

HARVESTING AND SOWING

Reflections and testimony
on a past as a mathematician

about

Alexandre GROTHENDIECK



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Summary

Prelude in Four Movements

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Presentation of Themes

or

PRELUDE IN FOUR MOVEMENTS

Booklet 01 :

As a foreword

Walk through a work — or the child and the Mother

Booklet 02 :

Letter

Introduction

University of Science and Technology of Languedoc, Montpellier and
National Center for Scientific Research

To my parents

HARVEST AND SOWING: Presentation of Themes

or

Prelude in four movements

(Summary)

As a Foreword...

Walk through a work — or the child and the Mother

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NB This "fascicle 01 " of the provisional edition of Récoltes et Semailles is intended (as the table of contents shows) to be placed before the fascicle (taking the place of n° 02) which had been distributed previously, under the title "Letter - Introduction"; with the exception, however, of the "Postscript Epilogue" (numbered from L 44 to L 56), which constitutes (as its name indicates) a "postscript" to the "Letter" (pages L 1 at L 43) opening this "issue 02 ". The set of two fascicles constitutes the introductory part of Récoltes et Semailles, called "Presentation of the Themes" or "Prelude in Four Movements".

As a Foreword. . .

January 30, 1986

All that was missing was the foreword to write, to entrust *Récoltes et Semailles* to the printer. And I swear I had the best will in the world to write something that would do the trick. Something reasonable this time. Three or four pages no more, but well thought out, to present this enormous “pavement” of more than a thousand pages. Something which “hooks” the jaded reader, which makes him see that in these not very reassuring “more than a thousand pages”, there could be things which interest him (or even which concern him, who knows?). It's not really my style, the hook, no. But here I was going to make the exception, for once! It was necessary that “the publisher crazy enough to take the adventure” (to publish this monster, visibly unpublishable) had to cover his costs as best he could.

And then no, it didn't come. I did my best though. And not just one afternoon, as I was planning to do, quickly. Tomorrow it will be exactly three weeks since I've been here, and the leaves are piling up. What has come, it is certain, is not what one could decently call a “foreword”. It's definitely missed again! We don't change things anymore at my age — and I'm not made to, to sell or to sell. Even when it comes to pleasing yourself (and your friends...).

What came was a sort of long commented “walk” through my work as a mathematician. A walk aimed especially at the “layman” — at those who “have never understood anything about math”. And for me too, who had never taken the leisure of such a walk. One thing led to another, and I saw myself led to reveal and say things that until then had always remained unsaid. As luck would have it, these are also the ones that I feel are the most essential, in my work and in my work. These are things that are not technical. It's up to you to see if I succeeded in my naive enterprise of “passing them along” — a somewhat crazy enterprise, surely, too. My satisfaction and my pleasure would be to have been able to make you feel them. Things that many of my learned colleagues no longer know how to sense. Perhaps they have become too scholarly and too prestigious. It often makes you lose touch with simple and essential things.

During this “walk through a work”, I also talk a little about my life. And a little bit, here and there, about what *Récoltes et Semailles* is about. I talk about it again and in more detail, in the “Letter” (dated May last year) which follows the “Promenade”. This

Letter was intended for my ex-students and my “friends from yesteryear” in the mathematical world. But there is nothing technical about it either. It can be read without problem by any reader who would be interested in learning, through a “live” story, the ins and outs that ultimately led me to write *Récoltes et Semailles*. Even more than the *Promenade*, it will also give you a taste of a certain atmosphere, in the “big world” of mathematics. And also (just like the *Promenade*), my style of expression, a little special it seems. And also the spirit which is expressed by this style - a spirit which is not appreciated by everyone either.

In the *Promenade* and almost everywhere in *Récoltes et Semailles*, I talk about mathematical work. It's a job I know well and first-hand. Most of what I say about it is true, surely, for all creative work, all work of discovery. This is true at least for so-called “intellectual” work, that which is done mainly “in the head”, and by writing. Such work is marked by the emergence and blossoming of an understanding of the things we are probing. But, to take an example from the opposite end, the passion of love is also a drive for discovery. It opens us to a so-called “carnal” knowledge, which is also renewed, blossoms, deepens.

These two impulses - the one which animates the mathematician at work, say, and that in the lover - are much closer than we generally suspect, or than we are prepared to believe. admit. I hope that the pages of *Récoltes et Semailles* can help to make you feel this, in your work and in your everyday life.

During the *Walk*, it will mainly be about mathematical work itself. However, I remain almost silent on the context in which this work takes place, and on the motivations that come into play outside of working time itself. This risks giving me, or the mathematician or the “scientist” in general, a flattering, but distorted, image. Like “great and noble passion”, without corrective of any kind. In short, in line with the great “Myth of Science” (with capital S please!). The heroic, “Promethean” myth, into which writers and scholars have fallen (and continue to fall) as best they can. It is only historians, perhaps, who sometimes resist this seductive myth. The truth is that in the motivations of “the scientist”, which sometimes push him to invest generously in his work, ambition and vanity play as important and almost universal a role as in any other profession. It takes more or less crude, more or less subtle forms, depending on the person concerned. I don't pretend

by no means an exception. Reading my testimony will, I hope, leave no doubt on this subject.

It is also true that the most devouring ambition is powerless to discover the slightest mathematical statement, or to demonstrate it - just as it is powerless (for example) to “get it hard” (in the literal sense of the term). Whether you are a woman or a man, what “makes you hard” is in no way ambition, the desire to shine, to exhibit power, sexual in this case — quite the contrary! But it is the acute perception of something strong, very real and very delicate at the same time. We can call it “beauty”, and this is one of the thousand faces of this thing. Being ambitious doesn't necessarily prevent you from sometimes feeling the beauty of a being, or a thing, okay. But what is certain is that it is not ambition that makes us feel it...

The man who first discovered and mastered fire was someone just like you and me. Not at all what we imagine under the name of “hero”, “demi-god” and so on. Surely, like you and like me, he has known the sting of anguish, and the vain salve experienced, which makes us forget the sting. But the moment he “experienced” the fire, there was neither fear nor vanity. This is the truth in the heroic myth. The myth becomes insipid, it becomes ointment, when it serves to hide from us another aspect of things, just as real and just as essential.

My purpose in *Récoltes et Semailles* was to speak of both aspects - of the drive for knowledge, and of fear and its vain antidotes. I believe I “understand”, or at least know the drive and its nature. (Perhaps one day I will discover, in wonder, to what extent I was deluding myself...) But as for fear and vanity, and the insidious blocks to creativity that derive from them, I know well that I have not reached the bottom of this great enigma. And I don't know if I will ever see the bottom of this mystery, during the years I have left to live...

During the writing of *Récoltes et Semailles* two images emerged, to represent one or the other of these two aspects of the human adventure. They are the child (aka the worker), and the Boss. In the Walk that we are going to take later, it is the “child” that will be discussed almost exclusively. He is also the one who appears in the subtitle “The Child and the Mother”. This name will become clearer, I hope, during the walk.

In all the rest of the reflection, it is the Boss on the other hand who especially takes center stage. He's not the boss for nothing! It would also be more accurate to say that it is

not of a Boss, but of the Bosses of competing companies. But it is also true that all the Bosses are essentially alike. And when we start talking about Bosses, that also means that there are going to be “villains”. In part I of the reflection (“Fatuity and Renewal”, which follows this introductory part, or the “Prelude in four Movements”), it is especially me, “the naughty one”. In the next three parts, it’s mostly “the others”. Everyone takes their turn!

This means that there will be, in addition to deep philosophical reflections and “confessions” (in no way contrite), “vitriolic portraits” (to use the expression of one of my colleagues and friends, who is found a little mishandled...). Not to mention large-scale and not worm-bitten “operations”. Robert Jaulin(*) assured me (half-joking) that in *Récoltes et Semailles* I was doing “the ethnology of the mathematical environment” (or perhaps sociology, I can't really say anymore). We are flattered of course, when we learn that (without even knowing it) we are doing scholarly things! It is a fact that during the “investigation” part of the reflection (and against my will...), I saw appear, in the pages that I was writing, a good part of the mathematical establishment, not to mention a number of colleagues and friends of more modest status. And in recent months, since I sent out the provisional edition of *Récoltes et Semailles* last October, things have “done it” again. Clearly, my testimony came like a stone in the pond. There were echoes in all tones really (except that of boredom...). Almost every shot was not at all what I would have expected. And there was also a lot of silence, which speaks volumes. Obviously, I had (and still have) to learn more, and in all colors, about what is happening in everyone's minds, among my ex-students and other more or less well-situated colleagues. — sorry, on the “sociology of the mathematical environment” I mean! To all those who have already come to make their contribution to the great sociological work of my old age, I would like to express here my grateful feelings.

Of course, I was particularly sensitive to the echoes in warm tones. There were also a few rare colleagues who expressed to me an emotion, or a feeling (which remained unexpressed until then) of crisis, or of degradation within this mathematical environment from which they feel part.

(*) Robert Jaulin is an old friend. I thought I understood that vis-à-vis the ethnological establishment, he finds himself in a situation (of “white wolf”) somewhat analogous to mine vis-à-vis the mathematical “beau monde”.

Outside of this environment, among the very first to give a warm, even emotional, welcome to my testimony, I would like to name here Sylvie and Catherine Chevalley (*), Robert Jaulin, Stéphane Deligeorge, Christian Bourgois. If *Récoltes et Semailles* will have a wider distribution than that of the initial provisional print run (intended for a very restricted circle), it is above all thanks to them. Thanks, above all, to their communicative conviction: that what I tried to grasp and say, had to be said. And that this could be heard in a wider circle than that of my colleagues (often sullen, even surly, and in no way willing to question themselves...). This is how Christian Bourgois did not hesitate to run the risk of publishing the unpublishable, and Stéphane Deligeorge, to do me the honor of welcoming my indigestible testimony in the “Epistémè” collection, alongside (for the moment) of Newton, Cuvier and Arago. (I couldn't dream of better company!) To each and every one, for their repeated signs of sympathy and trust, occurring at a particularly “sensitive” moment, I am happy to express my gratitude here.

And here we are at the start of a Walk through a work, as an introduction to a journey through a life. A long journey yes, of a thousand pages and more, and each one tightly packed. It took me a lifetime to make this journey, without having exhausted it, and more than a year to rediscover it, page after page. The words have sometimes been hesitant in coming, to express all the juice of an experience still evading a hesitant understanding - like ripe and thick grapes piled up in the press seem, at times, to want to escape the force which embraced... But even in the moments when the words seem to jostle and flow in torrents, it is not through happiness that they jostle and flow. Each of them was weighed in passing, or otherwise afterwards, to be carefully adjusted if it was found too light, or too heavy. Also this reflection-testimony-journey is not meant to be read quickly, in a day or in a month, by a reader who is eager to get to the final word. There are no “final words”, no “conclusions” in *Récoltes et Semailles*, any more than there are in my life, or in yours. There is a wine, aged for a lifetime in the barrels of my

(*) Sylvie and Catherine Chevalley are the widow and daughter of Claude Chevalley, the colleague and friend to whom the central part of *Récoltes et Semailles* (ReS III, “The Key to Yin and Yang”) is dedicated. In several places in the reflection, I talk about him, and the role he played in my itinerary.

be. The last drink you drink will not be better than the first or the hundredth. They are all “the same”, and they are all different. And if the first glass is spoiled, the whole barrel is; You might as well drink good water (if there is any) rather than bad wine.

But a good wine is not drunk in a hurry, nor at short notice.

Walk through a work or The child and the mother

January 1986

1. The magic of things.

When I was a kid, I loved going to school. We had the same master to teach us to read and write, arithmetic, singing (he played a little violin to accompany us), or prehistoric men and the discovery of fire. I don't remember anyone ever being bored at school at that time. There was the magic of numbers, and that of words, signs and sounds. That of rhyme too, in songs or in little poems. There seemed to be a mystery in the rhyme beyond words. It was like this, until the day someone explained to me that there was a very simple "trick"; that rhyme is quite simply when we make two consecutive spoken movements end with the same syllable, which suddenly, as if by magic, become verses. It was a revelation! At home, where I found people around me, for weeks and months, I had fun writing verses. At one point, I only spoke in rhymes. It passed me, fortunately.

But even today, on occasion, I still write poems - but without hardly looking for the rhyme anymore, if it doesn't come of itself.

At another time an older friend, who was already in high school, taught me negative numbers. It was another fun game, but it wore out quickly. And there were crosswords — I spent days and weeks making them, more and more intertwined. In this game the magic of form, and that of signs and words were combined. But this passion left me, apparently without leaving a trace.

In high school, first in Germany in the first year, then in France, I was a good student, without being the "brilliant student". I invested myself without counting in what interested me the most, and tended to neglect what interested me less, without worrying too much about the appreciation of the "teacher" concerned. The first year of high school in France, in 1940, I was interned with my mother in the concentration camp, in Rieucros near Mende. It was war, and we were strangers — "undesirables" — the camp turned a blind eye to us, as they said. But the administration of the kids in the camp, as undesirable as they were. We came and went as we wanted. I was the oldest, and the only one to go to high school, at four or

five kilometers away, whether it was snowing or windy, with makeshift shoes that always got wet.

I still remember the first “maths composition”, where the teacher gave me a bad grade, for the demonstration of one of the “three cases of equality of triangles”. My demonstration was not that of the book, which he followed religiously. However, I knew full well that my demonstration was neither more nor less convincing than that which was in the book and whose spirit I followed, with the endless “we slide this figure in such a way onto another” traditional. Obviously, this man who taught me did not feel capable of judging by his own lights (here, the validity of reasoning). He had to refer to an authority, that of a book in this case. It must have struck me, these arrangements, for me to remember this little incident. Subsequently and to this day, I have had ample opportunity to see that such provisions are by no means the exception, but the almost universal rule. There is much to say on this subject - a subject that I touch on more than once in one form or another, in *Récoltes et Semailles*.

But even today, whether I like it or not, I feel disconcerted every time I find myself confronted with it again...

During the last years of the war, while my mother remained interned in the camp, I was in a “Secours Suisse” children's home, for refugee children, in Chambon sur Lignon. Most of us were Jewish, and when we were warned (by the local police) that there would be Gestapo raids, we would hide in the woods for a night or two, in small groups of two or three, without we realize too much that our skin is indeed at stake. The region was full of Jews hidden in the Cevennes region, and many survived thanks to the solidarity of the local population.

What struck me especially at the “Collège Cévenol” (where I was a student) was how little my classmates were interested in what they learned there. As for me, I devoured the class books at the start of the school year, thinking that this time, we were finally going to learn some really interesting things; and the rest of the year I used my time as best I could, while the planned program was drawn up inexorably, throughout the quarters. However, we had really nice teachers. The natural history teacher, Mr. Friedel, was of remarkable human and intellectual quality. But, unable to “crack down”, he was heckled to death, to the point that towards the end of the year, it became impossible to follow anymore, his helpless voice drowned out by the general pandemonium. This is why, if it turns out

that I didn't become a biologist!

I spent a lot of my time, even during lessons (shhh...), doing math problems. Soon the ones in the book were no longer enough for me. Perhaps because they tended to resemble each other a little too much; but above all, I think, because they fell a little too much from the sky, like that, in single file, without saying where they came from or where they were going. Those were the book's problems, not my problems. However, there was no shortage of truly natural questions. Thus, when the lengths a , b , c of the three sides of a triangle are known, this triangle is known (apart from its position), so there must be an explicit "formula" to express, for example, the area of the triangle as a function of a , b , c . Same for a tetrahedron of which we know the length of the six edges — what is the volume? This time I think I had to struggle, but I had to end up getting there, by force. In any case, when something "got to me", I didn't count the hours or days I spent there, even if it meant forgetting everything else! (And it is still like this now...)

What satisfied me the least, in our math books, was the absence of any serious definition of the notion of length (of a curve), area (of a surface), volume (of a solid). I promised myself I would fill this gap as soon as I had the opportunity. I spent most of my energy there between 1945 and 1948, while I was a student at the University of Montpellier. The courses at the University were not designed to satisfy me. Without ever being told this clearly, I must have had the impression that the teachers were just repeating their books, just like my first maths teacher at Mende high school. So I only set foot in the University from time to time, to keep up to date with the endless "program". The books were quite sufficient for this program, but it was also very clear that they in no way answered the questions I asked myself. In fact, they didn't even see them, any more than my high school books did. From the moment they gave calculation recipes to everyone, for lengths, areas and volumes, using simple, double, triple integrals (dimensions greater than three remaining prudently avoided...), the question giving an intrinsic definition did not seem to arise, any more for my teachers than for the authors of the textbooks.

From my then limited experience, it might well have seemed that I was the only being in the world gifted with a curiosity about mathematical questions. In any case, this was my unexpressed conviction, during these years spent in intellectual solitude.

complete, and which did not weigh me down (*). To tell the truth, I don't think I ever thought, during that time, of delving into the question of whether or not I was the only person in the world who might be interested in what I was doing. My energy was sufficiently absorbed in meeting the challenge I had set for myself: developing a theory that fully satisfied me.

There was no doubt in me that I could not fail to get there, to find the end of things, as long as I took the trouble to scrutinize them, putting down black and white what they told me. said, little by little. The intuition of volume, let's say, was irrefutable. It could only be the reflection of a reality, elusive for the moment, but perfectly reliable. It was this reality that we simply had to grasp - a little, perhaps, as this magical reality of "rhyme" had been grasped, "understood" one day.

When I started it, at the age of seventeen and fresh out of high school, I thought it would take a few weeks. I stayed on it for three years. I even found a way, by force, to fail an exam, at the end of the second year of college — that of spherical trigonometry (in the "in-depth astronomy" option, sic), because of an idiotic error in numerical calculation. . (I was never very good at calculations, it must be said, once I left high school...)

That's why I had to stay another third year in Montpellier to finish my degree, instead of going to Paris straight away - the only place, I was assured, where I would have the opportunity to meet people aware of what was considered important in math. My informant, Mr. Soula, also assured me that the last problems that had still arisen in maths had been solved, twenty or thirty years ago, by a man named Lebesgue. He would have developed precisely (a funny coincidence, indeed!) a theory of measurement and integration, which put an end to mathematics.

Mr. Soula, my "diff calculus" teacher, was a kind and well-disposed man.

(*) Between 1945 and 1948, I lived with my mother in a small hamlet about ten kilometers from Montpellier, Mairargues (via Vendargues), lost in the middle of the vineyards. (My father disappeared in Auschwitz in 1942.) We lived frugally on my meager student grant. To make ends meet, I did the grape harvest every year, and after the harvest, grape wine, which I managed to sell as best I could (in contravention, it seems, of the legislation in force). ...) In addition there was a garden which, without ever having to work it, provided us with an abundance of figs, spinach and even (towards the end) tomatoes, planted by a complacent neighbor in the middle of a sea of splendid poppies. It was a good life — but sometimes just around the edges, when it came to replacing a spectacle frame, or a pair of worn-out shoes.

Fortunately, for my mother, weakened and ill following her long stay in the camps, we were entitled to free medical assistance. We would never have been able to pay a doctor...

towards me. I don't think he convinced me yet. There must already have been in me the foreknowledge that mathematics is something unlimited in scope and depth. Does the sea have an "end point"? The fact remains that at no time did I entertain the thought of going to unearth the book by this Lebesgue that Monsieur Soula had spoken to me about, and that it must never have been between the hands. In my mind, there was nothing in common between what a book could contain, and the work I was doing, in my own way, to satisfy my curiosity about things that had intrigued me.

2. The importance of being alone.

When I finally made contact with the mathematical world in Paris, a year or two later, I ended up learning, among many other things, that the work I had done in my corner with the means from the edge, was (more or less) what was well known to "everyone", under the name "theory of measurement and the integral of Lebesgue". In the eyes of the two or three elders to whom I spoke about this work (or even showed a manuscript), it was a bit as if I had simply wasted my time, redoing something "already known". I don't remember being disappointed, by the way. At that time, the idea of garnering "credit," or even just approval or simply interest from others, for the work I was doing must still have been foreign to my mind. Not to mention that my energy was quite busy familiarizing myself with a completely different environment, and above all, learning what was considered in Paris as the mathematician's BABA (*).

Yet, looking back now on those three years, I realize that they were by no means wasted. Without even knowing it, I learned in solitude what is essential to the profession of mathematician - what no master can truly teach.

Without ever having to tell myself, without having had to meet someone with whom to share my thirst for understanding, I nevertheless knew, "by my gut" I would say, that I was a mathematician: someone who "does" math, in the full sense of the term — like we "make" love. Mathematics had become for me a teacher always welcoming my desire. These years of solitude laid the foundation of a confidence which has never been shaken - nor by the discovery (disembarking in Paris at the age of twenty) of the full extent of my ignorance and immensity of what I had to learn; nor (more than twenty years later) by

(*) I give a short account of this period of somewhat harsh transition, in the first part of *Récoltes et Semailles* (ReS I), in the section "The Welcome Stranger" (n° 9).

the eventful episodes of my departure from the mathematical world without return; nor, in recent years, by the often quite crazy episodes of a certain “Burial” (anticipated and without mistakes) of my person and my work, orchestrated by my closest companions of yesteryear...

To put it another way: I learned, in these crucial years, to be alone (*). By this I mean: approaching through my own lights the things I want to know, rather than relying on ideas and consensus, expressed or tacit, which would come to me from a more or less extensive group of which I would feel a member, or who for any other reason would be vested with authority for me. Silent consensus had told me, in high school as at university, that there was no need to question the very notion of “volume”, presented as “well known”, “obvious”, “no problem”. I had ignored it, as a matter of course - just as Lebesgue, a few decades earlier, had had to ignore it. It is in this act of “going beyond”, of being oneself in short and not simply the expression of the consensus which is law, of not remaining locked inside the imperative circle that they set for us. — it is above all in this solitary act that “creation” is found. Everything else comes on top of that.

Subsequently, I had the opportunity, in this world of mathematicians which welcomed me, to meet many people, both elders and young people more or less of my age, who were visibly much more brilliant, much more “gifted” than me. I admired them for the ease with which they learned, as if playing, new concepts, and juggled with them as if they had known them from their cradle - while I felt heavy and clumsy, making my way painfully, like a mole, through a shapeless mountain of things that it was important (I was assured) for me to learn, and of which I felt incapable of grasping the ins and outs. In fact, I was nothing like a brilliant student, passing prestigious competitions with flying colors, assimilating prohibitive programs in the blink of an eye.

Most of my more brilliant comrades have also become mathematicians

(*) This formulation is somewhat improper. I never had to “learn to be alone”, for the simple reason that I never unlearned, during my childhood, this innate capacity which was in me at birth, as it is in everyone. But these three years of solitary work, where I was able to give my measure to myself, following the criteria of spontaneous demand that were mine, confirmed and rested in me, in my relationship this time to mathematical work, a foundation of confidence and quiet assurance, which owed nothing to the consensus and fashions that are the law. I have the opportunity to allude to it again in the note “Roots and solitude” (ReS IV, n° 1713 notably p. 1080).

competent and reputable. However, with the hindsight of thirty or thirty-five years, I see that they have not left a really deep imprint on the mathematics of our time. They did things, sometimes beautiful things, in an already ready-made context, which they would not have thought of touching. They remained prisoners without knowing it of these invisible and compelling circles, which delimit a Universe in a given environment and at a given time. To overcome them, they would have had to rediscover within themselves this capacity which was theirs at birth, just as it was mine: the capacity to be alone.

The little child has no difficulty being alone. He is solitary by nature, even if he does not mind occasional company and he knows how to ask for mom's totosse when it is time to drink. And he knows very well, without having to say it, that the bitch is for him, and that he knows how to drink. But often we have lost contact with this child within us. And we constantly miss the best, without deigning to see it...

If in *Récoltes et Semailles* I address someone other than myself, it is not to an "public". I am addressing you who read me as a person, and a person alone. It is to the one in you who knows how to be alone, to the child, that I would like to speak, and to no one else. The child is often far away, I know that well. He's seen all the colors and for a long time. He's hidden God knows where, and it's often not easy to get to him. You would swear that he has been dead forever, that he never existed rather — and yet, I am sure that he is there somewhere, and very much alive.

And I also know what the sign is that I am being heard. It is when, beyond all differences of culture and destiny, what I say about myself and my life finds echo and resonance in you; when you also find your own life there, your own experience of yourself, in a light perhaps to which you had not paid attention until then. It is not a question of "identification" with something or someone distant from you. But perhaps, a little, you rediscover your own life, what is closest to you, through the rediscovery that I make of mine, throughout the pages of *Récoltes et Semailles* and even in these pages that I I'm writing today.

3. The inner adventure – or myth and testimony.

Above all, *Récoltes et Semailles* is a reflection on myself and my life. In this way, it is also a testimony, and this in two ways. It is a testimony to my past, on which the main weight of reflection bears. But at the same time it is also a

testimony on the most immediate present - on the very moment when I write, and where the pages of *Récoltes et Semailles* are born over the hours, nights and days. These pages are the faithful witnesses of a long meditation on my life, as it really continued (and is still continuing at this very moment...).

These pages have no literary pretensions. They constitute a document about myself. I only allowed myself to touch it (for occasional stylistic retouching, in particular) within very narrow limits (*). If he has a claim, it is only that of being true. And that's a lot.

This document, moreover, has nothing of an "autobiography". You will learn neither my date of birth (which would be of little interest except for drawing up an astrological chart), nor the names of my mother and my father or what they did for a living, nor the names of the one who was my wife and other women who were important in my life, or those of the children who were born from these loves, and what each of them did with their lives. It's not that these things haven't been important in my life, and don't remain important even now. But as this reflection on myself began and continued, at no time did I feel encouraged to engage even a little in a description of these things that I come close to here and there, and even less, to carefully align names and numbers. At no time would it have seemed to me that this could add anything to the point I was pursuing at that moment. (While in the few preceding pages, I was led, as if in spite of myself, to include perhaps more material details about my life than in the thousand pages which follow...)

And if you ask me what is this "proposal" that I pursue for a thousand pages, I will answer: it is to tell the story, and thereby the discovery, of the interior adventure that was and what is my life. This story-testimony of an adventure continues at the same time on the two levels that I have just spoken about. There is the exploration of an adventure in the past, its roots and its origin all the way back to my childhood. And there is the continuation and renewal of this "same" adventure, over the moments and days as I write *Récoltes et Semailles*, in spontaneous response to a violent challenge coming to me from the outside world.

(*) Thus, possible rectifications of errors (material, or perspective, etc.) are not the occasion for retouching the first draft, but are made in footnotes, or during a "return " later on the situation examined.

(**).

External facts provide food for thought, only to the extent that they arouse and provoke a twist in the internal adventure, or help to shed light on it. And the burial and pillaging of my mathematical work, which will be discussed at length, was such a provocation. It aroused in me the mass lifting of powerful ego reactions, and at the same time revealed to me the deep and ignored links which continue to connect me to the work coming from me.

It is true that the fact that I am one of the “strong at maths” is not necessarily a reason (and even less a good reason) for you to be interested in my particular “adventure” — nor the fact that I had trouble with my colleagues, after changing environment and lifestyle.

There is also no shortage of colleagues or even friends who find it extremely ridiculous to display in public (as they say) one's “states of mind”. What matters are the “results”.

The “soul”, that is to say that in us which experiences the “production” of these “results”, or also its repercussions of all kinds (both in the life of the “producer”, as in that of his peers), is the object of disesteem, even of openly displayed derision. This attitude is intended to be an expression of “modesty”. I see there the sign of a leak, and a strange disturbance, promoted by the very air we breathe. It is certain that I am not writing for someone struck by this sort of latent contempt for himself, which makes him disdain the best I have to offer him.

A contempt for what truly makes its own life, and for what makes mine: the superficial and deep, gross or subtle movements which animate the psyche, this “soul” precisely which lives the experience and which reacts to it, which freezes or flourishes, withdraws or learns...

The story of an inner adventure can only be told by the person who experiences it, and by no one else. But even if the story is only intended for oneself, it is rare that it does not slip into the rut of constructing a myth, of which the narrator would be the hero. Such a myth is born, not from the creative imagination of a people and a culture, but from the vanity of someone who does not dare to assume a humble reality, and who takes pleasure in substituting a construction, the work of his own mind. . But a true story (if there is one), of an adventure as it was truly experienced, is a precious thing. And this, not by a prestige which (rightly or wrongly) surrounds the narrator, but by the simple fact of existing, with its quality of truth. Such testimony is precious, that it

(**) For details about this “violent arrest”, see “Letter”, in particular sections 3 to 8.

comes from a man of notoriety or even illustriousness, or from a small employee without a future and responsible for a family, or from a common criminal.

If such a story has a virtue for others, it is above all, to confront them with themselves, through this unvarnished testimony of the experience of another. Or also (to put it another way) to perhaps erase in him (and if only for the space of time that a reading lasts) this contempt in which he holds his own adventure, and this “soul” which is the passenger and the captain...

4. The table of morals.

By talking about my past as a mathematician, and subsequently by discovering (as if against my will) the adventures and mysteries of the gigantic Burial of my work, I was led, without having sought it, to draw up the table of a certain environment and a certain era - an era marked by the decomposition of some of the values which gave meaning to the work of men. This is the “picture of morals” aspect, painted around a “news story” undoubtedly unique in the annals of “Science”. What I said previously, says quite clearly, I think, that you will not find in *Récoltes et Semailles* a “file” concerning a certain unusual “affair”, just to get you up to speed quickly.

Such a friend, however, in search of the file, passed with his eyes closed and without seeing anything, alongside almost everything that makes up the substance and meat of *Récoltes et Semailles*.

As I explain in much more detail in the Letter, the “investigation” (or the “table of morals”) continues especially during parts II and IV, “The Burial (1) — or the dress of the “Emperor of China” and “The Burial (3) — or the Four Operations”.

Throughout the pages, I stubbornly bring to light, one after the other, a multitude of juicy facts (to say the least), which I try as best I can to “cram” in as I go along. . Little by little, these facts come together into an overall picture which gradually emerges from the mists, in ever brighter colors, with ever sharper contours. In these day-to-day notes, the “raw facts” that have just emerged are inextricably mixed with personal reminiscences, and with comments and reflections of a psychological, philosophical, and even (occasionally) mathematical nature. It’s like that and I can’t do anything about it!

Based on the work that I have done, which kept me in suspense for more than a year, putting together a file, in the style of “investigation conclusions”, should represent additional work of the order of a few hours or a few days, depending on curiosity and requirements

of the interested reader. At one point I tried to put together the famous file. It was when I began to write a note which was to be called "The Four Operations"(*). And then no, there was nothing to do. I couldn't do it! This is definitely not my style of expression, and in my old age less so than ever. And I now believe, with *Récoltes et Semailles*, to have done enough for the benefit of the "mathematical community", to leave without remorse to others other than me (if there are any among my colleagues who feel concerned) the care of compiling the necessary "file".

5. The heirs and the builder.

It is time for me to say a few words here about my mathematical work, which has taken up a major place in my life and retains (to my own surprise) an important place. More than once in *Récoltes et Semailles* I return to this work - sometimes in a way clearly intelligible to everyone, and at other times in somewhat technical terms (*). These last passages will largely go "over the head" not only of the "layman", but even of the mathematician colleague who would be more or less "in the know" of the mathematics in question there. You can of course skip any passages that seem a little too "sophisticated" to you. As you can also browse them, and perhaps catch in passing a reflection of the "mysterious beauty" (as a non-mathematician friend wrote to me) of the mathematical world of things, emerging like so many "strange inaccessible islands" in the vast moving waters of reflection...

Most mathematicians, as I said earlier, are inclined to confine themselves to a conceptual framework, to a "Universe" fixed once and for all – the one, essentially, that they found "ready-made" at the moment when they studied. They are like heirs of a large and beautiful house all set up, with its living rooms and its kitchens and its workshops, and its cookware and tools for all comers, with which there is, my goodness, something to cook and tinker with. How this house was built gradually, over the course of generations, and how and why certain tools were designed and shaped (and not others...), why the rooms are arranged and arranged in such a way here, and such another

(*) The planned note ended up breaking out into part IV (of the same name "The four operations") of *Récoltes et Semailles*, comprising 70 notes extending over four hundred pages.

(*) There are also here and there, in addition to mathematical overviews of my past work, passages also containing new mathematical developments. The longest is "The five photos (crystals and -Modules)" in ReS IV, note n

there - these are so many questions that these heirs would never dream of asking themselves. This is the "Universe", the "given" in which we must live, that's all! Something that seems big (and we are far, most often, from having gone through all its pieces), but familiar at the same time, and above all: immutable. When they get busy, it is to maintain and beautify a heritage: repairing a rickety piece of furniture, plastering a facade, sharpening a tool, or even sometimes, for the most enterprising, making a piece of furniture from scratch in the workshop. new. And it happens, when they put all their effort into it, that the furniture is absolutely beautiful, and that the whole house seems embellished.

Even more rarely, one of them will think of making some modification to one of the tools in the reserve, or even, under the repeated and insistent pressure of needs, of imagining and making a new one. In doing so, he will barely apologize for what he feels is a sort of violation of the piety due to family tradition, which he feels he is upsetting by a unusual innovation.

In most of the rooms of the house, the windows and shutters are carefully closed - probably for fear of a wind blowing in from elsewhere. And when the beautiful new pieces of furniture, one here and the other there, without counting the offspring, begin to clutter up rooms that have become narrow and invade even the corridors, none of these heirs will want to realize that their A familiar and cozy world is starting to feel a little tight around the edges. Rather than resolving to such an observation, everyone will prefer to squeeze in and get stuck as best they can, between a Louis XV sideboard and a rattan rocking chair, between a snotty brat and an Egyptian sarcophagus, and another finally, in desperation, will climb as best he can a motley and crumbling heap of chairs and benches...

The little picture that I have just painted is not special to the world of mathematicians. It illustrates inveterate and immemorial conditionings, which we encounter in all environments and in all spheres of human activity, and this (as far as I know) in all societies and in all eras. I have already had occasion to allude to it, and I in no way claim to be exempt from it myself. As my testimony will show, the opposite is true. It only happens that at the relatively limited level of intellectual creative activity, I was relatively little affected (*) by this conditioning, which we

(*) I see the main cause in a certain favorable climate which surrounded my childhood until the age of five. See on this subject the note "Innocence" (ReS III, n ° 107).

might call “cultural blindness” — the inability to see (and move) outside of the “Universe” fixed by the surrounding culture.

For my part, I feel part of the lineage of mathematicians whose spontaneous vocation and joy is to constantly build new houses (**). Along the way, they cannot help but also invent and shape as they go along all the tools, utensils, furniture and instruments required, both to build the house from the foundations to the ridge, and to provide in abundance future kitchens and future workshops, and set up the house to live there and be comfortable. However, once everything has been laid down to the last oak tree and the last stool, it is rare for the worker to linger for long in these places, where each stone and each rafter bears the trace of the hand which worked on it and laid. His place is not in the tranquility of ready-made universes, however welcoming and harmonious they may be - whether they were arranged by his own hands, or by those of his predecessors. Other tasks already call him to new projects, under the imperious push of needs that he is perhaps the only one to feel clearly, or (even more often) by anticipating needs that he is the only one to sense. . Its place is in the open air. He is the friend of the wind and does not fear being alone in the task, for months and years and, if necessary, for an entire life, if a welcome relief does not come to the rescue. He only has two hands like everyone else, that's for sure — but two hands which at every moment guess what they have to do, which are not averse to the biggest tasks or the most delicate ones, and who never tire of making and reacquainting themselves with these innumerable things which constantly call them to know them.

Two hands are few, perhaps, because the World is infinite. They will never exhaust it! And yet, two hands are a lot...

I, who am not strong in history, if I had to give the names of mathematicians in this lineage, those of Galois and Riemann (in the last century) and that of Hilbert (at the beginning of the present century) come to mind spontaneously. If I look for a representative among the elders who welcomed me at my beginnings in the mathematical world (*), it is the name of Jean Leray which comes to me before any other, even though my contacts with him remained of the most episodic (**).

(**) This archetypal image of the “house” to be built, surfaces and is formulated for the first time times in the note “Yin the Servant, and the new masters” (ReS III, n.º 135).

(*) I talk about these beginnings in the section “The Welcome Stranger” (ReS I, n.º 9).

(**) This does not prevent the fact that I was (following H. Cartan and JP Serre) one of the main users and pro-

I have just sketched in broad strokes two portraits: that of the “homebody” mathematician who is content to maintain and embellish a heritage, and that of the pioneer builder (*), who cannot help but cross without ceases these “invisible and compelling circles” which delimit a Universe (**). We can also call them, by somewhat blunt but suggestive names, the “conservatives” and the “innovators”. Both have their reason for being and their role to play, in the same collective adventure continuing over generations, centuries and millennia. In a period of flourishing of a science or an art, there is no opposition or antagonism between these two temperaments (***). They are different and they complement each other like dough and leaven.

Between these two extreme types (but in no way opposed by nature), there is of course a whole range of intermediate temperaments. Such a “homebody” who would not dream of leaving a familiar home, and even less of going to the task of building another one God knows where, will not hesitate, however, when things definitely start to get cramped, to put hand with a trowel to arrange a cellar or an attic, raise a floor, or even, if necessary, add to the walls some new outbuilding of modest proportions.

driving forces of one of the great innovative notions introduced by Leray, that of the beam, which has been one of the essential tools throughout all my work as a surveyor. It is also what provided me with the key to broadening the notion of (topological) space into that of topos, which will be discussed below.

Leray also differs from the portrait that I drew of the “builder”, it seems to me, in that he does not seem to be inclined to “build houses from the foundations to the ridge”. Rather, he could not help but begin laying vast foundations, in places that no one would have thought of, while leaving it to others to finish them and build on them, and, once the house built, to settle in the place (even if only for a time)...

(*) I have just, surreptitiously and “by the way”, attached two qualifiers to male resonances (that of “builder” and that of “pioneer”), which nevertheless express very different aspects of the drive for discovery, and of a more delicate nature which these names cannot evoke. This is what will appear in the rest of this walk-reflection, in the stage “Discovering the Mother — or the two sides” (n ̃ 17).

(**) At the same time, and without having wanted it, it assigns to this ancient Universe (if not for itself, at least for its congeners less mobile than itself) new limits, in new circles more vast indeed, but just as invisible and just as imperious as were those they replaced.

(***) This was particularly the case in the mathematical world, during the period (1948–1969) of which I was a direct witness, while I myself was part of this world. After I left in 1970, there seems to have been a sort of wide-ranging reaction, a sort of “consensus of disdain” for “ideas” in general, and more particularly, for the big, innovative ideas that I had introduced.

(****). Without being a builder at heart, he often looks with an eye of sympathy, or at least without secret worry or disapproval, at another who had shared the same home with him, and who is now toiling to gather beams and stones. in some impossible bush country, with the air of someone who already sees a palace there...

6. Points of view and vision.

But I come back to myself and my work.

If I have excelled in the art of mathematician, it is less through skill and perseverance in solving problems handed down by my predecessors, than through this natural propensity in me which pushes me to see questions, visibly crucial, that no one had seen, or to identify the “good notions” which were missing (often without anyone realizing it, before the new notion appeared), as well as the “good statements” which no one had seen. 'had thought. Very often, notions and statements fit together in such a perfect way that there can be no doubt in my mind that they are correct (apart from minor alterations, at most) — and often then, when there is no is a “piece work” intended for publication, I refrain from going further, and taking the time to develop a demonstration which very often, once the statement and its context are clearly seen, can no longer be anything other than a question of “job”, not to say routine. The things that demand attention are innumerable, and it is impossible to follow the call of each one to the end! This does not prevent the propositions and theorems demonstrated in due form, in my written and published work, numbering in the thousands, and I believe I can say that with very few exceptions, they have all entered the heritage common of things commonly accepted as “known” and commonly used almost everywhere in mathematics.

But even more than towards the discovery of new questions, notions and statements, it is towards that of fertile points of view, constantly leading me to introduce, and to develop more or less, entirely new themes, that draws me my particular genius. This, it seems to me, is what I have contributed most to the mathematics of my time. To tell the truth, these innumerable questions, notions, statements that I have just spoken about, do not

(****) Most of my “elders” (discussed for example in “A Welcome Debt”, Introduction, 10) correspond to this intermediate temperament. I thought in particular of Henri Cartan, Claude Chevalley, André Weil, Jean-Pierre Serre, Laurent Schwartz. Except perhaps Weil, they all gave an “eye of sympathy”, without “concern or secret disapproval”, to the solitary adventures in which they saw me embarking.

take on a meaning for me only in the light of such a “point of view” — or to put it better, they arise spontaneously, with the force of evidence; in the same way that a light (even diffuse) which emerges in the dark night, seems to give rise from nothingness to these more or less blurred or clear contours which it suddenly reveals to us. Without this light which unites them in a common beam, the ten or a hundred or a thousand questions, notions, statements would appear as a heterogeneous and amorphous heap of “mental gadgets”, isolated from each other - and not as parts of a Whole which, although perhaps remaining invisible, still hiding in the folds of the night, is no less clearly foreseen.

The fruitful point of view is the one which reveals to us, like so many living parts of the same Whole which encompasses them and gives them meaning, these burning questions that no one felt, and (as perhaps in response to these questions) these notions which are so natural that no one had thought of bringing out, and finally these statements which seem to flow naturally, and which no one certainly risks asking, as long as the questions which gave rise to them, and the notions which allow them to be raised formulate, had not yet appeared. Even more than what we call “key theorems” in mathematics, it is the fertile points of view which are, in our art (*), the most powerful tools of discovery - or rather, they are not tools, but they are the very eyes of the researcher who, passionately, wants to know the nature of mathematical things.

Thus, the fruitful point of view is none other than this “eye” which both makes us discover and makes us recognize the unity in the multiplicity of what is discovered. And this unity is truly the very life and breath that connects and animates these multiple things.

But as its very name suggests, a “point of view” in itself remains fragmented. It reveals to us one of the aspects of a landscape or a panorama, among a multiplicity of others equally valid, equally “real”. It is to the extent that complementary points of view of the same reality combine, where our “eyes” multiply, that the gaze penetrates further into the knowledge of things. The richer and more complex the reality we wish to know, the more important it is to have several “eyes” (**) to grasp it in all its breadth and finesse.

(*) This is certainly not the case in “our art” only, but (it seems to me) in any work of discovery green, at least when it is at the level of intellectual knowledge.

(**) Every point of view leads to the development of a language which expresses it and which is specific to it. Having several “eyes” or several “points of view” to understand a situation also comes down (in mathematics throughout

And it happens, sometimes, that a bundle of converging points of view on the same vast landscape, by virtue of which we are able to grasp the One through the multiple, gives substance to a new thing; to a thing that goes beyond each partial perspective, in the same way that a living being goes beyond each of its members and organs. This new thing can be called a vision. The vision unites the already known points of view which embody it, and it reveals to us others hitherto ignored, just as the fertile point of view makes us discover and apprehend as part of the same Whole, a multiplicity of questions, new notions and statements.

To put it another way: vision is to the points of view from which it appears to come and which it unites, as the clear and warm light of day is to the different components of the solar spectrum. A vast and profound vision is like an inexhaustible source, made to inspire and enlighten the work not only of the one in whom it was born one day and who made himself his servant, but that of generations, fascinated perhaps (like he himself was) by these distant limits that it allows us to glimpse...

7. The “big idea” – or the trees and the forest.

The so-called “productive” period of my mathematical activity, that is to say that attested by proper publications, extends between 1950 and 1969, therefore over twenty years. And for twenty-five years, between 1945 (when I was seventeen) and 1969 (when I was about forty-two), I invested practically all of my energy in mathematical research. A disproportionate investment, certainly. I paid for it with a long spiritual stagnation, with a progressive “thickening”, which I will have the opportunity to mention more than once in the pages of *Récoltes et Semailles*. However, within the limited field of a purely intellectual activity, and through the emergence and maturation of a vision restricted to the world of mathematical things only, these were years of intense creativity.

During this long period of my life, almost all of my time and energy was devoted to what we call “work on parts”: the painstaking work of shaping, assembling and lapping, required for the construction of houses from scratch that an inner voice (or demon...) enjoined me to build, according to a project manager that she suggested to me as the work progressed. Taken by the “trade” tasks: those in turn of stonemason, mason, carpenter, even plumber, carpenter and

less) to have several different languages to understand it.

cabinetmaker - rarely have I taken the leisure to note in black and white, even if only in broad strokes, the master plan invisible to everyone (as it appeared later...) except to me, who over the days, months and years guided my hand with the sureness of a sleepwalker (*). It must be said that the work on pieces, in which I liked to put loving care, was in no way meant to displease me. Furthermore, the mathematical mode of expression that was professed and practiced by my elders gave preeminence (to say the least) to the technical aspect of the work,

(*) The image of the "somnambulist" was inspired by the title of Koestler's remarkable book "Les somnambules" (Calman Lévy), presenting an "Essay on the history of conceptions of the Universe", from the origins of scientific thought to Newton. One of the aspects of this story which struck Koestler and which he highlights is to what extent, often, the progression from a certain point in our knowledge of the world, to some other point which (logically and with the hindsight) seems very close, sometimes goes through the most absurd detours, which seem to defy sound reason; and how yet, through these thousand detours which seem destined to lead them astray forever, and with a "sleepwalker's sureness", the men who set out in search of the "keys" to the Universe fall, as if against their will and without even thinking. often report on other "keys" that they were far from foreseeing, and which nevertheless turn out to be "the right ones".

From what I have been able to observe around me, at the level of mathematical discovery, these enormous detours in the path of discovery are the work of certain large-scale researchers, but by no means all of them. This could be due to the fact that for two or three centuries, research in the natural sciences, and even more in mathematics, has been freed from imperative religious or metaphysical presuppositions relating to a given culture and era, which have been particularly powerful obstacles to the deployment (for better and for worse) of a "scientific" understanding of the Universe. It is true, however, that certain ideas and the most fundamental and obvious notions in mathematics (such as those of displacement, group, the number zero, literal calculation, the coordinates of a point in space, the notion of together, or that of topological "form", without even talking about negative numbers and complex numbers) took millennia before making their appearance. These are all eloquent signs of this inveterate "block", deeply implanted in the psyche, against the conception of totally new ideas, even in cases where these are childishly simple and seem to require themselves with the force of evidence, for generations, even for millennia...

Coming back to my own work, I have the impression that in it the "mess-ups" (perhaps more numerous than with most of my colleagues) are limited exclusively to points of detail, generally quickly spotted by my own care. These are simple "accidents", of a purely "local" nature and without serious impact on the validity of the essential intuitions concerning the situation examined. On the other hand, at the level of ideas and major guiding intuitions, it seems to me that my work is free from any "failure", as incredible as that may seem. It is this never failing security to apprehend at each moment, if not the ultimate outcomes of an approach (which most often remain hidden from view), but at least the most fertile directions which offer themselves to lead me straight towards essential things — it was this certainty that brought back to me Koestler's image of the "sleepwalker".

and hardly encouraged “digressions” which would have lingered on “motivations”; even, those which would have pretended to make some perhaps inspiring image or vision emerge from the mists, but which, for lack of having yet been embodied in tangible constructions in wood, stone or pure cement, were akin to more like shreds of a dream than the work of the craftsman, diligent and conscientious.

On a quantitative level, my work during these years of intense productivity took the form of some twelve thousand pages of publications, in the form of articles, monographs or seminars (*), and by hundreds, if not There are thousands of new notions that have entered the common heritage, with the very names that I gave them when I identified them (**). In the history of mathematics, I believe I am the one who introduced the greatest number of new notions into our science, and at the same time, the one who was led, by this very fact, to invent the greatest number of new names. , to express these notions delicately, and as suggestively as I could.

These all “quantitative” indications provide, of course, only a more than crude apprehension of my work, missing out on what truly makes up its soul, life and vigor. As I wrote earlier, the best thing I brought to mathematics were the new “points of view” that I was able to first glimpse, and then patiently identify and develop more or less. Like the notions I have just discussed, these new points of view, introduced into a vast multiplicity of very different situations, are themselves almost innumerable.

However, there are points of view which are broader than others, and which alone give rise to and encompass a multitude of partial points of view, in a multitude of different particular situations. Such a view can also be rightly called a “big idea”. Through the fecundity which is its own, such an idea gives birth to a teeming offspring, of ideas which all inherit its fecundity, but most of which (if not all) are less vast in scope than the mother idea.

(*) From the 1960s, some of these publications were written with the collaboration of colleagues (especially J. Dieudonné) and students.

(**) The most important among these notions are reviewed in the Thematic Sketch, and in the History Commentary which accompanies it, which will be included in volume 4 of the Reflections. Some of the names were suggested to me by friends or students, such as the term “smooth morphism” (J. Dieudonné) or the panoply “site, field, sheaf, link”, developed in Jean Giraud’s thesis.

As for expressing a great idea, “saying it” then, is, most often, a thing almost as delicate as its very conception and its slow gestation in the person who conceived it — or to put it better, this laborious work of gestation and formation is none other than that which “expresses” the idea: the work which consists of patiently releasing it, day after day, from the veils of mists which surround it at its birth, to gradually arrive at little to give it tangible form, in a picture which is enriched, strengthened and refined over the weeks, months and years. Simply naming the idea, by some striking formula, or by more or less technical key words, may take a few lines, or even a few pages - but few will be those who, without already knowing it well, will be able to understand this “name” and recognize a face. And when the idea has reached full maturity, perhaps a hundred pages will be enough to express it, to the full satisfaction of the worker in whom it was born - as it is also possible that ten thousand pages, long worked and weighed, will not be enough (*).

And in both cases, among those who, in order to make it their own, have taken note of the work which finally presents the idea in full bloom, like a spacious forest which would have grown there on a deserted moor - there it's a safe bet that there will be many people who will see all these vigorous and slender trees and who will have use of them (some to climb them, some to pull beams and planks from them, and another to light the fires in their fireplace). ...). But few will be able to see the forest...

8. The vision – or twelve themes for harmony.

Perhaps we can say that the “big idea” is the point of view which not only proves new and fruitful, but which introduces into science a new and vast theme which embodies it. And all science, when we understand it not as an instrument of power and domination, but as an adventure of knowledge of our species through the ages, is not

(*) At the time of leaving the mathematical scene in 1970, all of my publications (many of them in collaboration) on the central theme of diagrams, must have amounted to some ten thousand pages. This, however, was only a modest part of the vast program I saw before me, concerning the diagrams. This program was abandoned sine die as soon as I left, and this despite the fact that, with very little difference, everything that had already been developed and published to be made available to all, immediately entered into the common heritage of notions and results commonly used as “good known”.

The part of my program on the schematic theme and on its extensions and ramifications, which I had accomplished at the time of my departure, represents in itself the largest work of foundations ever accomplished in the history of mathematics, and surely also the largest in the history of science.

something other than this harmony, more or less vast and more or less rich from one era to another, which unfolds over the generations and centuries, through the delicate counterpoint of all the themes appearing in turn, as called from nothingness, to join in it and intertwine with it.

Among the many new points of view that I have identified in mathematics, there are twelve, with hindsight, that I would call “big ideas” (*). To see my work as a mathematician, to “feel” it, is to see and “feel” somewhat at least some of these ideas, and these great themes that they introduce and which make up both the plot and the soul Artwork.

By force of circumstances, some of these ideas come out “bigger” than others (which, by the same token, are “smaller”). In other words, among these new themes, some are broader than others, and some delve deeper into the heart of the mystery of things

(*) Here, for the mathematician reader who might be curious, is the list of these twelve key ideas, or “master themes” of my work (in chronological order of appearance):

1. Topological tensor products and nuclear spaces.
2. “Continuous” and “discrete” duality (derived categories, “six operations”).
3. Yoga Riemann–Roch–Grothendieck (K-theory, relation to intersection theory).
4. Diagrams.
5. Topos.
6. Etal and -adic cohomology.
7. Motifs and motivic Galois group ($\tilde{y}$ -Grothendieck categories).
8. Crystals and crystal cohomology, yoga “De Rham coefficients”, “Hodge coefficients”...
9. “Topological algebra”: $\tilde{y}$ -fields, differentiators; cohomological formalism of topos, as inspiration for a new homotopic algebra.
10. Moderate topology.
11. Yoga of Anabelian algebraic geometry, Galois–Teichmüller theory.
12. “Schematic” or “arithmetic” point of view for regular polyhedra and configurations regular of all kinds.

Aside from the first of these themes, an important part of which is part of my thesis (1953) and was developed during my period of functional analysis between 1950 and 1955, the eleven others emerged during my period as a surveyor. , from 1955.

mathematics (**). There are three (and not the least in my eyes) which, appearing only after my departure from the mathematical scene, still remain in an embryonic state: “officially” they do not even exist, since no publication in good and formal is not there to take the place of a birth certificate (*). Among the nine themes that appeared before my departure, the last three, which I had left in full bloom, still remain in childhood today, due to the lack (after my departure) of loving hands to provide for the necessary for these “orphans”, left behind in a hostile world (**). As for the other six themes, which reached full maturity during the two decades preceding my departure, we can say

(**) Among these themes, the broadest in scope seems to me to be that of topos, which provides the idea of a synthesis of algebraic geometry, topology and arithmetic. The broadest in terms of the extent of the developments to which it has given rise to date is the theme of diagrams. (See on this subject the note by b. de p. (*) page 20.) It is he who provides the “par excellence” framework for eight others among these envisaged themes (namely, all the others excluding the themes 1, 5 and 19, at the same time as it provides the central notion for a fundamental renewal of algebraic geometry and algebraic-geometric language.

At the opposite end, the first and last of the twelve themes appear to me to be of more modest dimensions than the others. However, as for the last one, introducing a new perspective into the very old theme of regular polyhedra and regular configurations, I doubt that the life of a mathematician who would devote himself body and soul to it would be enough to exhaust it. As for the first of all these themes, that of topological tensor products, it played more the role of a new ready-to-use tool than that of a source of inspiration for subsequent developments. This does not prevent me, until recent years, from receiving sporadic echoes of more or less recent work, resolving (twenty or thirty years later) some of the questions that I had left unanswered.

The most profound (in my eyes) among these twelve themes are that of motives, and the closely related one of anabelian algebraic geometry and the yoga of Galois–Teichmüller.

From the point of view of the power of tools perfectly developed and honed by me, and in common use in various “cutting-edge sectors” in research over the last two decades, these are the “diagrams” and “equal and -adic cohomology” which seem to me the most notable. For a well-informed mathematician, I think that from now on there can be little doubt that the schematic tool, like that of -adic cohomology which came from it, are part of the few great achievements of the century, which have come to nourish and renew our science over the last few generations.

(*) The only “semi-official” text where these three themes are sketched out to any extent is the Outline of a Program, written in January 1984 on the occasion of a request for secondment to the CNRS. This text (which is also discussed in Introduction 3, “Compass and Baggage”) will in principle be included in volume 4 of Reflections.

(**) After burial without fanfare of these three orphans, the very day after my departure, two of them were exhumed with great fanfare and without mention of the worker, one in 1981 and the other another (given the smooth success of the operation) the following year.

(with one or two reservations (***)) that they had already from that moment entered into the common heritage: among the geometer population especially, “everyone” these days intones them without even more knowledge (as Monsieur Jourdain did prose), all day long and at any time. They are part of the air we breathe, when we “do geometry”, or when we do arithmetic, algebra or even slightly “geometric” analysis.

These twelve major themes of my work are in no way isolated from each other. In my eyes, they are part of a unity of spirit and purpose, present, like a common and persistent background note, throughout all my “written” and “unwritten” work. And in writing these lines, I seemed to find the same note again — like a call! — through these three years of “free”, hard and solitary work, at a time when I had not yet cared to know if there were mathematicians in the world besides me, so much was I taken by the fascination of what called me...

This unity is not only the result of the mark of the same worker, on the works that come from his hands. These themes are linked together by innumerable links, both delicate and obvious, just as the different themes, each clearly recognizable, are linked together, which unfold and intertwine in the same vast counterpoint - in a harmony which brings them together, carries them forward and gives each a meaning, a movement and a fullness in which all the others participate. Each of the partial themes seems to be born from this larger harmony and to be reborn again over the course of moments, much more than this appears as a “sum” or as a “result”, of constituent themes which would pre-exist in She. And to tell the truth, I cannot defend myself from this feeling (no doubt absurd...) that in a certain way it is indeed this harmony, not yet appeared but which surely already “existed” well and truly, somewhere in the dark bosom of things yet to be born - that it was indeed she who in turn gave rise to these themes which were only going to take on their full meaning through her, and that it was also she who was already calling to me with her voice low and pressing, in these years of ardent solitude, at the end of adolescence...

The fact remains that these twelve master themes of my work all find themselves, as if by a secret predestination, contributing to the same symphony - or, to use a different image, they find themselves embodying so many different “points of view”. , coming all

(***) The “roughly” mainly concerns the Grothendieckian yoga of duality (derived categories and six operations), and that of topos. This will be discussed in detail (among many other things) in parts II and IV of *Récoltes et Semailles* (The Burial (1) and (3)).

contribute to the same and vast vision.

This vision only began to emerge from the mists, to reveal recognizable contours, around the years 1957, 58 — years of intense gestation (*). Strange thing perhaps, this vision was so close to me, so “obvious”, that until a year ago (*), I had not thought of giving it a name. (Me, one of whose passions has been to constantly name the things that are discovered to me, as a first means of apprehending them...) It is true that I cannot indicate a particular moment, which would have been experienced as the moment of the appearance of this vision, or that I could recognize as such in hindsight. A new vision is something so vast that its appearance cannot undoubtedly be located at a particular moment, but must penetrate and take possession progressively over many years, if not over generations, of the one or those who scrutinize and contemplate; as if new eyes had to laboriously form, behind the familiar eyes for which they are called to replace little by little. And the

(*) The year 1957 was the year in which I came up with the theme “Riemann–Roch” (Grothendieck version) — which, overnight, made me a “great star”. It was also the year of my mother's death, and thus, that of an important break in my life. It was one of the most intensely creative years of my life, and not only on a mathematical level. It had been twelve years since all of my energy was invested in mathematical work. That year the feeling emerged that I had more or less “gone around” what mathematical work is, that it might now be time to invest myself in something else. It was a need for inner renewal, visibly, which surfaced then, for the first time in my life.

At that time I thought of becoming a writer, and for several months I stopped all mathematical activity. Finally, I decided that I would at least put down in black and white the mathematical work that I already had in progress, probably for a few months, or a full year...

The time was not yet ripe, no doubt, for the big leap. Still, once returning to work Mathematics, he was the one who took me back then. He didn't let me go again, for twelve more years!

The year which followed this interlude (1958) is perhaps the most fruitful of all in my life as a mathematician. It was in this year that the two central themes of new geometry emerged, with the strong start of the theory of diagrams (subject of my presentation at the international congress of mathematicians in Edinburgh, the summer of that same year). year), and the appearance of the notion of “site”, a provisional technical version of the crucial notion of topos. With a hindsight of almost thirty years, I can now say that this is the year in which the vision of new geometry was really born, in the wake of the two master tools of this geometry: the diagrams (which represent a metamorphosis of the ancient notion of “algebraic variety”), and the topos (which represent an even more profound metamorphosis of the notion of space).

(*) I thought for the first time of giving a name to this vision in the reflection of December 4, 1984, in the subnote (n^o 1361) to the note “Yin the Servant (2) — or generosity” (ReS III, page 637).

vision is also too vast for it to be a question of “grasping” it, as one would grasp the first notion that appears at the turn of the road. This is why there is undoubtedly no reason to be surprised, ultimately, that the thought of naming something so vast, and so close and so diffuse, only appeared with hindsight, once only this thing had reached full maturity. To tell the truth, until two years ago my

relationship with mathematics was limited (apart from the task of teaching it) to doing it — to following an impulse which constantly pulled me forward, in a “unknown” which constantly attracted me. The idea would not have occurred to me to stop in this momentum, to pose even for a moment, to turn around and see perhaps a path taken, or even, to situate a bygone work. (Whether it is to situate it in my life, as something to which deep and long-ignored links continue to connect me; or also, to situate it in this collective adventure that is “mathematics”.)

Strange thing again, to lead me to finally “put down” and reacquaint myself with this half-forgotten work, or to even think of giving a name to the vision which was its soul, I had to find myself suddenly confronted with the reality of a Burial of gigantic proportions: to the burial, by silence and by derision, and of the vision, and of the worker in whom she was born...

9. Form and structure – or the voice of things.

Without having planned it, this “foreword” ended up, one thing leading to another, becoming a sort of formal presentation of my work, intended (especially) for the non-mathematician reader. Too committed already to be able to go back, all I have to do is finish “the presentations”! I would like to try as best I can to say at least a few words on the substance of these wonderful “big ideas” (or these “master themes”) that I have dangled in the previous pages, and on the nature of this famous “vision” in which these key ideas are supposed to come together. Without being able to use a somewhat technical language, I will probably only be able to convey an extremely blurry image (if anything really wants to “pass” in fact...) (*).

(*) That this image must remain “blurry” in no way prevents this image from being faithful, and from truly restoring something of the essence of what is being viewed (in this case, my work). Conversely, an image may well be clear, but it may very well be distorted, and moreover, include only the accessory and completely miss the essential. Also, if you “hook” on what I see to say about my work (and surely then something of the image in me will indeed “come through”), you will be able to flatter yourself of having better grasped what makes the work essential in

Traditionally, we distinguish three types of “qualities” or “aspects” of things: the Universe, which are the object of mathematical reflection: these are the number(**), the magnitude, and shape. We can also call them the “arithmetic” aspect, the “metric” (or “analytical”) aspect, and the “geometric” aspect of things. In most of the situations studied in There mathematically, these three aspects are present simultaneously and in close interaction. However, more often than not, there is a distinct predominance of one of the three. He is seems that with most mathematicians it is quite clear (to those who know them, or who are aware of their work) what their basic temperament is, if they are “arithmeticians”, “analysts”, or “geometricians” – and this, even though they would have many strings on their violin, and would have worked in all the registers and pitches imaginable.

My first and solitary reflections, on the theory of measurement and integration, are placed without possible ambiguity in the rubric “magnitude”, or “analysis”. And it is the same of the first of the new themes that I introduced in mathematics (which appears to me smaller dimensions than the other eleven). That I entered mathematics through “bias” of the analysis appears to me to be due, not to my particular temperament, but to what we can call a “fortuitous circumstance”: it is that the most enormous gap, for my spirit in love with generality and rigor, in the teaching that was offered to me at high school as at university, was about the “metric” or “analytical” side of things.

The year 1955 marked a crucial turning point in my mathematical work: that of the transition from “analysis” to “geometry”. I still remember this striking impression (all subjective of course), as if I were leaving arid and harsh steppes, to suddenly find myself in a sort of “promised land” with luxuriant riches, multiplying to infinity wherever the hand pleases to rest, to pick or to search... And this impression of overwhelming wealth, beyond all measure (*), has only been confirmed and deepened

my work, than perhaps any of my learned colleagues!

(**) It is understood here that these are the “numbers” called “natural integers” 0, 1, 2, 3 etc, or (at most) the numbers (such as fractional numbers) which are expressed using them by operations of an elementary nature. These numbers do not lend themselves, like “real numbers”, to measuring a quantity capable of continuous variation, such as the distance between two variable points on a line, in a plane or in space.

(*) I used the word association “overwhelming, beyond all measure”, to make it somehow the German expression “überwältigend”, and its English equivalent “overwhelming”. In the previous sentence, the (inadequate) expression “striking impression” is also to be understood with this nuance: when

over the years, until today.

This means that if there is one thing in mathematics which (probably always has) me neither fascinates more than any other, it is neither “the number” . “magnitude”, but always form. And among the thousand and one faces that form chooses to reveal itself to us, the one that fascinated me more than any other and continues to fascinate me is the structure hidden in mathematical things.

The structure of a thing is in no way something that we can “invent”. We can only patiently, humbly update it — get to know it, “discover” it. If there is inventiveness in this work, and if we happen to act as a blacksmith or tireless builder, it is in no way to “shape”, or to “build”, “structures”.

These in no way expected us to be, and to be exactly what they are! But it is to express, as faithfully as we can, these things that we are in the process of discovering and probing, and this structure reluctant to give itself up, that we are trying gropingly, and through a language that is perhaps still in its infancy. , to be identified. Thus we are led to constantly “invent” the language capable of expressing more and more finely the intimate structure of the mathematical thing, and to “build” with the help of this language, gradually and from scratch. , the “theories” which are supposed to account for what has been apprehended and seen. There is a continuous, uninterrupted back and forth movement between the apprehension of things, and the expression of what is apprehended, through a language which is refined and re-created over the course of the work, under the constant pressure of immediate need.

As the reader will no doubt have guessed, these “theories”, “constructed from scratch”, are also none other than these “beautiful houses” which were discussed previously: those which we inherit from our predecessors, and those which we we are led to build with our own hands, to the call and to listening to things. And if I spoke earlier of the “inventiveness” (or the imagination) of the builder or the blacksmith, I would have to add that what makes up the soul and the secret nerve is in no way the pride of one who says: “I want this, and not that!” and who takes pleasure in deciding as he pleases; like a poor architect who has his plans ready-made in his head, before having seen and felt a piece of land, and having probed its possibilities and requirements.

What constitutes the quality of the researcher's inventiveness and imagination is the quality of his

the impressions and feelings aroused in us by the confrontation with extraordinary splendor, grandeur or beauty suddenly overwhelm us, to the point that any desire to express what we feel seems destroyed in advance.

pay attention, listening to the voice of things. Because the things of the Universe never tire of speaking about themselves and revealing themselves to those who care to hear. And the most beautiful house, the one in which the love of the worker appears, is not the one that is larger or higher than others. The beautiful house is one that faithfully reflects the hidden structure and beauty of things.

10. The new geometry – or the marriage of number and size.

But here I am diverging again - I intended to speak of master themes, coming to unite in the same mother vision, like so many rivers returning to the Sea of which they are the sons...

This vast unifying vision can be described as a new geometry. It is the one, it seems, that Kronecker dreamed of in the last century (*). But reality (which a bold dream sometimes makes us sense or glimpse, and which it encourages us to discover...) each time exceeds in richness and resonance even the most reckless or profound dream. Surely, for more than one of the aspects of this new geometry (if not for all), no one, even the day before the day on which it appeared, would have thought of it - the worker himself no more than THE others.

We can say that “number” is able to grasp the structure of “discontinuous” or “discrete” aggregates: systems, often finite, made up of “elements” or “objects” so to speak isolated from each other. others, without some principle of “continuous passage” from one to the other. “Greatness” on the other hand is the quality par excellence, susceptible to “continuous variation”; thereby, it is able to grasp continuous structures and phenomena: movements, spaces, “varieties” of all kinds, force fields, etc. Thus, arithmetic appears (roughly speaking)

(*) I only know about this “Kronecker dream” by hearsay, when someone (maybe it was John Tate) told me that I was making this dream come true . In the teaching that I received from my elders, historical references were extremely rare, and I was nourished, not by the reading of even remotely ancient or even contemporary authors, but above all by communication, orally. or by letters, with other mathematicians, starting with my elders. The main, perhaps even the only external inspiration for the sudden and vigorous start of schema theory in 1958, was the article by Serre, well known under the acronym FAC (“Coherent Algebraic Sheaves”), published a few years earlier. early. This aside, my main inspiration in the subsequent development of the theory was found to flow from itself, and to be renewed over the years, by the sole requirements of simplicity and internal coherence, in an effort to account in this new context, what was “well known” in algebraic geometry (and which I assimilated as it transformed in my hands), and what this “known” made me sense .

as the science of discrete structures, and analysis, as the science of continuous structures.

As for geometry, we can say that for more than two thousand years that it has existed in the form of a science in the modern sense of the word, it has "straddled" these two types of structures, the "discrete" ones. and "continues" (*). For a long time, moreover, there was not really a "divorce", between two geometries which would have been of different species, one discrete, the other continuous. Rather, there were two different points of view in the investigation of the same geometric figures: one emphasizing "discrete" properties (and in particular, numerical and combinatorial properties), the other on "discrete" properties continuous" (such as the position in ambient space, or the "magnitude" measured in terms of mutual distances of its points, etc.).

It was at the end of the last century that a divorce appeared, with the appearance and development of what was sometimes called "abstract (algebraic) geometry". Roughly speaking, this consisted of introducing, for each prime number p , an (algebraic) geometry "of characteristic p ", modeled on the (continuous) model of (algebraic) geometry inherited from previous centuries, but in a context however, which appeared as irreducibly "dis-continuous", "discrete". These new geometric objects have taken on increasing importance since the beginning of the century, particularly in view of their close relationships with arithmetic, the science par excellence of discrete structure. It would seem that it is one of the guiding ideas in the work of André Weil (**), perhaps even the main driving idea (remained more or less tacit in his written work, as it should be), that "there"

(*) To tell the truth, traditionally it is the "continuous" aspect which was at the center of the geometer's attention, while the properties of a "discrete" nature, and in particular the numerical and combinatorial properties, were passed over in silence. or treated from below the leg. It was with wonder that I discovered, about ten years ago, the richness of the combinatorial theory of the icosahedron, even though this theme has not even been touched on (and probably not even seen).) in Klein's classic book on the icosahedron. I see another striking sign of this neglect (two millennia old) of geometers with regard to the discrete structures which are introduced spontaneously into geometry: it is that the notion of group (of symmetries, in particular) is not appeared only in the last century, and what's more, it was first introduced (by Évariste Galois) in a context which was not then considered as belonging to "geometry". It is true that even today, there are many algebraists who have still not understood that Galois' theory is indeed, in its essence, a "geometric" vision, renewing our understanding of so-called "arithmetic" phenomena. .

(**) André Weil, a French mathematician who emigrated to the United States, is one of the "founding members" of the "Bourbaki group", which will be discussed quite a bit in the first part of *Récoltes et Semailles* (as well as Weil himself, occasionally).

(algebraic) geometry, and particularly the “discrete” geometries associated with the different prime numbers, were to provide the key to a vast renewal of arithmetic. It is in this spirit that he released, in 1949, the famous “conjectures by Weil”. Absolutely breathtaking conjectures, to tell the truth, which gave a glimpse, for these new “varieties” (or “spaces”) of a discrete nature, the possibility of certain types of constructions and arguments (*) which until then only seemed thinkable within the framework of only “spaces” considered worthy of the name by analysts — namely, the so-called spaces “topological” (where the notion of continuous variation applies).

We can consider that the new geometry is, above all else, a synthesis between these two worlds, until now adjoining and closely united, but nevertheless separated: the “arithmetic” world, in which the (so-called) “spaces” live without the principle of continuity, and the world of continuous magnitude, where the “spaces” in the literal sense of the term live, accessible to the means of the analyst and (for this very reason) accepted by him as worthy to stay in the mathematical city. In the new vision, these two worlds once separated, no longer are more than one.

The first embryo of this vision of an “arithmetic geometry” (as I propose to call this geometry new) is found in Weil's conjectures. In the development of some of my main themes (**), these conjectures remained my main source of inspiration, throughout the years between 1958 and 1969. Even before me, moreover, Oscar Zariski on the one hand, then Jean-Pierre Serre on the other, had developed for spaces-without-faith-in-law of “abstract” algebraic geometry certain “topological” methods, inspired of those that were previously used for everyone's “good-looking spaces” (***), Their ideas, of course, played an important role in my first steps in building

(*) (For the mathematician reader.) This concerns “constructions and arguments” linked to the theory cohomology of differentiable or complexed varieties, and in particular those involving the formula of Lefschetz fixed points, and Hodge theory.

(**) These are the four “median” themes (n° 5 to 8), namely those of topos, of étale and p -adic cohomology, patterns, and (to a lesser extent) that of crystals. I identified these themes in turn between 1958 and 1966.

(***) (For the mathematician reader.) Zariski's main contribution in this sense seems to me the introduction of the “Zariski topology” (which later was an essential tool for Serre in FAC), and its “principle of connectedness” and what he called his “theory of holomorphic functions” — became in his hands the theory of formal schemes, and the “comparison theorems” between the formal and the algebraic (with, as second source of inspiration, the fundamental GAGA article by Serre). As for Serre's contribution to this

arithmetic geometry; more, it is true, as starting points and as tools (which I had to refashion more or less from scratch, for the needs of a much larger context), than as a source of inspiration which would have continued to nourish my dreams and my projects, over the months and years. In any case, it was clear from the outset that, even reshaped, these tools fell far short of what was required to take even the very first steps in the direction of fantastical conjectures.

11. The magic fan – or innocence.

The two crucial key ideas in the start and development of the new geometry were that of diagram and that of topos. Appearing almost simultaneously and in close symbiosis with each other (*), they were like a single driving nerve in the spectacular rise of the new geometry, and this from the very year of their appearance . To finish this overview of my work, it remains for me to say a few words about at least these two ideas.

The notion of schema is the most natural, the most “obvious” imaginable, to encompass in a single notion the infinite series of notions of “variety” (algebraic) that we handled previously (such a notion for each prime number (*) ...). Furthermore, one and the same “schema” (or new style “variety”) gives rise, for each first number.

Ile I allude to in the text, it is of course, above all, the introduction by him, in abstract algebraic geometry, of the point of view of the sheaves (introduced by Jean Leray a dozen years earlier, in a disputes everything different), in this other fundamental article already cited FAC (“Coherent algebraic sheaves”).

In light of these “reminders”, if I had to name the immediate “ancestors” of the new geometric vision, it is the names of Oscar Zariski, André Weil, Jean Leray and Jean-Pierre Serre which immediately stand out to me. Among them Serre played a separate role, because it was mainly through him that I became aware not only of his own ideas, but also of the ideas of Zariski, Weil and Leray who had to play a role in the emergence and development of new geometry.

(*) This start, which takes place in 1958, is discussed in note b. from p. (*) page 23. The notion of site or “Grothendieck topology” (provisional version of that of topos) appeared in the immediate wake of the notion of diagram. It is this in turn which provides the new language of “localization” or “descent”, used at each step in the development of the theme and the schematic tool. The more intrinsic and more geometric notion of topos, which initially remained implicit during the following years, emerged especially from 1963, with the development of equate cohomology, and gradually imposed itself on me as the most common notion. more fundamental.

(*) It is appropriate to include in this series also the case $p = \bar{y}$, corresponding to algebraic varieties “of zero characteristic”.

mier p , to a well-determined “(algebraic) variety of characteristic p ”. The collection of these different varieties of different characteristics can then be visualized as a sort of “(infinite) fan of varieties” (one for each characteristic). The “schema” is this magical fan, which links together, like so many different “branches”, its “avatars” or “incarnations” of all possible characteristics. In this way, it provides an effective “principle of passage” to link together “varieties”, arising from geometries which until then had appeared as more or less isolated, cut off from each other. Now they find themselves encompassed in a common “geometry” and linked by it. We could call it schematic geometry, the first outline of this “arithmetic geometry” into which it would blossom in the following years.

The very idea of a diagram is childishly simple — so simple, so humble, that no one before me had dreamed of stooping so low. So “stupid” even, to put it bluntly, that for years and despite the evidence, for many of my learned colleagues, it really seemed “not serious”! In fact, it took me months of hard, solitary work to convince myself in my corner that “it really worked” — that the new language, so stupid, that I had the incorrigible naivety of persisting in wanting to test, was indeed adequate to grasp, in a new light and with a new finesse, and in a common framework from now on, some of the very first geometric intuitions attached to the previous “geometries of characteristic p ”. It was the kind of exercise, judged in advance stupid and hopeless by any “well-informed” person, that I was probably the only one, among all my colleagues and friends, who could ever have the idea of putting myself through. head, and even (driven by a secret demon...) to bring it to a successful end against all odds!

Rather than letting myself be distracted by the consensus that reigned around me on what is “serious” and what is not, I simply trusted, as in the past, in the humble voice of things, and to that in me who knows how to listen. The reward was immediate, and beyond all expectations. In the space of these few months, without even “doing it on purpose”, I had put my finger on powerful and unsuspected tools. They allowed me, not only to rediscover (as in playing) old results, reputedly difficult, in a more penetrating light and to go beyond them, but also to finally approach and resolve problems of “characteristic geometry”. p which until then had appeared out of reach by all the means then known (*).

(*) The report on this “strong start” of schema theory is the subject of my presentation at

In our knowledge of things in the Universe (whether mathematical or otherwise), the renovating power in us is none other than innocence. It is the original innocence that we all received at our birth and which rests in each of us, often the object of our contempt, and of our most secret fears. It alone unites the humility and the boldness which allow us to penetrate to the heart of things, and which allow us to let things penetrate us and to be impregnated by them.

This power is in no way the privilege of extraordinary "gifts" - of (let us say) extraordinary cerebral power to assimilate and to handle, with dexterity and ease, an impressive mass of facts, ideas and ideas. known techniques. Such gifts are certainly precious, surely worthy of envy for those who (like me) were not thus fulfilled at birth, "beyond all measure".

It is not these gifts, however, nor even the most ardent ambition, served by an unfailing will, which make us cross these "invisible and imperious circles" which enclose our Universe. Only innocence crosses them, without knowing it or caring, in the moments when we find ourselves alone listening to things, intensely absorbed in a child's game...

12. Topology – or surveying the mists.

The innovative idea of the "schema", as we have just seen, is that which makes it possible to link together the different "geometries" associated with the different prime numbers (or different "characteristics"). These geometries, however, still each remained essentially "discrete" or "discontinuous" in nature, in contrast to the traditional geometry bequeathed by past centuries (and dating back to Euclid). The new ideas introduced by Zariski and by Serre restored to a certain extent, for these geometries, a "dimension" of continuity, immediately inherited by the "schematic geometry" which had just appeared, in order to unite them. But as far as "fantastic conjectures" (of Weil) were concerned, we were very far from the mark. These "Zariski topologies" were, from this point of view, so crude that it was almost as if we had still remained at the "discrete aggregates" stage. What was missing, visibly, was some new principle, which would allow these geometric objects to be linked together.

International Congress of Mathematicians in Edinburgh, in 1958. The text of this presentation seems to me one of the best introductions to the point of view of diagrams, likely (perhaps) to motivate a geometric reader to familiarize themselves as best they can with the imposing (subsequent) treatise "Elements of Algebraic Geometry", exposing in detail (and without ignoring any technical detail) the new foundations and new techniques of algebraic geometry.

(or “varieties”, or “schemas”) to the usual (topological) “spaces”, or “good color”; those, let's say, whose “points” appear to be clearly separated from each other, whereas in the lawless-spaces introduced by Zariski, the points have an unfortunate tendency to clump together. ..

It was the appearance of such a decidedly “new principle”, and nothing less, which could bring about the consummation of these “weddings of number and magnitude” or of the “geometry of the discontinuous” with that of “continuous”, of which a first presentiment emerged from Weil's conjectures.

The notion of “space” is undoubtedly one of the oldest in mathematics. It is so fundamental in our “geometric” understanding of the world that it has remained more or less tacit for more than two millennia. It is only over the past century that this notion has gradually ended up detaching itself from the tyrannical influence of immediate perception (of a single “space” that surrounds us), and from its traditional theorization (“Euclidean”), to acquire its own autonomy and dynamics. Today, it is one of the few most universally and commonly used notions in mathematics, undoubtedly familiar to every mathematician without exception. A protean notion if ever there was one, with a hundred and a thousand faces, depending on the type of structures that we incorporate into these spaces, from the richest of all (such as the venerable “Euclidean” structures, or the “affine” structures ” and “projective” structures, or even the “algebraic” structures of the “varieties” of the same name, which generalize them and which make them more flexible) up to the most stripped down: those where any element of “quantitative” information whatever it may be seems disappeared without return, and where only the qualitative quintessence of the notion of “proximity” or that of “limit” (*) remains, and the most elusive version of the intuition of form (called “topological”) . The barest of all among these notions, the one which until now, during the past half century, had taken the place of a sort of vast common conceptual framework to encompass all the others, was that of topological space. The study of these spaces constitutes one of the most fascinating and enduring branches of geometry: topology.

However elusive this “pure quality” structure may seem at first glance embodied by a “space” (called “topological”), in the absence of any data of a quantitative nature (such as the distance between two points, in particular) which gives us allows us to cling to something

(*) Speaking of the notion of “limit”, it is mainly that of “passage to the limit” that I am thinking of here, rather than that (more familiar to non-mathematicians) of “border”.

familiar intuition of “greatness” or “smallness”, we have nevertheless managed, over the past century, to finely define these spaces in the tight and flexible meshes of a carefully “cut-to-piece” language. Better still, we invented and manufactured from scratch some kinds of “meters” or “toises” to still serve, against all odds, to attach kinds of “measures” (called “topological invariants”) to these sprawling “spaces” which seemed to escape, like elusive mists, from any attempt at measurement. It is true that most of these invariants, and the most essential, are of a more subtle nature than a simple “number” or a “magnitude” — they are rather themselves more or less delicate mathematical structures, attached (using more or less sophisticated constructions) to the envisaged space. One of the oldest and most crucial of these invariants, introduced already in the last century (by the Italian mathematician Betti), is made up of the different “groups” (or “spaces”) called “cohomology”, associated with the space (*). They are the ones who intervene (especially “between

(*) In fact, the invariants introduced by Betti were the homology invariants. Cohomology constitutes a more or less equivalent, “dual” version, introduced much later. This aspect acquired a pre-eminence over the initial, “homological” aspect, especially (without doubt) following the introduction, by Jean Leray, of the point of view of the fascicles, which is discussed below. From a technical point of view, we can say that a large part of my work as a geometer consisted of identifying, and developing more or less further, the cohomological theories which were missing, for spaces and varieties of all kinds and above all, for “algebraic varieties” and diagrams. Along the way, I was also led to reinterpret the traditional homological invariants in cohomological terms, and thereby, to show them in an entirely new light.

There are many other “topological invariants” which have been introduced by topologists, to identify one type of property or another of topological spaces. Apart from the “dimension” of a space, and the (co)homological invariants, the first other invariants are the “homotopy groups”. I introduced another in 1957, the group (known as “Grothendieck”) $K(X)$, which immediately experienced great fortune, and whose importance (both in topology and in arithmetic) continues to grow. confirm.

A host of new invariants, of a more subtle nature than the invariants currently known and used, but which I feel are fundamental, are planned in my “moderate topology” program (a very summary sketch of which can be found in the “Sketch of a Program”, to be published in volume 4 of *Réflexions*). This program is based on the notion of “moderate theory” or “moderate space”, which constitutes, a bit like that of topos, a (second) “metamorphosis of the notion of space”. It is much more obvious (it seems to me) and less profound than the latter. I foresee that its immediate repercussions on topology “proper” will be much more impactful, and that it will fundamentally transform the “profession” of topologist geometer, through a profound transformation of the conceptual context in which he works. (As was also the case in algebraic geometry with the introduction of the point of view of diagrams.) I also sent my “Sketch” to several of my former friends and illustrious topologists, but it does not seem that 'She has

the lines", it is true) in Weil's conjectures, which make them the deep "reason for being" and which (for me at least, "put into the bath" by Serre's explanations) give them all their meaning . But the possibility of associating such invariants with the "abstract" algebraic varieties which intervene in these conjectures, so as to respond to the very precise desiderata required for the needs of this cause – that was a simple hope. I doubt that apart from Serre and myself, no one else (not even, and especially, André Weil himself! (*)) really believed in it...

Shortly before, our conception of these cohomology invariants had been enriched and profoundly renewed by the work of Jean Leray (continued in captivity in Germany, during the war, in the first half of the 1940s). The essential innovative idea was that of an (abelian) beam on a space, to which Leray associates a series of corresponding "cohomology groups" (called "coefficients in this beam"). It was as if the good old standard "cohomological meter" that we had until now to "survey" a space, had suddenly seen itself multiplied into an unimaginably large multitude of new "meters" of all sizes, shapes and sizes. imaginable substances, each intimately adapted to the space in question, and each of which provides us with perfectly precise information about it, and which only it can give us. This was the main idea in a profound transformation in our approach to spaces of all kinds,

had the gift of interesting anyone...

(*) Paradoxically, Weil had a tenacious, apparently visceral "block", against cohomological formalism – even though it was largely his famous conjectures which inspired the development of the great cohomological theories in algebraic geometry, from the 1955 (with Serre kicking off, with his fundamental article FAC, already mentioned in a previous footnote).

It seems to me that this "block" is part, in Weil, of a general aversion against all "big tricks", against everything that resembles formalism (when this cannot be summarized in a few pages) , or to a somewhat overlapping "construction". He had nothing of the "builder", certainly, and it was visibly against his will that he saw himself forced, during the thirties, to develop the first foundations of "abstract" algebraic geometry which (see these provisions) have proven to be a real "Procrustean bed" for the user.

I don't know if he was angry with me for having gone beyond, and for having invested myself in building the vast residences, which allowed the dreams of a Kronecker and his own to be incarnated in a language and into delicate and effective tools. The fact remains that at no time did he make a word of comment to me about the work in which he saw me engaged, or that which had already been done. I also had no response to *Récoltes et Semailles*, which I had sent to him more than three months ago, with a warm dedication from my hand.

and surely one of the most crucial ideas to emerge during this century. Thanks especially to the subsequent work of Jean-Pierre Serre, Leray's ideas had as their first fruits, during the decade already following their appearance, an impressive restart in the theory of topological spaces (and in particular, of their so-called “d” invariants). 'homotopy', closely linked to cohomology), and another reboot, no less important, of so-called 'abstract' algebraic geometry (with the fundamental article 'FAC' by Serre, published in 1955). My own work in geometry, from 1955, is in continuity with this work of Serre, and thereby, with the innovative ideas of Leray.

13. The topos – or the double bed.

The point of view and the language of beams introduced by Leray led us to look at “spaces” and “varieties” of all kinds in a new light. However, they did not touch on the very notion of space, contenting themselves with making us understand more finely, with new eyes, these traditional “spaces”, already familiar to everyone. However, it turned out that this notion of space is inadequate to account for the most essential “topological invariants” which express the “form” of “abstract” algebraic varieties (like those to which Weil's conjectures apply). , even that of general “schemas” (generalizing old varieties). For the expected “weddings”, “of their number and size”, it was like a decidedly narrow bed, where only one of the future spouses (namely, the bride) could, at a pinch, find space to nestle as long as possible. although bad, but never both at the same time! The “new principle” which remained to be found, to consummate the nuptials promised by auspicious fairies, was also none other than this spacious “bed” which was missing from the future spouses, without anyone until then having even noticed it. ..

This “double bed” appeared (as if by a wave of a magic wand...) with the idea of the topos. This idea encompasses, in a common topological intuition, both the traditional (topological) spaces, embodying the world of continuous magnitude, as well as the (so-called) “spaces” (or “manifolds”) of the unrepentant abstract algebrist geometers, as well as as countless other types of structures, which until then had seemed irremediably riveted to the “arithmetic world” of “discontinuous” or “discrete” aggregates.

It is the point of view of the beams which was the silent and sure guide, the effective (and in no way secret) key, leading without delays or detours towards the nuptial chamber with the vast marital bed. Such a vast bed indeed (like a vast and peaceful very deep river...),

what

“all the king’s horses

They could drink together...”

— as an old tune tells us that you must surely have sung too, or at least heard it sung. And he who was the first to sing it felt the secret beauty and peaceful force of the topos better than any of my learned students and friends of yesteryear...

The key was the same, both in the initial and provisional approach (via the very convenient, but not intrinsic, notion of “site”), as in that of the topos. It is the idea of the topos that I would now like to try to describe.

Let us consider the set made up of all the beams on a given (topological) space, or, if you like, this prodigious arsenal made up of all these “meters” used to survey it (*). We consider this “set” or “arsenal” as provided with its most obvious structure, which appears there, so to speak, “visibly”; namely, a so-called “category” structure. (Let the non-mathematician reader not be troubled by not knowing the technical meaning of this term. He will have no need for it later.) It is this sort of “superstructure of surveying”, called “category of beams” (on the space envisaged), which will henceforth be considered as “embodying” what is most essential to space. This is indeed a licit thing (for “mathematical common sense”), because it turns out that we can “reconstruct” from scratch a topological space (**) in terms of this “category of sheaves” (or of this surveying arsenal) associated. (To check it is a simple exercise - once the question has been asked, of course...) It doesn't take much to be assured that (if it suits us for one reason or another) we can now “forget” the initial space, to no longer retain and use only the associated “category” (or “arsenal”), which will be considered as the most adequate incarnation of the “topological structure” (or “spatial”) that needs to be expressed.

(*) (For the benefit of the mathematician) To tell the truth, we are dealing here with the sheaves of sets, and not the abelian sheaves, introduced by Leray as the most general coefficients to form “cohomology groups”. I also believe that I was the first to have worked systematically with assembly sheaves (from 1955, in my article “A general theory of fiber spaces with structure sheaf” at the University of Kansas).

(**) (For the mathematician) Strictly speaking, this is only true for so-called “sober” spaces. These, however, include almost all of the spaces that we commonly encounter, and in particular all the “separate” spaces dear to analysts.

As so often in mathematics, we have succeeded here (thanks to the crucial idea of “fais-ceau”, or “cohomological meter”) to express a certain notion (that of “space” in this case) in terms from another (that of “category”). Each time, the discovery of such a translation of a notion (expressing a certain type of situation) in terms of another (corresponding to another type of situation), enriches our understanding of both. the other notion, by the unexpected confluence of specific intuitions which relate either to one or the other. Thus, a situation of a “topological” nature (embodied by a given space) is here translated by a situation of an “algebraic” nature (embodied by a “category”); or, if we wish, the “continuous” embodied by space, finds itself “translated” or “expressed” by the category structure, of an “algebraic” nature (and until then perceived as being of an essentially “discontinuous” or “discreet”).

But here there is more. The first of these notions, that of space, appeared to us as a sort of “maximal” notion — a notion already so general that it is hard to imagine how to find an extension that remains “reasonable”. On the other hand, it turns out that on the other side of the mirror (*), these “categories” (or “arsenals”) on which we come across, starting from topological spaces, are of a very particular nature. They indeed benefit from a set of strongly typed properties (**), which make them resemble a sort of “pastiche” of the simplest imaginable of them — that which one obtains starting from a space reduced to a single point. That said, a “new style space” (or topos), generalizing traditional topological spaces, will be described quite simply as a “category” which, without necessarily coming from an ordinary space, nevertheless possesses all these good properties (explicitly designated a once and for all, of course) of such a “category of beams”.

* *

*

(*) The “mirror” in question here, as in Alice in Wonderland, is the one which gives as an “image” of a space, placed in front of it, the associated “category”, considered as a sort of “double” of space, “on the other side of the looking glass”...

(**) (For the benefit of the mathematician) These are mainly properties that I introduced into category theory under the name of “accuracy properties” (along with the modern categorical notion of “general inductive and projective limits”). See “On some points of homological algebra”, Tohoku math.
journal . 1957 (p. 119–221).

So here is the new idea. Its appearance can be seen as a consequence of this observation, almost childish in fact, that what really counts in a topological space is in no way its “points” or its subsets of points (*), and the relationships of proximity etc between these, but that these are the beams on this space, and the category that they form. I have, in short, only taken Leray’s initial idea to its ultimate consequence - and having done so, taken the plunge.

Like the very idea of beams (due to Leray), or that of diagrams, like any “great idea” which shakes up an inveterate vision of things, that of topos is disconcerting due to its natural, “obvious” character. “, by its simplicity (bordering on, one would say, the naive or the simplistic, even the “stupid”) — by this particular quality which makes us so often exclaim: “Oh, that’s all!” , in a half-disappointed, half-envious tone; with the addition, perhaps, of this implication of “eccentric”, of “not serious”, which we often reserve for anything which is disconcerting by an excess of unexpected simplicity. To what reminds us, perhaps, of the long-buried and denied days of our childhood...

14. Mutation of the notion of space – or breath and faith.

The notion of schema constitutes a vast expansion of the notion of “algebraic variety”, and as such it has completely renewed the algebraic geometry bequeathed by my predecessors. That of topos constitutes an unsuspected extension, or better said, a metamorphosis of the notion of space. In this way, it carries the promise of a similar renewal of topology, and beyond this, of geometry. From now on, moreover, it has played a crucial role in the development of new geometry (especially through the cohomological -adic and crystalline themes which arise from it, and through them, in the demonstration of the conjectures of Weil). Like her older sister (and quasi-twin), she has the two complementary characteristics essential for any fertile generalization, which are as follows.

Firstly, the new notion is not too vast, in the sense that in the new “spaces” (rather called “topos”, so as not to upset delicate ears (**)), intuitions and “geometric” constructions the most essential (*), familiar for the good old spaces

(*) Thus, we can construct very “big” topos, which have only one “point”, or even no “points” at all!

(**) The name “topos” was chosen (in association with that of “topology”, or “topological”) to suggest that it is the “object par excellence” to which intuition is applied topological. By the rich cloud of mental images that this name arouses, it must be considered as being more or less the equivalent of the term “space”

of yesteryear, can be transposed in a more or less obvious way. In other words, for the new objects we have the entire rich range of mental images and associations, notions and at least some techniques, which previously remained restricted to old-style objects.

And secondly, the new notion is at the same time broad enough to encompass a host of situations which, until then, were not considered as giving rise to intuitions of a “topological-geometric” nature – to intuitions, precisely, that we had been reserved in the past for ordinary topological spaces only (and for good reason...).

The crucial thing here, in terms of Weil's conjectures, is that the new notion is broad enough indeed, to allow us to associate with any “schema” such a “generalized space” or “topos” (called the “total topos” of the envisaged diagram). Certain “co-homological invariants” of this topos (all the “stupid” things!) then seemed to have a good chance of providing “what we needed” to give full meaning to these conjectures, and (who knows!) to perhaps provide the means to demonstrate them.

It is in these pages that I am writing that, for the first time in my life as a mathematician, I take the leisure to evoke (if only to myself) all of the masters -themes and major guiding ideas in my mathematical work. This leads me to better appreciate the place and scope of each of these themes, and of the “points of view” that they embody, in the great geometric vision that unites them and from which they come. It is through this work that the two key innovative ideas in the first and powerful development of new geometry came to light: the idea of diagrams and that of topos.

It is the second of these ideas, that of topos, which now appears to me to be the more profound of the two. If by chance, towards the end of the fifties, I had not rolled up my sleeves, to stubbornly develop day after day, throughout twelve long years, a “schematic tool” of delicacy and a perfect power - it would seem almost unthinkable to me, however, that in the ten or twenty years which followed, others than me could in the long run prevent themselves from introducing at the end of the ends (even to their bodies defense

(topological), with simply a greater emphasis on the “topological” specificity of the notion. (Thus, there are “vector spaces”, but no “vector topos” until further notice!) It is necessary to keep the two expressions jointly, each with its own specificity.

(*) Among these “constructions”, there is notably that of all the familiar “topological invariants”, including cohomological invariants. For the latter, I had done everything necessary in the article already cited (“Tohoku” 1955), to be able to give them a meaning for all “topos”.

dant...) the notion which was visibly necessary, and to erect as best I could at least a few dilapidated “prefab” barracks, in the absence of the spacious and comfortable residences that I was keen to assemble stone by stone. stone and come up with my hands. On the other hand, I do not see anyone else on the mathematical scene, over the past three decades, who could have had this naivety, or this innocence, to take (in my place) this other crucial step among all, introducing the such a childish idea of topos (or even just that of “sites”).

And, even supposing this idea already graciously provided, and with it the timid promise it seemed to conceal - I do not see anyone else, whether among my friends of yesteryear or among my students, who would have had the breath, and above all faith, to bring this humble idea (*) to fruition (so insignificant in appearance, while the goal seemed infinitely distant...): from its first stammering beginnings, to the full maturity of “mastery of flat cohomology”, in which it ended up being embodied in my hands, over the years that followed.

15. All the king's horses. . . .

Yes, the river is deep, and vast and peaceful are the waters of my childhood, in a kingdom I thought I left long ago. All the king's horses could drink together at ease and to their heart's content, without exhausting them! They come from the glaciers, fiery like these distant snows, and they have the softness of the clay of the plains. I have just spoken of one of these horses, which a child had taken to drink and which drank its fill, at length. And I saw another one coming to drink for a while, following in the footsteps of the same kid perhaps — but that didn't last long. Someone must have kicked him out. And that's it, suffice to say. However, I see countless herds of thirsty horses wandering in the plain - and just this morning their neighings dragged me out of bed, at an ungodly hour, me who is almost sixty years old and who loves tranquility. There was nothing to do, I had to get up.

(*) (For the mathematician reader.) When I speak of “bringing this humble idea to fruition”, I am talking about the idea of equated cohomology as an approach to Weil's conjectures. It was inspired by this statement that I discovered the notion of site in 1958, and that this notion (or the very similar notion of topos), and the cohomological formalism, were developed between 1962 and 1966 under my leadership (with the assistance of some collaborators who will be discussed later).

When I speak of “breath” and “faith”, these are qualities of a “non-technical” nature, and which here appear to me to be the essential qualities. At another level, I could also add what I would call “cohomological flair”, that is to say the kind of flair that had developed in me for the construction of cohomological theories. I thought I would communicate this to my cohomologist students. Looking back seventeen years after my departure from the mathematical world, I see that it has not been preserved in any of them.

It pains me to see them, in the state of skinny dogs, when there is no shortage of good water, nor green pastures. But it seems that a malevolent spell has been cast on this region that I had known to be welcoming, and condemned access to these generous waters. Or maybe it's a stunt set up by the country's horse dealers, to bring down prices who knows? Or perhaps it's a country where there are no more children to lead the horses to water, and where the horses are thirsty, for want of a kid who can find the path that leads to the river...

16. Motives – or the heart within the heart.

The theme of topos comes from that of diagrams, the same year in which the diagrams appeared - but in scope it greatly exceeds the mother theme. It is the theme of the topos, and not that of diagrams, which is this “bed”, or this “deep river”, where geometry and algebra, topology and arithmetic, mathematical logic come together. and the theory of categories, the world of continuity and that of “discontinuous” or “discrete” structures. If the theme of diagrams is like the heart of the new geometry, the theme of the topos is its envelope, or the dwelling. It is the most vast thing I have designed, to capture with finesse, through the same language rich in geometric resonances, an “essence” common to situations that are the furthest from each other, coming from this region or that. of the vast universe of mathematical things.

This theme of topos is, however, very far from having known the fortune of that of diagrams. I speak on this subject on various occasions in *Récoltes et Semailles*, and this is not the place to dwell on the strange vicissitudes which have affected this notion. Two of the master themes of the new geometry nevertheless come from that of the topos, two complementary “co-homological theories”, both designed for the purpose of providing an approach to Weil's conjectures: the étale theme (or “-adic”), and the crystalline theme. The first materialized in my hands in the -adic cohomological tool, which now appears to be one of the most powerful mathematical tools of the century. As for the crystalline theme, reduced after my departure to a quasi-occult existence, it was finally exhumed (under the pressure of needs) in June 1981, in the limelight and under an assumed name, in circumstances more even stranger than those around the topos.

The -adic cohomological tool was, as expected, the essential tool for establishing Weil's conjectures. I demonstrated quite a lot myself, and the last step was accomplished with mastery, three years after my departure, by Pierre Deligne, the most brilliant of my students

“cohomologists”.

I had also identified, around 1968, a stronger and above all, more “geometric” version of Weil's conjectures. These remained “tainted” (if we can say so!) with an apparently irreducible “arithmetic” aspect, although the very spirit of these conjectures is to express and grasp “arithmetic” (or “the discrete”) through the mediation of “geometric” (or “continuous”) (*). In this sense, the version of the conjectures that I had released seems to me more “faithful” than that of Weil himself to the “philosophy of Weil” – to this unwritten and rarely said philosophy, which has perhaps been to be the main tacit motivation in the extraordinary growth of geometry over the past four decades (**). My re-formulation consisted, essentially, of bringing out a sort of “quintessence” of what should remain valid, within the framework of so-called “abstract” algebraic varieties, of the classic “Hodge theory”, valid for “ordinary” algebraic varieties (***). I called “standard conjectures” (for algebraic cycles) this new, entirely geometric version of the famous conjectures.

In my mind, this was a new step, after the development of the cohomological-adic tool, in the direction of these conjectures. But at the same time and above all, it was also one of the possible principles of approach towards what still appears to me to be the most profound theme that I have introduced into mathematics(*): that of patterns (itself born of the “cohomological -adic theme”). This theme is like the heart or the soul, the most hidden part, the

(*) (For the mathematician) Weil's conjectures are subordinate to hypotheses of an “arithmetic” nature, notably because the varieties considered must be defined on a finite field. From the point of view of cohomological formalism, this leads to giving a separate place to the Frobenius endomorphism associated with such a situation. In my approach, the crucial properties (“generalized index theorem” type) concern arbitrary algebraic correspondences, and do not make any hypothesis of an arithmetic nature on a previously given base body.

(**) There was, however, after my departure in 1970, a very clear movement of reaction, which materialized in a situation of relative stagnation, which I have had occasion to mention more than once in the Harvest and Sowing lines.

(***) “Ordinary” means here: “defined on the body of complexes”. Hodge's theory (known as “harmonic integrals”) was the most powerful of the known cohomological theories in the context of complex algebraic varieties.

(*) This is the most profound theme, at least in the “public” period of my activity as a mathematician, between 1950 and 1969, that is to say until the moment of my departure from the mathematical scene. I consider the theme of Anabelian algebraic geometry and the Galois–Teichmüller theory, developed from

better hidden from view, from the schematic theme, which itself is at the heart of the new vision. And the few key phenomena identified in the standard conjectures (**) can be seen as forming a sort of ultimate quintessence of the motivic theme, as the vital “breath” of this subtle theme among all, of this “heart within the heart” new geometry.

Here's basically what it's about. We have seen, for a given prime number p , the importance (in particular with a view to Weil's conjectures) of knowing how to construct “cohomological theories” for “(algebraic) varieties of characteristic p ”. However, the famous “adic cohomological tool” provides precisely such a theory, and even an infinity of different cohomological theories, namely one associated with any prime number different from the characteristic p . There is again clearly a “missing theory”, which would correspond to the case of a which would be equal to p . To provide for this, I specifically imagined yet another cohomological theory (to which reference was already made earlier), called “crystalline cohomology”.

Moreover, in the important case where p is infinite, we have three other cohomological theories (***) - and nothing proves that we will not be led, sooner or later, to introduce still more new cohomological theories, having all analogous formal properties. Contrary to what happened in ordinary topology, we therefore find ourselves faced with a disconcerting abundance of different cohomological theories. We had the very clear impression that in a sense which initially remained quite vague, all these theories had to “return to the same thing”, that they “gave the same results” (****). It is to succeed in expressing this intuition of “kinship” between different cohomological theories, that I de-

from 1977, as being of comparable depth,

(**) (For the reader algebraic geometer) There is reason, possibly, to reformulate these conjectures. 178, For more detailed comments, see “The tour of the construction sites” (ReS IV note n the $\mathbb{P}^1$ p. 1215–1216) and note of b. of pp 769 in “Conviction and knowledge” (ReS III, note n $\mathbb{P}^1$ 162).

(***) (For the mathematician reader) These theories correspond respectively to the cohomology of Betti (defined by transcendent way, using an embedding of the basic body in the body of complexes), to the Hodge cohomology (defined by Serre) and De Rham cohomology (defined by me), the latter two already dating back to the 1950s (and that of Betti, to the last century).

(****) (For the mathematician reader) For example, if f is an endomorphism of the variety inducing an algebraic $X \rightarrow X$ endomorphism of the cohomology space $H^i(X)$, the “characteristic polynomial” of the latter had to be with integer coefficients, not depending on the particular cohomological theory chosen (for example -adic, for variable). Itou for general algebraic correspondences, when X is assumed to be clean and smooth. The sad truth (and which gives an idea of the state of lamentable abandonment of the cohomological theory of algebraic varieties with characteristic $p > 0$, since my departure), is that the thing is not

gaged the notion of “pattern” associated with an algebraic variety. By this term, I intend to suggest that it is the “common pattern” (or the “common reason”) underlying this multitude of different cohomological invariants associated with the variety, using the multitude of all possible a priori cohomological theories. These different cohomological theories would be like so many different thematic developments, each in the “tempo”, in the “key” and in the “mode” (“major” or “minor”) which is specific to it, of the same “motif basic” (called “motivic cohomological theory”), which would at the same time be the most fundamental, or the most “fine”, of all these different thematic “incarnations” (that is to say, of all these possible cohomological theories). Thus, the motif associated with an algebraic variety would constitute the “ultimate”, “par excellence” cohomological invariant, from which all the others (associated with the different possible cohomological theories) would be deduced, like so many musical “incarnations”, or “different achievements. All the essential properties of the “cohomology” of the variety would already be “read” (or “heard”) on the corresponding pattern, so that the familiar properties and structures on the particularized cohomological invariants (p -adic or crystalline, for example), would simply be the faithful reflection of the internal properties and structures of the pattern (*).

still not demonstrated at present, even in the particular case where ℓ , typical of those which appear to be subordinate to standard conjectures. The decree of fashion is that the only endomorphism worthy of attention is the endomorphism of Frobenius (which could have been treated separately by Deligne, using the means at hand...).

(*) (For the mathematician reader) Another way of seeing the category of patterns on a field k is to visualize it as a sort of “enveloping abelian category” of the category of separate schemes of finite type on k . The motif associated with such a schema X (or “motivic cohomology of X ”) The crucial thing here is that, just as an algebraic variety continuous variation. This is an aspect of motivic cohomology, which is in striking contrast to what happens for all classical cohomological invariants, including p -adic invariants, with the sole exception of the Hodge cohomology of complexed algebraic varieties, or more generally, a “variable” pattern is also likely to be exception of the Hodge cohomology of complexed algebraic varieties.

This gives an idea to the extent to which “motivic cohomology” is a finer invariant, surrounding in a much tighter way the “arithmetic form” (if I dare hazard this expression) of X , than the traditional purely topological invariants. In my vision of patterns, they constitute a sort of very hidden and very delicate “cord”, connecting the algebro-geometric properties of an algebraic variety, to properties of an “arithmetic” nature embodied by its pattern. The latter can be considered as an object of nature

It is there, expressed in the non-technical language of a musical metaphor, the quintessence of an idea of still childish simplicity, delicate and audacious at the same time. I developed this idea, apart from the fundamental tasks that I considered more urgent, under the name “theory of motives” or “philosophy (or “yoga”) of motives”, throughout the years 1963–69. It is a theory of fascinating structural richness, a large part of which has still remained conjectural (*).

I speak on various occasions in *Récoltes et Semailles* about this “yoga of patterns”, which is particularly close to my heart. This is not the place to return here to what I say about it elsewhere. Suffice it to say that the “standard conjectures” arise most naturally from the world of this yoga of patterns. At the same time they provide a principle of approach for one of the possible formal constructions of the notion of motif.

These conjectures appeared to me, and still appear to me today, as one of the two most fundamental questions that arise in algebraic geometry. Neither this question, nor the other equally crucial question (that of the “resolution of singularities”) is yet resolved at the present time. But while the second of these questions appears, today as a hundred years ago, as a prestigious and formidable question, the one that I had the honor of raising has been classified by the peremptory decrees of fashion (from the years following my departure from the mathematical scene, and just like the motivic theme itself (*)) as pleasant Grothendieckian humbug. But once again

“geometric” in its very spirit, but where the “arithmetic” properties superimposed on geometry are, so to speak, “laid bare”.

Thus, the motif appears to me as the deepest “invariant of the form” that we have been able to associate so far with an algebraic variety, apart from its “fundamental motivic group”. Both invariants represent for me like the “shadows” of a “type of motivic homotopy” which remains to be described (and about which I say a few words in passing in the note “The tour of the construction sites — or tools and vision” (ReS IV, no site 5¹⁷⁸, see (Reasons), and in particular page 1214)). It is this last object which seems to me to be the most perfect incarnation of the elusive intuition of “arithmetic form” (or “motivic”) of an algebraic variety whatever.

with what.

(*) I explained my vision of the reasons to anyone who would listen, throughout these years, without taking the trouble to publish anything on this subject in black and white (not missing other tasks in the service of all). This later allowed some of my students to loo more at ease, under the tender eye of all of my former friends, who were well aware of the situation. (See b. de p. note which follows.)

(*) In fact, this theme was unearthed in 1982 (a year after the crystalline theme), under its original name this time (and in a narrow form, in the only case of a basic body with zero characteristics), without the name of

I anticipate...

17. Discovering the Mother – or both sides. To tell the truth, my reflections on Weil's conjectures themselves, with a view to establishing them, have remained sporadic. The panorama which had begun to open up before me and which I endeavored to scrutinize and capture, far exceeded in breadth and depth the hypothetical needs of a demonstration, and even everything that these famous conjectures had been able to achieve. first give a glimpse. With the appearance of the schematic theme and that of topos, a new and unsuspected world suddenly opened up. "Conjectures" occupied a central place there, certainly, a bit like the capital of a vast empire or continent, with innumerable provinces, but most of which only have the most distant connections with this brilliant and prestigious place. . Without ever having to tell myself, I knew that I was now the servant of a great task: to explore this immense and unknown world, to apprehend its contours to the most distant frontiers; and also, to travel in all directions and inventory with tenacious and methodical care the nearest and most accessible provinces, and to draw up maps of scrupulous fidelity and precision, where the smallest hamlet and the smallest cottage would have their place...

It was this last work in particular which absorbed most of my energy - a patient and vast work of foundations which I was the only one to see clearly and, above all, to "feel through the guts". It was he who took up, by far, the lion's share of my time, between 1958 (the year in which the schematic theme and that of topos appeared, in quick succession) and 1970 (the year of my departure from the mathematical scene).

Often, moreover, I was chomping at the bit to be held back like this, as if by a tenacious and sticky weight, with these endless tasks which (once I saw the essentials) were more akin to "stewardship" for me, than 'to a launch into the unknown. Constantly I had to hold back this impulse to rush forward — that of the pioneer or the explorer, setting out to discover and explore unknown and nameless worlds, constantly calling on me to know them. and names them. This impulse, and the energy that I invested in it (as if by stealth, almost!), were constantly in short supply.

the worker is not pronounced. This is one example among a number of others, of a notion or theme buried in the aftermath of my departure like Grothendieckian phantasmagorias, to be exhumed one after the other by some of my students during of the following ten or fifteen years, with modest pride and (need it be further clarified) without mention of the worker...

However, I knew deep down that it was this energy, stolen (so to speak) from that which I owed to my “tasks”, which was of the rarest and most delicate essence — that the “creation” in my work as a mathematician, it was above all where it was placed: in this intense attention to apprehend, in the dark, shapeless and moist folds of a warm and inexhaustible nourishing matrix, the first traces of form and of contours of what was not yet born and which seemed to call to me, to take shape and be incarnated and born... In the work of discovery, this intense attention, this ardent solicitude are an essential force, just as the heat of the sun for the obscure gestation of the seeds buried in the nourishing earth, and for their humble and miraculous hatching into the light of day.

In my work as a mathematician, I see at work above all these two forces or impulses, equally profound, of (it seems to me) different nature. To evoke both, I used the image of the builder, and that of the pioneer or explorer. Placed side by side, both suddenly strike me as very “yang”, very “masculine”, even “macho”! They have the haughty resonance of myth, or that of “great occasions”. Surely they are inspired by the vestiges, in me, of my old “heroic” vision of creative work, the super-yang vision. As they are, they give a strongly colored, not to say frozen, “at attention” vision of a reality that is much more fluid, more humble, more “simple” — of a living reality.

In this male impulse of the “builder”, which constantly seems to push me towards new projects, I nevertheless clearly discern, at the same time, that of the homebody: of the one deeply attached to “the” house. Above all else, it is “his” house, that of “loved ones” — the place of an intimate living entity of which he feels a part. Only then, and as the circle of what is felt to be “near” widens, is it also a “house for all”. And in this impulse to “make houses” (as one would “make” love...) there is also and above all a tenderness. There is the impulse of contact with these materials that one shapes one by one, with loving care, and that one only truly knows through this loving contact. And, once the walls have been erected and the beams and the roof installed, there is the profound satisfaction of installing one room after another, and of seeing little by little become established, among these rooms, these bedrooms and these small rooms. The harmonious order of the living house — beautiful, welcoming, good for living. Because the house, above all and secretly in each of us, is also the mother - that which surrounds us and shelters us, both refuge and comfort; and maybe (more

deeply still, and even though we are building it from scratch) this is also what we ourselves came from, what sheltered and nourished us, in these forever forgotten times before our birth ... It is also the Giron.

And the image that appeared spontaneously earlier, to go beyond the prestigious name of “pioneer”, and to identify the more hidden reality that it covered, was also stripped of any “heroic” accent. Here again, it was the archetypal image of the maternal that appeared — that of the nurturing “matrix” and its formless and obscure labors...

These two impulses which appeared to me as “different in nature” are ultimately closer than I would have thought. Both are in the nature of a “contact impulse”, leading us to encounter “the Mother”: of She who embodies and what is close, “known”, and what is “unknown”. To abandon myself to one or the other impulse is to “find the Mother”. It is renewing contact both with the close, with the “more or less known”, and with the “distant”, with what is “unknown” but at the same time anticipated, on the verge of making itself known.

The difference here is in tone, in dosage, not in nature. When I “build houses”, it is the “known” that dominates, and when “I explore”, it is the unknown. These two “modes” of discovery, or better said, these two aspects of the same process or the same work, are indissolubly linked. They are both essential and complementary. In my mathematical work, I discern a constant back and forth movement between these two modes of approach, or rather, between the moments (or periods) where one predominates, and those where the other predominates (*). But it is also clear that in each moment, both modes are present. When I build, arrange, or clear, clean, order, it is the “mode” or the “yang” or “masculine” “side” of the work that sets the tone. When I grope for the elusive, the formless, the nameless, I am the “ying”, or “feminine” side of my being.

There is no question for me of wanting to minimize or deny one or the other side

(*) What I say here about mathematical work is also true for the work of “meditation” (which will be discussed almost everywhere in *Récoltes et Semailles*). There is little doubt in my mind that this is something that appears in all work of discovery, including that of the artist (writer or poet, let's say).

The two “sides” that I describe here can also be seen as being, one that of expression and its “technical” requirements, the other that of reception (of perceptions and impressions of all kinds). , becoming inspiration through the effect of intense attention. Both are present at every moment of the work, and there is this constant movement of “back and forth” between the “times” where one predominates, and those where the other predominates.

of my nature, both essential — the “masculine” which constructs and generates, and the “feminine” which conceives, and which shelters the slow and obscure gestations. I “am” both — “yang” and “yin,” “man” and “woman.” But I also know that the most delicate, most delicate essence in creative processes is found on the side of the “yin”, “feminine” side — the humble, obscure, and often poor-looking side.

It is this side of the work which, I believe, has always held the most powerful fascination for me. The current consensus, however, encouraged me to invest most of my energy in the other side, in that which is embodied and affirmed in tangible “products”, not to say finished and completed — products with clearly defined contours, attesting to their reality with the evidence of cut stone...

I can clearly see, with hindsight, how these consensuses weighed on me, and also how I “beared the weight” — flexibly! The “design” or “exploration” part of my work was kept minimal until the moment of my departure, that is. And yet, in this retrospective glance at what my work as a mathematician was, it emerges with striking evidence that what constitutes the essence and the power of this work is indeed this aspect of our days neglected, when it is not the object of derision or condescending disdain: that of “ideas”, even that of the “dream”, in no way that of “results”. Trying in these pages to identify what is most essential to the mathematics of my time, through a look that embraces a forest, rather than lingering on trees - I saw, not a list of winners “great theorems”, but a living range of fertile ideas (*), all contributing to the same vast vision.

18. The child and the Mother.

When this “foreword” began to turn into a walk through my work

(*) It is not that what we can call “great theorems” are missing in my work, including theorems which resolve questions posed by others than me, which no one before me had been able to resolve. .

(I review some of them in the note by b. de p.(***) page 554, from the note “The rising sea...” (ReS III, n° 122).) But, as I already underlined from the beginning of this “walk” (in the stage “Points of view and vision”, n° 6), these theorems do not take for me all their meaning only through the nourishing context of a great theme, initiated by one of these “fertilized ideas”. Their demonstration therefore flows, as if from a source and without effort, from the very nature, from the “depth” of the theme which carries them - just as the waves of the river seem to be born gently from the very depth of its waters, without break and without effort. I express myself in a very similar sense, but with other images, in the note already cited “The rising sea...”.

as a mathematician, with my little overview on the “heirs” (good complexion) and on the “builders” (incorrigible), a name also began to appear for this missed foreword: it would be “The child and the builder” . Over the next few days, it became more and more clear that “the child” and “the builder” were one and the same. This name therefore became, more simply, “The Child Builder”. A name, my word, which did not lack allure, and did everything to please me!

But now reflection reveals that this haughty “builder”, or (more modestly) the child-who-plays-at-making-houses, was only one of the faces of the famous child- who-plays, which had two. There is also the child-who-likes-to-explore-things, to go rummaging and burying himself in the sand or in the muddy and nameless mud, the most impossible and absurd places. ... To mislead no doubt (if only to myself...), I started by introducing it under the flamboyant name of “pioneer”, followed by the more down-to-earth name -land but still haloed with prestige, of “explorer”. One had to wonder, between the “builder” and the “pioneer-explorer”, which was the more masculine, the more attractive of the two! Heads or tails?

And then, looking a little closer, here is our intrepid “pioneer” who ultimately turns out to be a girl (whom I was pleased to dress as a boy) — a sister of the ponds, of the rain, mists and night, silent and almost invisible due to fading into the shadows - the one that we always forget (when we don't pretend to make fun of it...). And I too found a way, for days and days, to forget him - to forget him doubly, I could say: I only wanted to see at first the boy (the one who plays make houses...) — and even when I couldn't help but, by force, still see the other, I still saw her as a boy, too...

As for the beautiful name for my walk, suddenly it no longer holds up at all. It's an all-yang, all-macho name, a limping name. To keep it askew, the other would have to be included as well. But, strangely enough, “the other” doesn't really have a name. The only one that sticks somewhat is “explorer”, but it's still a boy's name, nothing to do. Language here is a bitch, it traps us without us even realizing it, obviously in cahoots with ancestral prejudices.

We could perhaps get away with “The Child Who Builds and the Child Who Explores”. By leaving unsaid that one is “boy” and the other is “girl”, and that it is one and the same boy-girl child who, in building explores, and in exploring, builds.. . But yesterday, in addition to double

yin-yang side of that which contemplates and explores, and that which names and constructs, yet another aspect of things had appeared.

The Universe, the World, even the Cosmos, are fundamentally foreign and very distant things. They don't really concern us. It is not towards them that deep within ourselves the impulse for knowledge takes us. What attracts us is their tangible and immediate Incarnation, the closest, the most "carnal", loaded with deep resonances and rich in mystery — The one which merges with the origins of our being of flesh, as with those of our species — and She also who has always been waiting for us, silent and ready to welcome us, "at the other end of the road". It is from Her, the Mother, from She who gave birth to us as she gave birth to the World, that the impulse arises and that the paths of desire spring forth - and it is to meet Her that they carry us, towards Her that they rush, only to return incessantly and sink into Her.

Thus, at the bend in the path of an unforeseen "walk", I unexpectedly find a parable which was familiar to me, and which I had somewhat forgotten – the parable of the child and the Mother. We can see it as a parable for "Life, in search of itself". Or, at the humbler level of individual existence, a parable for "being, in search of things".

It is a parable, and it is also the expression of an ancestral experience, deeply implanted in the psyche - the most powerful among the original symbols which nourish the deep creative layers. I believe I recognize there, expressed in the immemorial language of archetypal images, the very breath of creative power in man, animating his flesh and his spirit, in its most humble and ephemeral manifestations, as well as the most dazzling and most durable.

This "breath", just like the carnal image which embodies it, is the most humble. It is also the most fragile thing, and the most ignored of all and the most despised...

And the story of the vicissitudes of this soufflé during your existence is none other than your adventure, the "adventure of knowledge" in your life. The wordless parable that expresses it is that of the child and the Mother.

You are the child, born from the Mother, sheltered in Her, nourished by Her power. And the child rushes from the Mother, the All-Near, the Well-Known — to meet the Mother, the Limitless, forever Unknown and full of mystery...

End of the "Walk through a work"

Epilogue: Invisible Circles

19. Death is my cradle (or three brats for a dying person).

Until the appearance of the point of view of topos, towards the end of the 1950s, the evolution of the notion of space appears to me to be an essentially "continuous" evolution. It seems to continue without clashes or leaps, starting from the Euclidean theorization of the space which surrounds us, and from the geometry bequeathed by the Greeks, focusing on the study of certain "figures" (straight lines, planes, circles, triangles etc) living in this space. Certainly, profound changes took place in the way in which the mathematician or the "natural philosopher" conceived "space" (*). But these changes all seem to me to be in the nature of an essential "continuity" — they have never placed the mathematician, attached (like everyone else) to familiar mental images, faced with a sudden change of scenery. They were like the changes, profound perhaps but progressive, which take place over the years in a being that we would have already known as a child, and whose evolution we would have followed from his first steps to his age. adult and fully mature. Imperceptible changes in some long periods of flat calm, and perhaps tumultuous in others. But even in the most intense periods of growth or ripening, and even though we might have lost sight of him for months, even years, at no time could there be the slightest doubt, the slightest hesitation: it was him again, a well-known and familiar being, that we found again, albeit with changed features.

I think I can say, moreover, that towards the middle of this century, this familiar being had already aged considerably - like a man who would have finally exhausted himself and worn out, overwhelmed by an influx of new tasks for which he was in no way prepared. . Perhaps he had already died his beautiful death, without anyone bothering to take note of it and make an observation.

(*) My initial intention, in writing the Epilogue, was to include a very summary sketch of some of these "profound changes", and to reveal this "essential continuity" that I see there. I gave it up, so as not to lengthen this Walk unduly, which was already much longer than expected! I am thinking of returning to this in the Historical Commentaries provided in volume 4 of the "Reflections", this time intended for a mathematician reader (which completely changes the task of exposition).

“Everyone” still pretended to be busy in the house of a living person, that it was almost as if he was still alive and well indeed.

Now, judge the unfortunate effect, for the regulars of the house, when in place of the venerable old man frozen, straight and stiff in his armchair, we see suddenly frolicking a vigorous kid, no taller than three apples, and who claims in passing, without laughing and as if it goes without saying, that Monsieur Espace (and you can now even drop the “Monsieur”, at your leisure...) is him! If only he at least seemed to have family traits, a natural child perhaps who knows... but not at all! At first glance, there was nothing that reminded us of the old Father Space that we had known so well (or thought we knew...), and of whom we were very sure, in any case (and that was the least we could do. ..) that he was eternal...

This is the famous “mutation of the notion of space”. This is what I must have “seen”, as something obvious, from the beginning of the sixties at least, without ever having had the opportunity to formulate it to myself before this very moment when I am writing these lines. And I suddenly see with new clarity, by the sole virtue of this pictorial evocation and the cloud of association that it immediately arouses: the traditional notion of “space”, just like the closely related notion of “variety”. (of all kinds, and in particular that of “algebraic variety”), had become, around the time I came to the area, so old that it was as if they were dead... (*). And I could say that it is with the appearance in quick succession from the point of view of the schemas (and its offspring (*)), plus ten thousand pages of foundations to

(*) This statement (which will seem peremptory to some) should be taken with a “grain of salt”. It is neither more nor less valid than the one (which I take up for myself below) that the “Newtonian model” of mechanics (terrestrial or celestial) was “moribund” at the beginning of this century, when Einstein came to the rescue. It is a fact that even today, in most “common” situations in physics, the Newtonian model is perfectly adequate, and that would be madness (given the margin of error allowed in the measurements made) look for relativistic models. Likewise, in many situations in mathematics, the old familiar notions of “space” and “variety” remain perfectly adequate, without seeking nilpotent elements, topos or “moderate structures”. But in either case, for a growing number of contexts involved in cutting-edge research, the old conceptual frameworks have become incapable of expressing even the most “common” situations.

(*) (For the mathematician) In this “offspring”, I include in particular formal diagrams, “multiplicities” of all kinds (and in particular, schematic or formal multiplicities), finally the so-called “rigid” spaces. analytical” (introduced by Tate, following a “master” provided by me, inspired by the new notion of topos, at the same time as that of formal schema). This list is by no means exhaustive...

the key), then that of the topos, that a situation of crisis-which-does not say-its-name was finally resolved.

In the image from earlier, it is not one kid that we should be talking about, as the product of a sudden mutation, but two. Two kids, moreover, who have an undeniable “family resemblance” between them, even if they hardly resemble the late old man. And again, looking closely, we could say that the toddler Schemas would act as a “link of kinship” between the late Father Espace (aka Variétés-en-tous-genres) and the toddler Topos (**).

20. Look at the neighbors across the street.

The situation seems to me very close to that which arose at the beginning of this century, with the appearance of Einstein's theory of relativity. There was a conceptual dead end, even more blatant, materializing in a sudden contradiction, which seemed irresolvable. Sure enough, the new idea that would bring order to chaos was an idea of childish simplicity. The remarkable thing (and in keeping with a most repetitive scenario...), is that among all these brilliant, eminent, prestigious people who were suddenly on edge, trying to “save the furniture”, no one there thought of this idea.

It had to be an unknown young man, freshly graduated (if that) from the benches of the student amphitheatres, who would come (a little embarrassed perhaps by his own audacity...) to explain to his illustrious elders what he had to be done to “save the phenomena”: all that was needed was to separate space from time (***)! Technically, everything came together for this idea to hatch and be accepted. And it is to the credit of Einstein's elders that they were able to welcome the new idea, without complaining too much. This is a sign that it was still a great era...

From a mathematical point of view, Einstein's new idea was banal. From the point of view

(**) It would also be appropriate, to these two toddlers, to add a third, younger one, who appeared in less clement times: this is the Espace moderate brat. As I pointed out elsewhere, he was not entitled to a birth certificate, and it was completely illegal that I nevertheless included him among the twelve “master themes” that I had the honor of introducing mathematics.

(***) This is a bit short, of course, as a description of Einstein's idea. At the technical level, it was necessary to highlight what structure to put on the new space-time (this was, however, already “in the air”, with Maxwell's theory and Lorentz's ideas). The essential step here was not of a technical nature, but rather “philosophical”: realizing that the notion of simultaneity for distant events had no experimental reality. This is the “childish observation”, the “but the Emperor is naked!”, which made us cross this famous “imperious and invisible circle which limits a Universe”...

of our conception of physical space on the other hand, it was a profound mutation, and a sudden “change of scenery”. The first mutation of its kind, since the mathematical model of physical space released by Euclid 2400 years ago, and taken up as is for the needs of mechanics by all physicists and astronomers since antiquity (including Newton), to describe terrestrial and stellar mechanical phenomena.

This initial idea of Einstein's subsequently developed considerably, becoming embodied in a more subtle, richer and more flexible mathematical model, using the rich arsenal of already existing mathematical notions (*). With the “generalized theory of relativity”, this idea broadens into a vast vision of the physical world, embracing in a single view the subatomic world of the infinitely small, the solar system, the Milky Way and distant galaxies, and the path of electromagnetic waves in a space-time curved at each point by the matter found there (**). This is the second and last time in the history of cosmology and physics (following Newton's first great synthesis three centuries ago), that a vast unifying vision appeared, in the language of a mathematical model, of all physical phenomena in the Universe.

This Einsteinian vision of the physical Universe has in turn been overwhelmed by events. “All of the physical phenomena” that need to be accounted for have had time to expand since the beginning of the century! A multitude of physical theories appeared, each to account, with more or less success, for a limited package of facts, in the immense mess of all the “observed facts”. And we are always waiting for the daring kid, who will find by playing the new key (if there is one...), the dream “cake model”, who is willing to “walk” to save all the phenomena at once. ..(*)

(*) It mainly concerns the notion of “Riemannian manifold”, and tensor calculation on such a manifold.

(**) One of the most striking features which distinguishes this model from the Euclidean (or Newtonian) model of space and time, and also from Einstein's very first model (“special relativity”), is that the global topological form of space-time remains indeterminate, instead of being imperatively prescribed by the very nature of the model. The question of knowing what this global form is seems to me (as a mathematician) one of the most fascinating in cosmology.

(*) Such a hypothetical theory, which would succeed in “unifying” and reconciling the multitude of partial theories in question, was called “unitary theory”. I have the feeling that the fundamental reflection which awaits to be undertaken will have to be placed on two different

levels. ỹ) A reflection of a “philosophical” nature, on the very notion of a “mathematical model” for a portion of reality. Since the success of Newtonian theory, it has become a tacit axiom of the physicist that there exists a mathematical model (or even a unique model, or “the” model) to express reality.

physically in a perfect way, without “detachment” or burring. This consensus, which has been law for more than two centuries, is like a sort of fossil vestige of the living vision of a Pythagoras that “Everything is number”. Perhaps this is the new “invisible circle”, which has replaced the old metaphysical circles to limit the physicist's Universe (while the race of “natural philosophers” seems definitively extinct, supplanted hands down by that of computers...). As long as one is willing to stop at it even for a moment, it is nevertheless very clear that the validity of this consensus is by no means obvious. There are even very serious philosophical reasons which lead us to doubt it a priori, or at least to provide very strict limits to its validity. This would be the moment or never to submit this axiom to a close critique, and perhaps even, to “demonstrate”, beyond all possible doubt, that it is unfounded: that there is no unique rigorous mathematical model, accounting for all of the so-called “physical” phenomena recorded to date.

Once the very notion of a “mathematical model” has been satisfactorily defined, and that of the “validity” of such a model (within the limits of such “margins of error” admitted in the measurements made), the question of a “unitary theory” or at least that of an “optimum model” (in a sense to be clarified) will finally be clearly posed. At the same time, we will undoubtedly also have a clearer idea of the degree of arbitrariness which is attached (by necessity, perhaps) to the choice of such a model.

ÿ) It is only after such reflection, it seems to me, that the “technical” question of identifying an explicit model 2, more satisfactory than its predecessors, takes on its full meaning. This would then be the moment, perhaps, to free ourselves from a second tacit axiom of the physicist, dating back to antiquity, and deeply anchored in our very mode of perception of space: it is that of continuous nature of space and time (or space-time), of the “place” therefore where “physical phenomena” take place.

It must have already been fifteen or twenty years ago, while leafing through the modest volume constituting Riemann's complete works, I was struck by a remark from him “in passing”. He points out that it could well be that the ultimate structure of space is “discrete”, and that the “continuous” representations that we have of it perhaps constitute a simplification (excessive perhaps, in the long run). ...) of a more complex reality; that for the human mind, “the continuous” was easier to grasp than “the discontinuous”, and that it serves us, consequently, as an “approximation” to apprehend the discontinuous. This is a surprisingly penetrating remark coming from the mouth of a mathematician, at a time when the Euclidean model of physical space had never yet been called into question; in the strictly logical sense, it is rather the discontinuous which, traditionally, has served as a mode of technical approach towards the continuous.

Developments in mathematics in recent decades have also shown a much more intimate symbiosis between continuous and discontinuous structures than was even imagined in the first half of this century. Still, finding a “satisfactory” model (or, if necessary, a set of such models, “connecting” as satisfactorily as possible...), whether it is “continuous”, “discrete” or of a “mixed” nature — such work will surely bring into play a great conceptual imagination, and a consummate flair for understanding and updating mathematical structures of a new type. This kind of imagination or “flair” seems to me to be a rare thing, not only among physicists (where Einstein and Schrödinger seem to have been among the rare exceptions), but even among mathematicians (and here I speak with full knowledge of the facts) .

The comparison between my contribution to the mathematics of my time, and that of Einstein to physics, imposed itself on me for two reasons: both works were accomplished thanks to a mutation of the conception we have of "space" (in the mathematical sense in one case, in the physical sense in the other); and both take the form of a unifying vision, embracing a vast multitude of phenomena and situations which until then appeared as separate from each other. I see there an obvious kinship of spirit between his work (*) and mine.

This relationship does not seem to me to be in any way contradicted by an obvious difference in "substance". As I have already suggested earlier, the Einsteinian mutation concerns the notion of physical space, while Einstein draws from the arsenal of mathematical notions already known, without ever needing to expand it, or even to upset. His contribution consisted of identifying, among the mathematical structures known of his time, those which were best suited to serving as "models" for the world of physical phenomena, in place of the moribund model (**) bequeathed by his predecessors. In this sense, his work was indeed that of a physicist, and beyond that, that of a "natural philosopher", in the sense that Newton and his contemporaries understood it. This "philosophical" dimension is absent from my mathematical work, where I have never been led to ask myself questions about the possible relationships between "ideal" conceptual constructions, taking place in the Universe of mathematical things, ticks, and the phenomena that take place in the physical Universe (or even the events experienced taking place in the psyche). My work has been that of a mathematician, deliberately turning away from the question of "applications" (to other sciences), or the "motivations" and the psychic roots of my work. A mathematician, moreover, driven by his very particular genius to constantly expand the arsenal of notions at the very basis of his art. This is how I was led, without even realizing it and as if playing, to overturn the notion

To summarize, I foresee that the expected renewal (if it is still to come...) will come, rather from a mathematician at heart, well informed of the major problems of physics, than from a physicist. But above all, it will take a man with "philosophical openness" to grasp the crux of the problem. This is in no way technical in nature, but rather a fundamental problem of "philosophy of nature".

(*) I in no way claim to be familiar with Einstein's work. In fact, I have not read any of his work, and only know his ideas by hearsay and very approximately. Yet I have the impression of discerning "the forest", even if I have never had to make the effort to examine any of its trees...

(**) For comments on the qualifier "moribund", see a previous footnote (note (*) page 55).

most fundamental of all for the geometer: that of space (and that of “variety”), it is express our conception of the very “place” where geometric beings live.

The new notion of space (like a sort of “generalized space”, but where the points which are supposed to form “space” have more or less disappeared) bears no resemblance, in its substance, to the notion brought by Einstein in physics (in no way confusing, for the mathematician). On the other hand, the comparison is necessary with quantum mechanics discovered by Schrödinger(*). In this new mechanics, the traditional “material point” disappears, to be replaced by a sort of “probabilistic cloud”, more or less dense of a region of ambient space to another, following the “probability” for the point to be found in this region. We clearly feel, in this new perspective, an even more profound “mutation” in our ways of conceiving mechanical phenomena, than in that embodied by Einstein's model — a mutation that does not consist of simply replacing a model mathematical a little narrow at the edges, by another similar but cut wider or better adjusted. This time, the new model resembles so little the good old traditional models that even the mathematician, a great specialist in mechanics, must have felt disoriented. suddenly, even lost (or outraged...). Moving from Newton's mechanics to Einstein's must be a bit, for the mathematician, like switching from the good old Provençal dialect with the latest Parisian slang. On the other hand, moving to quantum mechanics, I imagine, is switch from French to Chinese.

And these “probabilistic clouds”, replacing the reassuring material particles of yesteryear, strangely remind me of the elusive “open neighborhoods” which populate the topos, like evanescent ghosts, to surround imaginary “points”, to which a recalcitrant imagination continues to cling again against all odds...

21. “The one” – or the gift of solitude.

This brief excursion to the “neighbors across the street”, the physicists, could serve as a point of reference for a reader who (like most people) knows nothing about the world of mathematicians, but who has surely heard about Einstein and his famous “fourth dimension”, or even quantum mechanics. After all, even if it wasn't planned

(*) I believe I understand (from echoes that have come back to me from various quarters) that we generally consider that in this century there have been three “revolutions” or great upheavals in physics: Einstein's theory, discovery of radioactivity by the Curies, and the introduction of quantum mechanics by Schrödinger.

by the inventors that their discoveries would materialize in Hiroshimas, and later in atomic wars, both military and (supposedly) “peaceful”, the fact is that the discovery in physics has a tangible and almost immediate impact on the world men in general. The impact of mathematical discovery, and especially in so-called “pure” mathematics (that is to say, without motivation for “applications”) is less direct, and surely more difficult to define. I have not been aware, for example, that my contributions to mathematics have been “used” for anything, to build the slightest machine let's say. I have no merit in this being so, that's for sure, but it still reassures me. As soon as there are applications, we can be sure that it is the military (and after them, the police) who are the first to seize them - and as for industry (even the so-called “peaceful”), it's not always so much better...

For my own information, certainly, or for that of a mathematician reader, it would rather be necessary to try to situate my work by “reference points” in the history of mathematics itself, rather than going look for analogies elsewhere. I've been thinking about it in recent days, within the limits of my rather vague knowledge of the story in question (*). Already during the “Promenade”, I had the opportunity to evoke a “line” of mathematicians, of a temperament with which I recognize myself: Galois, Riemann, Hilbert. If I were better aware of the history of my art, there is a chance that I would find it possible to extend this lineage further into the past, or perhaps to interject a few other names that I hardly know except through hearsay. The thing that struck me is that I do not remember having been aware, even if only by allusion by friends or colleagues better versed in history than me, of a mathematician other than myself who brought a multiplicity of innovative ideas, not more or less disjointed from each other, but as parts of a vast unifying vision (as was the case for Newton and Einstein in physics and cosmology, and for Darwin and for Pasteur in biology). I have only known of two “moments” in the history of mathematics, where a new vision of vast

(*) Since I was a kid, I have never been too attached to history (or geography for that matter). (In the fifth part of *Récoltes et Semailles* (written only in part), I have the opportunity “in passing” to detect what seems to me the deep reason for this partial “block” against history — a block which is in the process of being absorbed, I believe, during these last years.) The mathematical teaching received by my elders, in the “Bourbachic circle”, was not, moreover, to help matters — the occasional historical references were more than rare there.

wingspan. One of these moments is that of the birth of mathematics, as a science in the sense we understand it today, 2500 years ago, in ancient Greece. The other is, above all, that of the birth of infinitesimal and integral calculus, in the seventeenth century, an era marked by the names of Newton, Leibnitz, Descartes and others. As far as I know, the vision born at one moment or another was the work not of a single person, but the collective work of an era.

Of course, between the time of Pythagoras and Euclid and the beginning of the seventeenth century, mathematics had time to change its face, and likewise between that of the “Calculation of infinitely small” created by the mathematicians of the seventeenth century, and the middle of the present nineteenth. But as far as I know, the profound changes that took place during these two periods, one of more than two thousand years and the other of three centuries, have never materialized or condensed into a new vision expressed in a given work (*), in a way similar to what took place in physics and cosmology, with the great syntheses of Newton, then Einstein, in two crucial moments in their history.

(*) Hours after writing these lines, I was struck that I had not thought here of the vast synthesis of contemporary mathematics that N. Bourbaki's (collective) treatise strives to present. (There will still be a lot of talk about the Bourbaki group in the first part of *Récoltes et Semailles*.) This is, it seems to me, due to two reasons.

On the one hand, this synthesis is limited to a sort of “putting in order” of a vast set of ideas and results already known, without bringing any innovative idea of its own. If there is a new idea, it would be that of a precise mathematical definition of the notion of “structure”, which has proven to be a valuable common thread throughout the treatise. But this idea seems to me to be assimilated more to that of an intelligent and imaginative lexicographer, than to an element of renewal of a language, giving a renewed apprehension of reality (here, that of mathematical things).

On the other hand, from the 1950s, the idea of structure was overtaken by events, with the sudden influx of “categorical” methods in some of the most dynamic parts of mathematics, such as topology or algebraic geometry. (Thus, the notion of “topos” refuses to enter the “bourbachic bag” of structures, decidedly narrow around the edges!) By deciding, with full knowledge of the facts, of course, not to engage in this “galley”, Bourbaki thereby renounced his initial ambition, which was to provide the foundations and the basic language for all of contemporary mathematics.

On the other hand, he established a language and, at the same time, a certain style of writing and approach to mathematics. This style was originally the (very partial) reflection of a certain spirit, a living and direct inheritance from Hilbert. During the 1950s and 1960s, this style finally took hold — for better and (especially) for worse. Over the past twenty years, it has ended up becoming a rigid “canon” with a “rigor” of pure facade, whose spirit which once animated it seems to have disappeared without return.

It would seem that as a servant of a vast unifying vision born within me, I am “one of a kind” in the history of mathematics from the beginning to the present. Sorry for seeming to want to single me out more than is allowed! To my own relief, however, I believe I discern a sort of potential (and providential!) brother. I have already had the opportunity to mention him earlier, as the first in the line of my “brothers in temperament”: he is Évariste Galois. In his short and dazzling life (*), I believe I discern the beginnings of a great vision - precisely that of the “wedding of number and grandeur”, in a new geometric vision. I mention elsewhere in *Récoltes et Semailles* (**) how, two years ago, this sudden intuition appeared in me: that in the mathematical work which at that moment exerted the most powerful fascination on me, I was in “resuming the legacy of Galois”. This intuition, rarely mentioned since, has nevertheless had time to mature in silence. The retrospective reflection on my work that I have been pursuing for three weeks will surely have further contributed to this. The most direct connection that I believe I now recognize with a mathematician of the past is the one that connects me to Évariste Galois. Rightly or wrongly, it seems to me that this vision that I developed during fifteen years of my life, and which continued to mature in me and to enrich itself during the sixteen years that have elapsed since my departure from the mathematical scene — that this vision is also the one that Galois could not have stopped developing (***), if he had been around in my place, and without an early death suddenly cutting it short a magnificent momentum.

There is yet another reason, surely, which contributes to giving me this feeling of an “essential kinship” — of a kinship which is not reduced to the sole “mathematical temperament”, nor to the striking aspects of a artwork. Between his life and mine, I also feel a kinship of destinies. Certainly, Galois died stupidly, at the age of twenty-one, while I am approaching sixty, and determined to make old bones. This does not, however, prevent the fact that Évariste Galois remained during his lifetime, just like me a century and a half later, a

(*) Évariste Galois (1811–1832) died in a duel, at the age of twenty-one. There are, I believe, several biographies of him. As a young man, I read a fictionalized biography, written by the physicist Infeld, which really struck me at the time.

(**) See “The legacy of Galois” (ReS I, section 7).

(***) I am convinced that a Galois would have gone much further than I have gone. On the one hand because of his completely exceptional gifts (which I did not receive in sharing, for my part). On the other hand because it is likely that he would not, like me, have let most of his energy be diverted to endless tasks of meticulous shaping, as he goes along, of this which is already more or less acquired...

“marginal” in the official mathematical world. In the case of Galois, it might seem at a superficial glance that this marginality was “accidental”, that he had simply not had the time yet to “establish himself” through his innovative ideas and through his work. In my case, my marginality, during the first three years of my life as a mathematician, was due to my ignorance (deliberate perhaps...) of the very existence of a world of mathematicians, to which I would have to confront myself; and since my departure from the mathematical scene sixteen years ago, it has been the consequence of a deliberate choice. It is this choice, surely, which provoked in retaliation an “unfailing collective desire” to erase from mathematics all traces of my name, and with it also the vision of which I had made myself the servant.

But beyond these accidental differences, I believe I discern a common cause in this “marginality”, which I feel is essential. I do not see this cause in historical circumstances, nor in particularities of “temperament” or “character” (which are undoubtedly as different from him to me as they can be from one person to another). other), and even less certainly at the level of “gifts” (visibly prodigious with Galois, and comparatively modest with me). If there is indeed an “essential kinship”, I see it on a much humbler, much more elementary level.

I have felt such kinship on a few rare occasions in my life. It is also through her that I feel “close” to yet another mathematician, and who was my elder: Claude Chevalley (*). The link I mean is that of a certain “naivety”, or an “innocence”, which I have had occasion to speak about. It is expressed by a propensity (often little appreciated by those around us) to look at things through one's own eyes, rather than through patented glasses, graciously offered by some more or less vast human group, invested with authority for one reason or another.

This “propensity”, or this inner attitude, is not the privilege of maturity, but rather that of childhood. It is a gift received at birth, at the same time as life - a humble and formidable gift. A gift often buried deep, that some have managed to preserve a little, or perhaps find again...

We can also call it the gift of solitude.

(*) I talk about Claude Chevalley here and there in *Récoltes et Semailles*, and more particularly in the section “Meeting with Claude Chevalley — or freedom and good feelings” (ReS I section 11), and in the note “A farewell to Claude Chevalley” (ReS III, note n ° 100).

A letter

May 1985

1. The thousand-page letter.

The text that I am sending you here, typed and printed in a limited number of copies by my university, is however neither a separate print nor a preprint. Its name, *Récoltes et Semailles*, announces this quite clearly. I'm sending it to you as I would send a long letter - a very personal letter, at that. If I send it to you, instead of just letting you read about it one day (if you are curious) in some volume on sale in a bookstore (if there is a publisher crazy enough to take the adventure...), it's because I'm addressing you more than others. More than once while writing it I thought of you — it must be said that I have been writing this letter for over a year, putting my all into it. It is a gift that I make to you, and I took great care in writing to give the best I had (at each moment) to offer. I don't know if the donation will be accepted - your response (or your non-response...) will let me know...

At the same time as you, I am sending *Récoltes et Semailles* to all those of my colleagues, friends or (ex-) students in the mathematical world, with whom I have been closely linked at any time, or who appear in my thinking in one way or another, by name or not. There is a chance that you will appear there, and if you read with your heart and not only with your eyes and your head, surely you will recognize yourself even where you are not named. I also send *Récoltes et Semailles* to a few other friends, scientists or not.

This “letter of introduction” that you are reading, which announces and presents to you a “letter of a thousand pages” (to begin with...), will also serve as a Foreword. The latter is not yet written at the time of writing these lines. *Récoltes et Semailles* also consists of five parts (not counting a “drawer” introduction). I send you here Parts I (Fatue and Renewal), II (The Burial (1) — or the Robe of the Emperor of China), and IV (The Burial (3) — or the Four Operations) (*). These are the ones that it seemed to me that concerned you more particularly. Part III (The Burial (2) — or the Key to Yin and Yang) is undoubtedly the most personal part of my testimony, and the one at the same time

(*) I am setting aside colleagues who figure in my thoughts in one capacity or another, but whom I do not know personally. I limit myself to sending them “The Four Operations” (which concerns them more particularly), at the same time as “booklet 0” consisting of this letter, and the Introduction to *Récoltes et Semailles* (plus the detailed table of contents of all of the first four parts).

a time which, even more than the others, seems to me to have a “universal” value, beyond the particular circumstances which surrounded its birth. I refer to this part here and there in part IV (The Four Operations), which however can be read independently, and even (to a large extent) independently of the three preceding parts (*). If reading what I send you here encourages you to respond to me (as is my wish), and if it makes you want to also read the missing part, let me know. I will be happy to send it to you, as long as your response makes me feel that your interest goes beyond that of a very superficial curiosity.

2. Birth of Harvests and Sowing (a flash retrospective).

In this pre-letter, I would now like to tell you in a few pages (if possible) what *Récoltes et Semailles* is about – tell you in more detail than the subtitle alone says: “Reflections and testimony on a mathematician's past” (mine's past, you guessed it...). There are many things in *Récoltes et Semailles*, and everyone will undoubtedly see many different things in it: a journey to discover a past; a meditation on existence; a picture of the morals of an environment and an era (or the picture of the insidious and implacable slide from one era to another...); an investigation (almost detective at times, and at others bordering on a cloak-and-dagger novel in the underbelly of the mathematical megapolis...); a vast mathematical rambling (which will confuse more than one...); a practical treatise on applied psychoanalysis (or, as desired, a “psychoanalysis-fiction” book); a panegyric of self-knowledge; “My confessions”; a diary ; a psychology of discovery and creation; an indictment (ruthless, as it should be...), even a settling of scores in “the beautiful mathematical world” (and without giving any gifts...). What is certain is that at no time was I bored while writing it, even though I learned from it and saw all the colors. If your important tasks leave you the leisure to read it, I would be surprised if you get bored reading me. Unless you force yourself, who knows...

(*) In general, you will be able to see that each “section” (in *Fatuity and Renewal*) or each “note” (in any of the following three parts of *Récoltes et Semailles*) has its own unity and autonomy. It can be read independently of the rest, just as one can find interest and pleasure in looking at a hand, a foot, a finger or a toe or any other large or small portion of the entire body, without forgetting that it is there a part of a Whole, and that it is only this Whole (which remains unsaid) which gives it all its meaning.

Obviously, this is not just for mathematicians. It is also true that at certain times, it is aimed at mathematicians more than others. In this pre-letter to the “Récoltes et Semailles letter”, I would like to summarize and highlight, above all, precisely what may concern you more particularly as a mathematician. The most natural way to do this will be to simply tell you how I came, one thing leading to another, to write in quick succession these four or five “blocks” that were discussed.

As you know, I left “the big world” of mathematics in 1970, following a story about military funds at my home institution (IHES). After a few years of anti-militarist and ecological activism, “cultural revolution” style, of which you undoubtedly heard some echo here and there, I practically disappeared from circulation, lost in a provincial university God knows where. Rumor has it that I spend my time herding sheep and drilling wells. The truth is that apart from many other occupations, I bravely went, like everyone else, to do my classes at the University (that was my somewhat original source of livelihood, and it still is today). It even happened here and there, for a few days, even a few weeks or a few months, to redo maths with a bit of zinc - I have boxes full of my scribbles, which I must be the only one who can decipher. But it was about very different things, at least at first glance, from what I had done before. Between 1955 and 1970, my favorite theme was cohomology, and more particularly, the cohomology of varieties of all kinds (algebraic, in particular). I judged that I had done enough in that direction for the others to manage without me, and while I was doing math, it was time for me to change discs...

In 1976 a new passion appeared in my life, as strong as my mathematical passion had once been, and in fact a close relative of it. It is the passion for what I called “meditation” (since things need names). This name, like any other name here, cannot fail to give rise to innumerable misunderstandings. As in mathematics, this is a work of discovery. I speak about it here and there during Récoltes et Semailles. Still, clearly there was something there to keep me busy until the end of my days. And more than once, in fact, I believed that mathematics was a thing of the past and that from now on I was only going to concern myself with more serious things — that I was going to “meditate”.

However, I ended up realizing (four years ago) that my mathematical passion had not yet died out. And even, without really knowing how and on my own

surprise, I who (for almost fifteen years) no longer thought of publishing a line of mathematics in my life, I suddenly saw myself embarked on the writing of a work of mathematics which visibly never ended and which was going to have volumes and volumes; and while I was at it, I was going to throw what I believed I had to say about math into an (infinite?) series of books that would be called "Mathematical Reflections," and let no one talk about it anymore.

It was two years ago, spring 1983. I was then already too busy writing (volume 1 of) "À la Pursuit des Champs", which was also to constitute volume 1 of "Réflex-ions" (mathematics), to ask me questions about what was happening to me. Nine months later, as it should be, this first volume was finished, so to speak, there was only the introduction to write, reread the whole thing, annotations - and to print...

The volume in question is still not finished at this time — it hasn't moved a bit in a year and a half. The introduction that remained to be written has exceeded the twelve hundred (typed) page mark, when it is actually finished there will actually be fourteen hundred. You will have guessed that the said "introduction" is none other than Récoltes et Semailles. The latest news is that it is supposed to form volumes 1 and 2 plus part of volume 3 of the famous "series" planned. This suddenly changes its name and will be called "Reflections" (in short, not necessarily mathematics). The rest of volume 3 will consist mainly of mathematical texts, now more burning for me than the Pursuit of the Fields. This will wait until next year, for annotations, indexes, plus, of course, an introduction...

End of the first Act!

3. The death of the boss – abandoned construction sites.

It is time, I feel, to offer some explanations: why I left so abruptly a world in which, apparently, I had felt comfortable for more than twenty years of my life; why I had the strange idea of "coming back" (like a ghost...) when people had done very well without me during these fifteen years; and why finally an introduction to a mathematical work of six or seven hundred pages ended up being twelve (or fourteen) hundred. And it is here too, by getting to the heart of the matter, that I will undoubtedly upset you (sorry!), or even make you angry. Because there is no doubt that, like me not long ago, you like to see "in pink" the environment of which you are a part, where you have your place, your name and all that. I know what it is... And now it's going to squeak a little...

I talk here and there in Récoltes et Semailles about the episode of my departure, without going into it too much.

Stop. This “departure” appears rather as an important caesura in my life as a mathematician — it is in relation to this “point” that the events of my life as a mathematician are constantly located, as “before” and “after”. It took a shock of great force to tear me away from an environment where I was strongly rooted, and from a strongly traced “trajectory”.

This shock came through the confrontation, in an environment with which I was strongly identified, with a certain form of corruption (*) to which until then I had chosen to turn a blind eye (by simply refraining from not participating in it). Looking back, I realize that beyond the event, there was a deeper force at work within me. It was an intense need for interior renewal. Such renewal could not be accomplished and continued in the lukewarm scientific atmosphere of a prestigious institution.

Behind me, twenty years of intense mathematical creativity and disproportionate mathematical investment — and, at the same time, also, twenty long years of spiritual stagnation, in “silence”... Without realizing it, I was suffocating — it was sea air that I needed! My providential “departure” marked the sudden end of a long stagnation, and a first step towards a balancing of the deep forces in my being, bent and screwed in a state of intense, frozen imbalance... This departure was, truly , a new beginning — the first step in a new journey...

As I said, my mathematical passion was not extinguished. It found expression in reflections which remained sporadic, in paths entirely different from those that I had traced for myself “before”. As for the work that I left behind me, the one “before”, both the one published in black and white and the one, more essential perhaps, which had not yet found its way to writing or the published text. — it could well have seemed, and indeed it seemed to me, that she had become detached from me. Before last year, with *Récoltes et Semailles*, the idea had never occurred to me to “pose” even a little on the scattered echoes that came back to me, here and there. I knew well that everything I had done in math, and more particularly, in my “geometric” period from 1955 to 1970, were things that had to be done — and the things I had seen or glimpsed, were things that had to appear, that had to be brought to light. And also, that the work I had done, and the work I had done

(*) This is about the unreserved collaboration, “establishment” in the lead, of all scientists from all countries with military apparatus, as a convenient source of funding, prestige and power. This question is barely touched upon in passing, once or twice, in *Récoltes et Semailles*, for example in the note “Le respect” of April 2 (n ° 179, pages 1221–1223).

to do, was a job well done, a job into which I had put my all. I had put all my strength and all my love into it, and (so it seemed to me) it was now autonomous - a living and vigorous thing - which no longer needed me to mother it. On this side, I left with perfect peace of mind. I had no doubt that these written and unwritten things that I left behind, I left them in good hands, who would know how to ensure that they unfold, that they grow and multiply according to their own nature as living things. and vigorous.

In these fifteen years of intense mathematical work, a vast unifying vision had hatched, matured and grown in me, embodied in a few very simple key ideas. The vision was that of an "arithmetic geometry", a synthesis of topology, geometry (algebraic and analytical), and arithmetic, of which I found a first embryo in Weil's conjectures. It was she who was my main source of inspiration in these years, which for me are especially those where I identified the key ideas of this new geometry, and where I shaped some of these main tools. This vision and these key ideas have become second nature to me. (And after having ceased all contact with them for almost fifteen years, I see today that this "second nature" is still alive in me!) They were for me so simple, and so obvious, that it went without saying that "everyone" had assimilated them and made them their own little by little, at the same time as me. It is only very recently, in these last few months, that I realized that neither the vision, nor these few "powerful ideas" which had been my constant guide, are found written in full in any published text, if it is at most between the lines. And above all, that this vision that I believed I was communicating, and these key ideas that carry it, still remain today, twenty years after having reached full maturity, unknown to all. It is I, the worker, and the servant of these things that I have had the privilege of discovering, who am also the only one in whom they are always alive.

This tool and that other that I had fashioned, is used here and there to "fracture" a problem known to be difficult, as one would break open a safe. The tool appears to be solid. However, I know of another "strength" in it other than that of a pincer monseigneur. It is part of a Whole, as a member is part of the body - a Whole from which it comes, which gives it its meaning and from which it draws strength and life. You can use a bone (if it's big) to fracture a skull, that's a given. But that is not its real function, its reason for being. And I see these scattered tools which each one has seized, a bit like bones, carefully

dismembered and cleaned, which they would have torn from a body - from a living body which they would pretend to ignore...

What I say there in carefully considered terms, at the end of a long reflection, must have been perceived by me little by little and in a diffuse way, over the years, at the level of the unspoken which is still seeking to take shape. in conscious thought and images, and in clearly articulated speech. I had decided that this past, deep down, no longer concerned me. The echoes that reached me from far and away, filtered as they were, were nevertheless eloquent, as long as I stopped to stop at them a little. I had thought myself a worker among others, busy on five or six "sites" (*) in full activity - a more experienced worker perhaps, the eldest who had previously worked alone in these same places, for many years, before a welcome relief comes; the eldest, yes, but basically no different from the others. And now, when he left, it was like a masonry company that had declared bankruptcy, following the unexpected death of the boss: overnight, in other words, the construction sites were deserted.

The "workers" left, each taking under his arm the little bits and pieces he thought he would use at home. The cash register was gone, and there was no longer any reason for him to continue to tire himself out working...

This is, again, a formulation that emerged from reflection and investigation that continued over more than a year. But surely, it was something perceived "somewhere" already, from the first years after my departure. Setting aside Deligne's work on the absolute values of Frobenius's eigenvalues (the "prestige question", as I understood recently...) - when from time to time I happened to meet one of my close friends from yesteryear, with whom I had worked on the same construction sites, and I asked him "so...?", it was always the same eloquent gesture, arms in the air as if asking for mercy. .. Obviously, everyone was busy with things more important than those that were close to my heart — and obviously, too, while everyone was busy and looking busy and important, not much was getting done. The essential had disappeared - a unity which gave meaning to the partial tasks, and a warmth too, I believe. There remained a scattering of tasks detached from a whole, each in their own corner incubating their little nest egg, or making it grow.

(*) I speak about these deserted "construction sites", and finally review them, in the series of notes "The desolate construction sites" (nŷs 176 to 178), from three months ago. A year before, and before the discovery of the Burial, it had already been discussed, in the first note where I reconnect with my work and on the fate that was its fate, in the note "My orphans" (n ŷ 46).

as best they could.

Even though I would have liked to defend myself against it, it of course pained me to see that everything had stopped dead in its tracks; to no longer hear about patterns, nor topoi, nor the six operations, nor the coefficients of De Rham, nor those of Hodge, nor the “mysterious functor” which was to connect them together, in the same fan, around the De Rham coefficients, the p -adic coefficients for all prime numbers, nor crystals (except to learn that they are always at the same point), nor “standard conjectures” and others that I had identified and which clearly represented crucial questions. Even the vast foundational work begun with the Elements of Algebraic Geometry (with the tireless assistance of Dieudonné), which would have been almost enough to continue on the momentum already acquired, was left behind: everyone was content to settling into the walls and furniture that someone else had patiently assembled, mounted and bricked. Once the worker had left, no one would have thought of rolling up his sleeves and putting his hand to the trowel to build the many buildings that remained to be built, houses, good for living in, for yourself and for everyone...

I couldn't help but, once again, continue with fully conscious images, which emerged and resurfaced through the work of reflection. But there is no doubt in my mind that these images must already be present in one form or another, in the deep layers of my being. I must have already felt the insidious reality of a Burial of my work at the same time as of my person, which imposed itself on me suddenly, with an undeniable force and with this very name, “The Burial”, the April 19 last year. On a conscious level, on the other hand, I would hardly have thought of being offended or even distressed. After all, “close” to formerly or not, it was only up to the person concerned, how he chose to spend his time. If what had once seemed to motivate or inspire him no longer inspired him, that was his business, not mine. If the same thing seemed to happen, with a perfect ensemble, to all my ex-students without exception, it was still the business of each of them separately and I had other things to worry about than looking for what sense could that have, that's all! As for these things that I had left behind, and to which a deep and unknown link continued to connect me - even though they were visibly abandoned, on these desolate construction sites, I knew well that they were not. They were not ones who feared “the insult of time” nor the fluctuations of fashions. If they had not yet entered the common heritage (as it had previously seemed to me), they could not

failing to take root there sooner or later, in ten years or in a hundred, it really didn't matter...

4. A burial wind. . . .

However, if it has pleased me throughout these years to avoid the diffuse perception of a large-scale funeral, it has not failed to stubbornly remind me of good memories, under other faces and less innocuous ones, than that of simple disaffection for a work. I learned little by little, I cannot really say how, that several notions which were part of the forgotten vision had not only fallen into disuse, but had become, in a certain beautiful world, the object of condescending disdain. This was the case, in particular, of the crucial unifying notion of topos, at the very heart of the new geometry - the very one which provides the common geometric intuition for topology, algebraic geometry and arithmetic - the one also which allowed me to identify both the étale and p -adic cohomological tool, as well as the key ideas (more or less forgotten since, it is true...) of crystalline cohomology. To tell the truth, it was my very name, over the years, which insidiously, mysteriously, had become an object of derision - as a synonym for endless vague bombings (such as those on these famous "topos", precisely, or these "patterns" which he kept telling you about and which no one had ever seen...), splitting hairs into four for a thousand pages, and plethoric and gigantic chatter about what, in any case, everything the world had already known it forever and without having expected it... A little in these tones, but muted, by implication, with all the delicacy that is required "among people of high flying and exquisite company."

During the reflection continued in *Récoltes et Semailles*, I believe I have put my finger on the deep forces at work in each of us, behind these airs of derision and condescension in the face of a work whose scope, life and the breath escapes them. I also discovered (apart from the particular traits of my person which have marked my work and my destiny) the secret "catalyst" which incited these forces to manifest themselves in this form of casual contempt in the face of the eloquent signs of a creativity intact; the Grand Officiant at the Funeral, in short, in this Funeral muffled by derision and contempt.

Strange thing, he is also the one, of all people, who was closest to me — also the only one who one day assimilated and made his own a certain vision, full of life and intense force. But I anticipate...

To tell the truth, these "bursts of discreet derision" which came back to me here and there,

didn't affect me too much. They remained somewhat anonymous until three or four years ago. I certainly saw it as a bleak sign of the times, but they did not really challenge me, and did not arouse anxiety or worry in me. One thing, however, which affected me more directly, were the signs of distancing myself from myself, coming to me here and there from many of my old friends in the mathematical world, friends to whom (notwithstanding my departure from a world that was common to us) I continued to feel connected by bonds of sympathy, in addition to those created by a common passion and a certain common past. Here again, although each time I was saddened by it, I hardly stopped at it, and the thought never occurred to me (as far as I remember) of making a connection between these three series of signs: the abandoned construction sites (and the forgotten vision), the "wind of derision", and the distancing of many among those who were friends. I wrote to each of them, and received no response from any.

It was not uncommon now for letters that I wrote to former friends or students, about things that were close to my heart, to go unanswered. New times, new morals — what could I do? I simply refrained from writing to them again. And yet (if you are one of those) this letter that I am writing, it will be the exception - a word that is offered to you again - it is up to you to see if you welcome it this time , or you close again...

The first signs of certain former friends distancing themselves from me date back, if I am not mistaken, to 1976. This is also the year when another "series" of signs began to appear again, which I still have to talk about, before returning to Récoltes et Semailles. To put it better, these last two series of signs then appeared jointly. At this very moment as I write, it appears to me that they are in fact inseparable, that they are basically two different aspects or "faces" of the same reality, bursting into the field in that year. from my own experience. For the aspect that I was about to talk about just now, it is a systematic, discreet and unanswerable "defiance", reserved by an "unfailing consensus" (*) for the few students -and-assimilated after 1970 which,

(*) This "unfailing consensus" is mentioned sporadically here and there in Fatuity and Renewal, and ends up becoming the subject of detailed testimony and reflection in the following part, *The Burial* (1), with the " Cortège _ This closes this part of Récoltes et Semailles, and at the same time constitutes a first outcome of this "second wind" of reflection.

through their work, their style of work and their inspiration, clearly bore the mark of my influence. It was perhaps also on this occasion that, for the first time, I perceived this “breath of discreet derision” which, through them, aimed at a certain style and a certain approach to mathematics — a style and a vision which (according to a consensus which had apparently already become universal in the mathematical establishment) had no reason to exist.

Again, this was something clearly perceived on an unconscious level. It even ended up, this same year again, imposing itself on my conscious attention, after the same aberrant scenario (illustrating the impossibility of having a visibly brilliant thesis published) had been repeated five times in a row, with the burlesque obstinacy of a circus gag. Thinking about it now, I realize that a certain reality was “signaling” to me with benevolent insistence, while I pretended to turn a deaf ear: “Hey, look, you big idiot, be careful one little about what is happening there right under your nose, it concerns you but yes...!!”. I shook myself a little, I looked (for a moment), half-bewildered and half-distracted: “ah yes, well, a little strange, it seems like we’re mad at someone.” there, something that must have gone decidedly wrong, and with such a perfect ensemble, it's hardly even believable, my word!

It was even so unbelievable that I was quick to forget both the gag and the circus. It is true that I had no shortage of other interesting pursuits. That did not prevent the circus from remembering me again in the following years - no longer in the tones of the gag now, but in those of a secret delight in humiliating, or that of the punch delivered in full mouth; except that we are among distinguished people and that the punch here takes more distinguished forms too, necessarily, but just as effective, left to the inventiveness of the distinguished people in question...

The episode that I felt like “a punch in the face” (from someone else) took place in October 1981 (*). That time, and for the first time since the insistent signs of a new spirit reached me, I was affected - more strongly no doubt than if it had been me that it had hit, instead of someone else. cash, which I had in affection. He looked like a bit of a student, and he was also a remarkably gifted mathematician, who had just done some great things - but that's a detail, after all. Which was not a

(*) This episode is recounted in the note “Coffin 3 — or the Jacobean women a little too relative” (n ° 95), notably pages 404–406.

detail, on the other hand, is that three of my “before” students were then directly supportive of an act received by the person concerned (and not without reason) as a humiliation and an affront. Two other of my former students had already had the opportunity to treat him with condescension, like wealthy people sending a dragoon (**). Yet another student would follow suit three years later (and in the “punch in the face” style again) — but I didn't know that yet of course. What appealed to me then was more than enough.

It was as if my past as a mathematician, never examined, was suddenly taunting me with a hideous sneer, through the person of five of those who were my students, who had become important, powerful and disdainful people...

It would have been the moment or never to pose, to probe the meaning of what was suddenly calling out to me with such violence. But somewhere in me it had been decided (without the thing ever having to be said...) that this “before” past no longer concerned me deep down, that there was no need let me stop there; that if he seemed to be calling out to me now in a voice that I recognized only too well - that of the time of contempt - there was definitely a mistake. And yet, I was knotted with anxiety, for days and perhaps weeks, without even taking note of it. (It was only last year, through the writing of *Récoltes et Semailles* which made me return to this episode, that I ended up becoming aware of this anxiety, which had been taken under control as soon as appeared.) Instead of observing it and probing its meaning, I got agitated, I wrote here and there, “the letters that were necessary”. Those interested even took the trouble to respond to me, evasive letters of course and which didn't get to the bottom of anything. The waves eventually calmed down, and everything returned to normal. I hardly had to think about it again until last year. This time, however, it remained like a wound, or like a painful splinter, rather, that one avoids touching; a splinter which maintains this wound which only asks to close...

This was, surely, the most painful and painful experience that I lived through in my life as a mathematician - when I was given to see (without however consenting to really become aware of what my eyes saw) “such a student or companion of yesteryear whom I loved, taking pleasure in discreetly crushing such another whom I love and in whom he recognizes me”. It had a stronger impact on me, surely, than the rather crazy discoveries that I made last year, and which (at a superficial glance) may seem quite otherwise incredible... It is true that this experience had brings into resonance several others,

(**) This is mentioned in passing, in the note cited in the previous footnote.

in the same tones but less violent, and which at the time had “gone to the ace” a bit.

This makes me remember, too, that this same year, 1981, was also that of a drastic turning point in my relationship with the only one among the students of yesteryear with whom I remained in regular contact after my departure, and also the one who since for around fifteen years, had been a “privileged interlocutor” for me, on a mathematical level. It was in fact the year when “the signs of an affectation of disdain” which had appeared for several years already (*) “suddenly became so brutal” that I ceased all mathematical communication with him.

It was a few months before the shocking episode earlier. With hindsight the coincidence seems striking to me, but I don't think I made the slightest connection at the time. It was stored in separate “lockers”; lockers, which, moreover, someone had declared did not really have any consequences - the cause was heard!

And this reminds me, too, that in June of that same year, 1981, a certain brilliant conference had already taken place, memorable in more than one way - a conference which will have well deserved to go down in history (or in what remains of it...) under the indelible name of “Colloque Pervers”. I met him (or rather, he fell on me!) on May 2 last year, two weeks after the discovery (on April 19) of *The Burial in the Flesh* — and I understood immediately that I had just come across “the Apotheosis”. The apotheosis of a burial, certainly, but also, an apotheosis of contempt for what, for more than two thousand years that our science has existed, has been the tacit and immutable foundation of the mathematician's ethics: namely, this elementary rule, not to present as one's own the ideas and results taken from another. And taking note of this remarkable coincidence in time, between two events which may seem very different in nature and scope, I am struck by seeing revealed here the deep and obvious link between respect for the person, and that of the elementary ethical rules of an art or a science, which make its exercise something other than a “free-for-all”, and of all those who are known to excel in it and who give it the tone, something other than an unscrupulous “mafia”. But again I anticipate...

5. The journey.

I think I have pretty much covered the context in which my “return to math” took place, and, one thing led to another, the writing of *Récoltes et Semailles*. It was the end of March last year, in the very last section of *Fatuity and Renewal* (“The weight of a past” (n ̃ 50)),

(*) This episode is discussed in the note “Two turning points” (n ̃ 66).

that I finally think of questioning myself about the reasons and the meaning of this unexpected return. As for the “reasons”, the strongest of all was surely the impression, diffuse and compelling at the same time, that these strong and vigorous things, which I had previously believed to entrust into loving hands — “it is in a tomb, cut off from the benefits of the wind, the rain and the sun that they languished during these fifteen years when I lost sight of them” (*). I had to understand, little by little and without ever thinking of telling myself before today, that it would be none other than me who would finally blow up these worm-eaten boards, holding living things made prisoner, not to rot in closed coffins, but to flourish in the open air. And these airs of false compunction and insidious derision around these padded and plethoric coffins (like the late deceased, without a doubt...), must also “end up awakening in me a fiber of combativeness which had somewhat subsided over the last ten years”, and “the desire to throw myself into the fray...” (**).

This is how, two years ago, what was first planned as a rapid prospecting, lasting a few days or a few weeks, of one of these “construction sites” left behind, has become a large mathematical serial in N volumes, fitting into the famous new series of “Reflections” (“mathematics”, while waiting to prune this useless qualifier). From the moment I knew that I was writing a mathematical work intended for publication, I also knew that I was going to attach, in addition to a “mathematical” introduction more or less in accordance with custom, yet another “introduction”, of a more personal nature. I felt that it was important for me to explain my “return”, which was in no way a return to an environment, but a “return” only to an intense mathematical investment and to the publication of mathematical texts of my pen, for an indefinite period. Also, I wanted to explain the spirit in which I now wrote mathematics, very different in certain respects from the spirit of my writings before my departure — the “logbook” spirit of a trip of discovery. Not to mention that there were other things on my mind, linked to these no doubt, but which I felt were even more essential. It was clear to me that I was going to take my time to say what I had to say. These things, still diffuse, were inseparable for me from the meaning that these volumes that I was about to write were going to have, and the “Reflections” in which they were going to be inserted. There was no question of slipping them in there on the sly, as if apologizing

(*) Quote taken from the note “The melody at the tomb — or sufficiency” (n° 167), page 826.

(**) See “The weight of a past” (section n° 50), in particular p. 137.

to abuse the precious time of a busy reader. If there were things in "A Pursuit of the Fields" of which it was good, for him and for everyone, for him to become acquainted, it was precisely those that I reserved myself from saying in this introduction. If twenty or thirty pages weren't enough, to say them, I would put forty, even fifty, it doesn't matter - not to mention that I wouldn't force anyone to read me...

This is how *Récoltes et Semailles* was born. I wrote the first pages of the introduction planned for June 1983, at a low point in the writing of the first volume of *La Poursuite des Champs*. Then I put it back in February last year, when my volume had been practically finished for several months (*). I expected that this introduction would be an opportunity to enlighten me on two or three things that remained a little vague in my mind. But I had no suspicion that it was going to be, much like the volume I had just written, a journey of discovery; a journey into a world even richer and of greater dimensions than the one I was about to explore, in the written volume and in those which were to follow. It was over the course of days, weeks and months, without really realizing what was happening, that this new journey continued, discovering a certain past (obstinately evaded for more than three decades. ..), and of myself and the links that connect me to this past; also discovering some of those who were close to me in the mathematical world, and whom I knew so little; and finally even, in the process and in addition, a journey of mathematical discovery, while for the first time in fifteen or twenty years (*), I took the leisure to return to some of the questions that I had left, burning, at the time of my departure. I can say, in short, that these are three journeys of discovery, intimately intertwined, that I pursue in the pages of *Récoltes et Semailles*. And none of the three is completed with the final point, on page twelve hundred and so. The echoes, already, that my testimony will collect (and even the echo through silence) will be part of the "continuation" of the journey. As for its "term", this journey surely

(*) In the meantime I had spent a good month thinking about the "structural surface" for a system of pseudo-lines, obtained in terms of the set of all possible "relative positions" of a pseudo-line relative to such a system. I also wrote "The Outline of a Program", which will be included in volume 3 of the *Reflections*.

(*) In the fifties and sixties, I had often repressed my desire to pursue such juicy and burning questions, absorbed as I was by endless fundamental tasks, which no one would have known or wanted to continue in my place, and that no one after my departure had the heart to continue either...

is one of those which is never brought to fruition - not even, if it happens, on the day of our dead...

And here I am finally back at the starting point: to tell you in advance, if possible, "what it is about" in *Récoltes et Semailles*. But it is also true that without even having looked for it, the previous pages have already told you more or less. It will be more interesting, perhaps, to continue my momentum and tell, rather than "announce".

June 1985

6. The dark side – or creation and contempt.

The previous pages were written during a short "down time" last month. In the meantime, I have finally finished putting the finishing touches to the "Four Operations" (the fourth part of *Récoltes et Semailles*) — all that remains is for me to finish this letter or "pre-letter" (which is also mine to take on prohibitive dimensions...) so that everything is finally ready for typing and duplication. I no longer believed it, almost a year and a half since I was "on the verge of finishing" these famous notes!

Getting to this "introduction" of a somewhat unusual nature for a mathematical work, in February last year (and already the year before, in June), there were (I think) three kinds of things especially on which I wanted to express myself.

First of all, I wanted to explain my intentions in returning to a mathematical activity, and the spirit in which I had written this first volume of "*À la Pursuit des Champs*" (which I had just declared finished), and also on the spirit in which I intended to continue an even broader journey of prospecting and mathematical discovery, with the "Reflections". It would no longer be a question for me, from now on, of presenting meticulous and meticulous foundations for some new mathematical universe in the making. They would rather be "logbooks", where the work would continue day by day, without hiding anything and as it really continues, with its failures and its screw-ups, its insistent flashbacks and also its sudden leaps. forward - a work pulled irresistibly forward day after day (and notwithstanding innumerable incidents and unforeseen events), as by an invisible thread - by some elusive, tenacious and sure vision. A work that is often groping, especially in these "sensitive moments" when some as yet nameless and faceless intuition emerges, barely perceptible; or at the start of some new journey, at the call and pursuit of some first ideas and intuitions, often elusive and reluctant to let themselves be caught in the meshes

of language, when it is precisely the appropriate language to grasp them delicately that is often still lacking. It is such a language, before anything else, that it is then a question of making it condense out of an apparent nothingness of impalpable mists. What is still only foreseen, before being only glimpsed and even less “seen” and touched with a finger, little by little settling from the imponderable, emerges from its mantle of shadow and mists to take shape and flesh and weight...

It is this part of the work, of poor appearance if not (many times) lame, which is also the most delicate and most essential part - the one where, truly, something new makes its appearance. , through the effect of intense attention, solicitude, respect for this fragile, infinitely delicate thing about to be born. It is the creative part above all - that of conception and a slow gestation in the warm darkness of the nourishing womb, from the invisible double original gamete, becoming shapeless embryo and transforming over the days and months, through obscure and intense work, invisible and without appearance, into a new being in flesh and blood.

This is also the “obscure” part, the “yin” or “feminine” part of the work of discovery. The complementary aspect, the “clarity”, or “yang” or “masculine” part, would be more akin to working with a hammer or a sledgehammer, on a well-sharpened chisel or on a wedge of good hardened steel. (Tools already ready to use, and with proven effectiveness...) Both aspects have their reason for being and their function, in inseparable symbiosis with each other - or to put it better, they are the wife and husband of the indissoluble couple of the two forces original cosmics, whose constantly renewed embrace constantly brings to the surface the obscure creative labors of conception, gestation and birth - of the birth of the child, of the new thing.

The second thing on which I felt the need to express myself, in my famous personal and “philosophical” “introduction” to a mathematical text, was precisely on the subject of the nature of creative work. I had already realized, for years, that this nature was generally ignored, obscured by all-around clichés and by repressions and ancestral fears. To what extent this is indeed so, I discovered only afterwards, gradually, over the days and months, all during the reflection and the “investigation” pursued in *Récoltes et Semailles*. It was from the “kick-off” of this reflection, during the few pages dated June 1983, that I was for the first time struck by the significance of this seemingly innocuous, yet astonishing, fact. as long as we

stops there somewhat: that this “creative part among all” which I have just spoken about in the work of discovery, does not appear practically anywhere in the texts or speeches which are supposed to present such work (or at least, its most tangible fruits); whether they are manuals and other didactic texts, or original articles and dissertations, or oral courses and seminar presentations, etc. There has been, for millennia it would seem, since the very origins of mathematics and other arts and sciences, a sort of “conspiracy of silence” around these “unspeakable labors” which prelude the blossoming of any new idea. -new, large or small, coming to renew our knowledge of a portion of this world, in perpetual creation, where we live.

To put it bluntly, it would seem that the repression of knowledge of this aspect or stage, the most crucial of all in any work of discovery (and in creative work in general), is so effective, so internalized by the very people who know such work first hand, that often one would swear that even they have eradicated all traces of it from their conscious memory. A bit like in an excessively puritanical society, a woman would have eradicated from her memory, in relation to each of these children whom she makes it her duty to blow and wipe, the moment of the embrace (accepted reluctantly).) which made him conceive, the long months of pregnancy (experienced as an inconvenience), and the long hours of childbirth (endured as a somewhat unpleasant ordeal, followed finally by deliverance).

This comparison may seem exaggerated, and perhaps it is, if I apply it to what I remember today of the spirit that I knew in the mathematical environment in which I myself left, still twenty years ago. But during my reflection in *Récoltes et Semailles* I was able to realize, and in a striking way especially in these very last months (with the writing of the “Quatre Operations”), that there has been since my departure from the mathematical scene an astonishing degradation in the spirit which today is law in the circles that I had known, and (it seems to me, to a large extent at least) in the mathematical world in general (*) . It is even possible, both by my very particular mathematical personality and by the conditions which surrounded my departure, that it acted as

(*) This degradation is by no means limited to the “mathematical world” alone. We also see it throughout scientific life, and even beyond it, in the contemporary world on a planetary scale. A beginning of observation and reflection in this direction is found in the note “The muscle and the guts” which opens the reflection on the yin and the yang (note n 106).

a catalyst in an evolution that was already taking place (**) — an evolution of which I was then unable to perceive anything (any more than any other of my colleagues and friends, with the sole exception perhaps of being by Claude Chevalley). The aspect of this degradation that I am thinking of here (which is just one aspect among many others (***)) is the tacit contempt, if not the unequivocal derision, against that which (in mathematics, in this case) does not resemble the pure work of the hammer on the anvil or on the chisel - the contempt for the most delicate (and often less apparent) creative processes; of everything that is inspiration, dream, vision (however powerful and fertile they may be), and even (at the limit) of any idea, however clearly conceived and formulated: of everything that is not written and published in black and white, in the form of pure and hard statements, cataloged and indexed, ripe for the “data banks” swallowed up in the inexhaustible memories of our megacomputers.

There has been (to use an expression from CL Siegel (*)) an extraordinary “flattening”, a “narrowing” of mathematical thought, stripped of an essential dimension, of all its “shadow side”. , from the “feminine” side. It is true that through an ancestral tradition, this side of the work of discovery remained to a large extent hidden, no one (might say) ever spoke about it - but the living contact with the deep sources of dreams, which nourish great visions and great designs, had never yet (to my knowledge) been lost. It would seem that from now on we have already entered a period of desiccation, where this source is, certainly not dried up, but where access to it is

(**) This is the development examined in the note cited in the previous note by b. from p. Links between this and the Burial (of my person and my work) emerge and are examined in the notes “The Funeral of Yin (yang buries yin (4))”, “The providential circumstance — or the ‘Apotheosis’, ‘Disavowal (1) - or recall’, ‘Disavowal (2) - or metamorphosis’ (nys 124 , 151, 152, 153). See also the more recent notes (in ReS IV) “Useless details” (n y 171(v), part (c) “Things that resemble nothing — or drying out”) and “The family album” (n y 173, part c. “He among all — or acquiescence”).

(***) The aspect which is most often at the center of attention in *Récoltes et Semailles*, and more particularly in the two “investigation” parts (RS II or “The dress of the Emperor of China” , and RS IV or “The Four Operations”), and the one also, perhaps, which “stunned” me the most, is the degradation of the ethics of the profession, expressed through pillaging, debinding and a shameless shenanigan, practiced among some of the most prestigious and brilliant mathematicians of the moment, and this (to a very large extent) in full view of everyone. For certain other more delicate aspects, and directly linked to this one, I refer to the note already cited (n y 173 part c.) “Things which resemble nothing - or drying out”.

(*) This expression is cited and commented on in the note which has just been cited in the previous note by b. from p.

condemned, by the final verdict of general contempt and by the reprisals of derision.

We are approaching the moment, it seems, when everyone will be eradicated not only the memory of all work close to the source, of “feminine” work (ridiculed as “slimy”, “soft”, “insubstantial” — or at the opposite end as “trivialities”, “childishness”, “bombinage”...), but where this very work and its fruits will also be extirpated: that where new notions and visions are conceived, developed and born. It will also be the time when the exercise of our art will be reduced to dry and vain exhibitions of cerebral “weights and dumbbells”, to the overbidding of prowess to “crack” the problems in the competition (“of proverbial difficulty”) — the era of a feverish and sterile “supermacho” hypertrophy, following more than three centuries of creative renewal.

7. Respect and fortitude.

But again I digress, anticipating what reflection has taught me. I started from a double intention, clearly present in me even before the beginnings of this one: the intention of a “declaration of intentions”, and (intimately linked to this one, as it has just been appear) that of expressing myself about the nature of creative work. There was, however, a third point still, less clearly present at the conscious level, but responding to a deeper and more essential need. It was aroused by these sometimes disconcerting “questions”, reaching me from my past as a mathematician through the voices of those who had been my students or my friends (or at least, a good number of them). At the epidermal level, this need translated into a desire to “empty my bag”, to tell some “unpleasant truths”. But more deeply, surely, there was the need to finally get to know a certain past, which until then I had chosen to avoid. It is from this need, above all, that *Récoltes et Semailles* was born. This long reflection was my “response”, day by day, to this impulse for knowledge in me, and to the constantly renewed questioning which came to me from the outside world, from the “mathematical world” which I had left without mind. back. Aside from the very first pages of “Fatuity and Renewal”, those which form the first two chapters (“Work and discovery” and “The dream and the Dreamer”), and from the chapter which follows “Birth of fear” (p. 18), with a “testimony” which was in no way planned in the program, it is this need to get to know my past and to fully assume it, which (I believe) was the main force at work in the writing of *Récoltes et Semailles*.

The question that came to me from the world of mathematicians, and which returned to me with new force throughout *Récoltes et Semailles* (and above all, during the “investigation” continued in parts II and IV), had immediately taken on the mask of self-importance, when it was not that of disdain (“delicately measured”), derision or contempt, whether towards me (sometimes) or (especially) towards those who had dared to take inspiration from me (without suspecting, of course, what awaited them) and who were “classified” as having a party linked to me, by some tacit and implacable decree. And once again I see the “obvious” and “deep” link appearing here, between respect (or lack of respect) for the person of others; that for the act of creation and for some of its most delicate and essential fruits; and finally respect for the most obvious rules of scientific ethics: those which are rooted in an elementary respect for oneself and others and which I would be tempted to call the “rules of decency” in the exercise of our art. These are all aspects, surely, of an elementary and essential “self-respect”. If I try, in a single concise formula, to take stock of what *Récoltes et Semailles* taught me about a certain world that was mine, a world with which I had identified for more than twenty years of my life, I would say: it is a world that has lost respect (*).

This was something already strongly felt, if not formulated, in the years which had preceded. It has only been confirmed and clarified, always in an unforeseen and sometimes astonishing way, throughout the course of *Récoltes et Semailles*. It is clearly apparent from the moment when a reflection of a “philosophical” and general nature suddenly becomes a personal testimony (in the section “The Welcome Stranger” (n^o 9, p. 18) opening the chapter already cited “Birth of fear”).

This perception, however, does not appear in the tone of acerbic or bitter recrimination, but (by the internal logic of the writing and by the different attitude that it arouses) in that of a question: what was my own part in this degradation, in this loss of respect that I see today? This is the main question which runs through and carries this first part of *Récoltes et Semailles*, until the moment when it is finally resolved-

(*) Here again, this is a formulation which does not only apply to a certain limited environment, where I had ample opportunity to see the thing up close, but it seems to me to summarize a certain degradation on the whole of the contemporary world. (Compare with the note by b. de p. (*) page L 19.) In the more limited framework of the results of an “investigation” continued in *Récoltes et Semailles*, this formulation appears in the note of April 2, “Respect” (n^o 179).

into a clear and unequivocal statement (**). Previously, this degradation had appeared to me as “falling from the sky” suddenly, inexplicably and all the more outrageous, intolerable. During reflection, I discovered that it had continued insidiously, without anyone detecting it around him or in himself, throughout the fifties and sixties, including in my own person.

The observation of this humble fact, surely very obvious and without appearance, marks a first crucial turning point in the testimony, and an immediate qualitative change (***). This was the first essential thing I had to learn, about my past as a mathematician and about myself. This knowledge of a share of responsibility that fell to me in the general degradation (more or less acute knowledge depending on the moments of reflection) remained as a background note and as a reminder, throughout *Récoltes et Semailles*. This was especially the case at times when my reflection took on the appearance of an investigation into the disgraces and inequities of an era. Together with the desire to understand, with curiosity therefore which animates and carries forward all true work of discovery, it is this humble knowledge (many times forgotten along the way and resurfacing despite everything, where we expected it the most). less...) which preserved my testimony from ever veering (I believe) into sterile recrimination about the ingratitude of the world, or even into “settling of scores” with some of those who had been my students or friends (or the two).

This absence of complacency towards myself has also given me this inner calm, or this fortitude, which has preserved me from the traps of complacency towards others, or would not be -those of a false “discretion”. Everything I thought I had to say, at one moment or another during the reflection, whether about myself, or about one of my colleagues, ex-students or friends, or about an environment, or about an era, I said it, without ever having to overcome my reluctance. For these, it was enough each time I examined them carefully for them to disappear without leaving a trace.

8. “My loved ones” – or connivance.

It is not my purpose in this letter to review all the “strong moments” (or all the “sensitive moments”) in the writing of *Récoltes et Semailles*, or in such of

(**) In the sections “Sporting mathematics” and “No more merry-go-round” (nos. 40 , 41).

(***) From the next day, the testimony deepens into a meditation on myself, and keeps this particular quality in the weeks that follow, until the end of this “first breath” of *Récoltes et Semailles* (with the section “The weight of a past”, n ° 50).

its steps (*). Suffice it for me to say that there have been, in this work, four clearly marked major stages or four “breaths” — like the breaths of a breath, or like the successive waves in a train of waves emerging, I cannot say how, of these vast mute, immobile and moving masses, without limits and without name, of an unknown and bottomless sea which is “me”, or rather, of a sea infinitely larger and deeper than this “me” that she carries and nourishes. These “breaths” or these “waves” materialized in the four parts of *Récoltes et Semailles* written now. Each wave came without me calling for it or even foreseeing it, and at no time could I have known where it would take me or when it would end. And when it had ended and a new wave had already taken its continuation, for a while longer I still believed myself to be at the end of a momentum (which would also be, at the end of the ends, the end of *Récoltes et Semailles* !), even though I was already lifted and carried towards another breath of the same vast movement. It is only with hindsight that this appears clearly and that a structure is unequivocally revealed in what had been experienced as an act and as a movement.

And surely, this movement did not end with my final point (all provisional!) to *Récoltes et Semailles*, and will not end either with the final point to this letter to you, which is one of the “times” of this movement. And it was not born on a day in June 1983, or February 1984, when I sat down at my typewriter to write (or retake) a certain introduction to a certain mathematical work. He was born (or rather, he was reborn...) nine years ago, on a certain day that I still remember (while so many things from my distant or near past have sunk...) , the day meditation appeared in my life...

But once again I digress, letting myself be carried away (and carried away...) by the images and associations born of the moment, instead of wisely sticking to the thread of a “proposal”, of the expected. My intention today was to continue with the story, however succinct it may be, of the “discovery of the Burial” last April, at a time when for two weeks I thought I had finished *Récoltes et Semailles* — how discoveries cascaded down upon me, in the space of barely three or four weeks, one bigger and more unbelievable than the other — so big and so crazy that for months to come, I have

(*) You will find a short retrospective review of all of the first three parts of *Récoltes et Semailles*, in the two groups of notes “Les fruits du soir” (n^os 179–182) and “Discovery of a past” (n^os 183–186).

had the greatest difficulty “to believe the testimony of my healthy faculties”, to free myself from an insidious disbelief in the face of the evidence (*). This secret and tenacious disbelief only ended up dissipating last October (six months after the discovery of “the Burial in all its splendor”), following the visit to my home of my friend and ex-student (occult, it is true) Pierre Deligne (**). For the first time, I saw myself confronted with the Burial no longer through texts, speaking to me (in certainly eloquent terms!) of the debinding, the pillaging and the massacre of a work, and the burial (in the person of the absent master) of a certain style and a certain approach to mathematics - but this time in a direct and tangible way, under familiar features and in a well-known voice, with affable and ingenuous intonations. The Funeral was there before me at last, “in the flesh”, under these busy and innocuous features which I now recognized well, but which for the first time I looked at with new eyes, with new attention. Here then unfolds before me the one who, during my reflection of the preceding months, had revealed himself as the Grand Officiant at my solemn Funeral, as the “Priest in chasuble” at the same time as the main artisan and the main “beneficiary” of an unprecedented “operation”, hidden heir of a work delivered to derision and pillage...

This meeting takes place at the beginning of the “third wave” in *Récoltes et Semailles*, when I had just engaged in the long meditation on yin and yang, in pursuit of an elusive and tenacious association of ideas. At the time, this short episode leaves only the trace of an echo of a few lines, in passing. However, it marks an important moment, the fruits of which will only clearly appear months later.

There was a second such moment of confrontation at “The Burial in the Flesh.” It was barely ten days ago, and came to relaunch once again, “at the last minute”, an investigation which was constantly starting up again and again. This time, it was a simple phone call to Jean-Pierre Serre (*). This “off-the-cuff” conversation confirmed in a striking way and even beyond all expectations, what (barely a few days before) I had just explained to myself at length (**), and almost reluctantly, at the subject of the role played by

(*) I try to express this difficulty, through the tale “The dress of the Emperor of China”, in the note of the same name (n 77), and return to it again in the note “The duty accomplished — or the moment of truth” (n 163).

(**) I give the account of this visit in the note that I have just cited (in the previous note by b. de p.).

(*) This conversation is the subject of part e. (“The Burial — or the natural slope”) from the note “The family album” (n 173).

(**) In part c. — (“He among all — or acquiescence”) of the same note (n 173).

Hold in my Burial and on a “secret acquiescence” in him to what was happening “right under his nose”, without him pretending to see or feel anything.

Here again, as expected, the conversation was all that was “cool” and friendly, and obviously these friendly dispositions in Serre towards me were also all that was sincere and genuine. However, this time I was able to truly see, or “touch” I would like to write, this “acquiescence” that I had just ended up admitting to myself; “secret” no doubt (as I had written previously) but above all eager, as I was then able to see without any possibility of doubt. An eager and unreserved acquiescence, so that what must be buried is buried, and so that, wherever it proves desirable and whatever the means, a real paternity (which Serre knows first hand) and undesirable, is replaced by an artificial and welcome paternity...(**) This was a striking confirmation of an intuition that had already appeared a year earlier, when I wrote (*):

“Seen in this light (**), the principal officer Deligne no longer appears as the one who would have shaped a fashion in the image of the deep forces which determine his own life and his actions, but rather as the all-designated instrument (of by his role as “legitimate heir” (***)) of a collective desire for flawless coherence, committed to the impossible task of erasing both my name and my personal style from contemporary mathematics. ”

If Deligne appeared to me then as the ideal “instrument” (at the same time as the first and main “beneficiary”) of a “collective desire for flawless coherence”, Serre now appears to me as the incarnation of this same collective will, and as the guarantor of its unreserved acquiescence; an acquiescence in all the shenanigans and

(***) This is, more or less, a quotation from the note “The Gravedigger — or the entire Congregation” (n^o 97, page 417).

(*) This quote is taken from the same note (see previous b. de p. note), on the same page 417.

(**) “In the light” of this deliberate statement, which had just been discussed, to eliminate “authorities” at all costs undesirable” (or even “intolerable”, to use the expression used in the cited note).

(***) This role of “heir” of Deligne is a role that is both occult (while not a published line from Deligne can make one suspect that he could have learned something from me), and at the same time clearly felt and accepted by all. This is one of the typical aspects of Deligne's double-dealing and his particular “style”, that he knew how to play with mastery on this ambiguity, and cash in on the advantages of this tacit role of heir, while disavowing the late master and taking charge of large-scale burial operations.

countless scams and even vast “operations” of collective mystification and shameless appropriation, as long as these contribute to this “impossible task” with regard to my modest and deceased person, or with respect to of such another (****) who dared to claim to be mine and appear, against all odds, as a “continuer of Grothendieck”.

It is one of the paradoxical and disconcerting aspects, among many others in the Burial, that it is the work above all, if not exclusively, of those who had been my friends or my students, in a world where I had never known any enemies. It is for this reason above all, I believe, that *Récoltes et Semailles* concerns you more than any other, and that this letter that I am writing to you is intended to be a challenge in its turn.

Because if you are a mathematician, and if you are one of those who were my students, or who were my friends, you are undoubtedly no stranger to the Burial, whether by actions or by connivance, and would not what by your silence towards me, about something that is happening in front of your doorstep. And if (extraordinarily) you accept my humble words and the testimony they bear to you, rather than remaining locked behind your closed doors and sending away these unwelcome messengers, you will then learn, perhaps, that what has been buried by everyone and with your participation (active, or by tacit acquiescence), it is not only the work of another, fruit and living testimony of my love with mathematics; but that at a level even more secret than this burial (which never says its name...) and deeper, it is a living and essential part of your own being, of your original power to know, to love and to create, which it pleased you to bury by your own hands in the person of another.

Among all my students, Deligne had occupied a very special place, on which I dwell at length during the reflection (*). He was, by far, the “closest”, also the only one (student or not) to have intimately assimilated and made his own (**) a vast vision which was

(****) I am thinking here of Zoghman Mebkhout, mentioned for the first time in the Introduction, 6 (“The Burial”), then in the note “My orphans” (n^o 46), and in the notes (written later, after the discovery of the Burial) “Failure of a teaching (2) - or creation and conceit” and “A feeling of injustice and impotence” (n^os 44, 44). I discover the iniquitous operation of shirking and appropriation of Mebkhout's pioneering work, through the eleven notes forming Procession VII of the Burial, “The Col-loque — or bundles of Mebkhout and Perversity” (n^os 75–80). A more detailed investigation and account of this (fourth and final) “operation” forms the most extensive part of the investigation “The Four Operations”, under the obvious name “The Apotheosis” (notes n^os 171(i) to 1714).

(*) See especially, on this subject, the group of seventeen notes “My friend Pierre” (n^os 60–71) in RS II.

born and had grown in me long before we met. And among all my friends sharing with me a common passion for mathematics, it was Serre, who had at the same time appeared a bit of an elder, who was the closest (and by far, too), as the one (notably) who for a decade had played in my work a unique role of “detonator” for some of my major investments, and for most of the major ideas which inspired my mathematical thinking during the fifties and sixties, until the time of my departure. This very special relationship that both of them had with me is certainly not without links, of course, with the exceptional means of both, which ensured them an equally exceptional influence over mathematicians. of their generation, and those that followed. Apart from these common points, the temperaments and mannerisms of Serre and Deligne seem to me to be as dissimilar as possible, the polar opposites of each other in many respects.

In any case, if there have been mathematicians who, in one way or another, have been “close” to my person and my work (and, what is more, known as such), it is indeed Serre and Deligne: one, an elder and a source of inspiration in my work during a crucial period of gestation of a vision; the other, the most gifted of my students, for whom I was in my turn (and remained, Funeral or not...) his main (and secret...) source of inspiration (*). If a Funeral was set in motion the day after my departure (becoming a “death” in due form), and materialized in an endless procession of large and small “operations” serving the same end , this could only be done with the combined and closely supportive cooperation of both, the ex-elder and the ex-pupil (see, ex-“disciple”): one taking the discreet and effective direction of operations, while sounding the rallying of some of my students (**), in search of the massacre of the Father (under the grotesque and derisory effigy of a plethoric and bombinant Supernana); and the other giving a “green light”

(**) This “vast vision”, which Deligne had indeed “intimately assimilated and made his own”, had exercised a powerful fascination on him, and continues to fascinate him in spite of himself, while an imperious force pushes him at the same time. time to destroy it, to shatter its land unity and to seize the scattered pieces. Thus, his occult antagonism towards a disowned and “defunct” master is the expression of a division in his being, which profoundly marked his work after my departure - work which remained very far below the quite prodigious means that I had known about him.

(*) See the previous note by b on this subject. from p.

(**) These are, exactly, the five other students who chose their main theme (just like Deligne) that of the cohomology of varieties.

without reservation, unconditional and unlimited in the pursuit of the (four) operations (of clearing, carnage, dismemberment and sharing of an inexhaustible remains...).

9. Counting.

As I already hinted earlier, I had to overcome considerable internal resistance, or rather make them subside through patient, meticulous and tenacious work, to succeed in separating myself from certain familiar, solidly based images. , of considerable inertia, which for decades had taken for me (as for everyone, and for you too, surely) the place of a direct and nuanced perception of reality - in this case, of that of a certain mathematical world, to which I continue to be linked by a past and by a work. One of the most strongly anchored of these images, or ready-made ideas, is that it seems impossible from the outset that a scientist of international notoriety, or even a man who is considered a great mathematician, could afford to pay (were it not -only as an exception, and even less as a dear habit...) small or large scams; or if he refrains (again from old habit) from dipping his hand in it himself, that he can nevertheless welcome with open arms such operations (defying all sense of decency, at times) mounted by another, and where, for one reason or another, he finds his account. At only two months old, this inertia of the mind was such in me that it was at the end of a long reflection which had already continued for an entire year, that I ended up having a glimpse timidly something to do with this Burial - something which now that Serre perhaps also had seems obvious to me, even independently of the eloquent conversation I had with him recently. As with all members of the "Bourbaki milieu" who had welcomed me with kindness when I started, and particularly in his case, for me there was a sort of tacit "taboo" around his person. He represented the very incarnation of a certain "elegance" — an elegance which is in no way limited to form, but which also includes rigor, scrupulous probity.

Before I discovered the Funeral, on April 19 last year, the idea would not have occurred to me, even in a dream, that one of those who had been my students was capable of dishonesty in the exercise of his profession, whether towards me or anyone else; and it was for the most brilliant of them, the one who had been closest to me, that such a supposition would have seemed the most aberrant! However, from the moment I left and throughout the years that followed and until today, I had had ample opportunity

sion to realize to what extent his relationship with me was divided. More than once, too, I saw him use (for the sole pleasure, one might say) the power to discourage and humiliate, when the opportunity was propitious. Each time I was deeply affected by it (more, probably, than I would have liked to admit...). These were quite eloquent signs of a profound disorder, which (I also had ample opportunity to observe) was in no way limited to his person alone, even in the most limited circle of those who had been my students. Such a disorder, through the loss of respect for the person of others, is no less flagrant and less profound than that which manifests itself through what is called “professional dishonesty”. However, the discovery of such dishonesty came as a complete surprise and shock to me.

In the weeks which followed this breathtaking revelation, followed by a whole series of others of the same nature, I gradually realized that a certain shenanigan, among some of my students (*), had already started in the years before my departure. This was particularly obvious, precisely, among the most brilliant of them – the one, after my departure, who set the tone and (as I wrote earlier) “took the discreet and effective direction of operations”. With the hindsight of almost twenty years, this shenanigan now seems obvious to me, it was “obvious”. If I then chose to turn a blind eye to what was happening, all in pursuit of the “white whale” in a world “where everything is order and beauty” (as I liked to say). imagine), I see today that I did not know how to assume the responsibility that fell to me, towards students learning from me a profession that I love; a profession which is something other than simple know-how, or the development of a certain “flair”, through complacency towards brilliant students, which I liked (by tacit decree) to treat as “beings apart” and above all suspicion, I then contributed my part (**) to the emergence of the corruption (unprecedented, it seems to me) that I see display today in a world and among beings who had been dear to me.

(*) See the previous note by b. from p.

(**) This “contribution” appears in particular in the note “Being apart” (n ̃ 67), as well as in the two notes “The ascension” and “The ambiguity” (n ̃ , 63), and again (in a slightly different light) at the end of s 63 the note “The eviction” (n ̃ 1691). Another type of “contribution” appears in “Fatuity and Renewal”, with attitudes of fatuity towards less brilliantly gifted young mathematicians. This awareness of a share of responsibility in a general degradation culminates in the section “Sporting mathematics” (n ̃ 40).

Certainly, given their immense inertia, it took intense and sustained work to separate myself from what we are accustomed to calling “illusions” (not without some tone of regret...), and which I would rather call ready-made ideas; on myself, on an environment with which I had previously identified, on people I loved and who perhaps I still love — “separate” myself from these ideas, or rather, let them detach from me. It was work, yes, but never a struggle — work that brought me, among many other valuable things, moments of sadness sometimes, but never a moment of regret or bitterness. Bitterness is one of the means of evading knowledge, of evading the message of an experience; to maintain a certain tenacious illusion about oneself, at the cost of another “illusion” (negative, as it were) about the world and others.

It is without bitterness and without regret that I see these ready-made ideas which had been “dear” to me, out of old habit and because they were by there “always”. They had certainly become second nature. But this “second nature” is not “me”. To separate myself piece by piece is not a heartbreak or even a frustration, for someone who would see himself stripped of things that are valuable to him. The “emptying” of which I speak comes as the reward and the fruit of work. Its sign is immediate and beneficial relief, a welcome liberation.

10. Four waves in one movement.

As expected, this letter is not at all what I had planned when I started so much. I was especially thinking of giving a little “topo” on the Funeral: this is what happened in broad terms, you will believe me or not (I had difficulty believing it myself...), but that's it nonetheless, unmistakable, even, whether you like it or not, black and white publications such periodical or such book, such date such page, all you have to do is look - besides everything is unscrewed by the menu in Harvests and Sowing; see “[Four Operations](#)” such notes — take it or leave it! And if you prefer to refrain from reading me, others will take care of it for you...

In the end there was none of that - and yet this letter is already at thirty pages, whereas I expected five or six in all. Without even doing it on purpose, these are the essential things that I was led to tell you, over the pages, while this “bag” that I had been so impatient to empty (there clearly for suddenly, on the first pages!), it is still not unpacked! It doesn't even tickle my fingers anymore, the desire

dissipated along the way. I understood that this was not the place...

In fact, part IV of Harvests and Seedlings (and the longest of all), called “The Burial (3)” or “The Four Operations”, comes from a “note” initially intended as “a little topo” precisely, to summarize in broad terms what the surprise (and sudden) investigation revealed to me last year, continued in part II (“The Burial (1)”, or “The dress of the Emperor of China”). I thought there would be enough for a “note” of five or ten pages, no more. Finally, one thing led to another, and this made the investigation start again, there were almost four hundred pages - almost double the part of which I was supposed to summarize or draw conclusions! So the little topo in question is still missing, even though the six hundred pages of *Récoltes et Semailles* are devoted to the investigation into the Burial. It's a bit silly, it's true. But there will always be time to add it in a third part to the Introduction (which is no longer ten or twenty pages in), before entrusting my notes to a printer.

The five parts of *Récoltes et Semailles* (the last of which is not yet finished, and will probably not be for a few months) represent an alternation of (three) waves-“meditation” and (two) waves-“investigation”. There is a sort of reflection, in short, of my life over the last nine years, which has also consisted of an alternation of “waves” arising from the two passions which today dominate my life, the passion for meditation and mathematical passion. And to tell the truth, the two parts (or “waves”) of *Récoltes et Semailles* which I have just described with the cookie-cutter name “investigation”, are precisely those which emerged directly from my roots in my past as a mathematician, driven by the mathematical passion in me and by the egoic attachments that are rooted in it.

The first wave, “Fatuity and Renewal”, is a first encounter with my past as a mathematician, leading to a meditation on my present, the roots of which I have just discovered in this past. Without this having been in the least premeditated, of course, this part sets the “basic tone” for the entire rest of *Récoltes et Semailles*, it is like an interior preparation, providential and essential, to assume the discovery of “the Burial in all its splendor” which follows closely, during the second wave, “The Burial (1) — or the robe of the Emperor of China”. More than an “investigation”, in fact, this is the story of this day-to-day discovery, of its impact on my being, of my efforts to face what was falling on me without shouting be careful, to be able to situate the incredible in terms of my experience, of what ended up becoming familiar to me, the

dre intelligible as best he can. This movement leads to a first provisional outcome, in the note “The Gravedigger — or the entire Congregation” (n° 97), the first attempt to discern an explanation and a meaning in something which, for years already and now in a way more acute than ever, took on the appearance of a formidable challenge to common sense!

This same second movement also leads to an “illness episode” (*), forcing me to absolute rest and putting an end to all intellectual activity for more than three months. It was at a time when I thought I was once again on the verge of having completed Harvest and Sowing (except for the last “stewardship” tasks...). By resuming normal activity, towards the end of September last year, and preparing to finally put the finishing touches to my notes that remained in distress, I still believed that I had enough for two or three final notes to add, including one at the subject of the “health incident” I had just gone through. In fact, from week to week and from month to month, a thousand more pages have come — more than double what was already written — and this time, it is very clear that I still have not finished (*). In fact, this long interruption, during which I had practically lost contact with a substance which was all that was hot (and even burning!) at the moment of leaving it, practically forced me to return to this substance with new eyes, if I did not want to limit myself to stupidly “completing” the final end of a “program” with which I had lost living contact.

This is how the third wave was born in the vast movement that is Récoltes et Se-mailles — a long “wave-meditation” on the theme of yin and yang, the “shadow” and “light” sides in the dynamic things and in human existence. Coming from the desire for a more in-depth understanding of the profound forces at work in the Burial, this meditation nevertheless acquires from the beginning its own autonomy and unity, and immediately moves towards what is the most universal, as also towards what is most intimately personal. It is during this meditation that I discover this thing (obvious in fact, if one asks the question), that in my spontaneous approach to the discovery of things, whether in mathematics or elsewhere, the “basic tone” is “yin”, “feminine”; and also

(*) This episode is the subject of two notes “The incident — or the body and the mind” and “The trap — or ease and exhaustion” (n° s 98, 99), opening “Cortège XI” named “The deceased (still not deceased)”.

(*) “Still not finished” — if only because there is still a part V to come, which is not finished at the time of writing these lines.

and above all, that contrary to what happens most often, I have remained faithful to this original nature in me (**), without ever changing or correcting it to conform to the dominant values in honor in the surrounding environments. This discovery appears to me at first as a simple curiosity. It is only little by little that it reveals itself as an essential key to an understanding of the Burial. Moreover - and this is something which seems to me of even greater significance - I now see very clearly and without the slightest doubt this: that if, with in no way exceptional intellectual gifts, I was nonetheless able to constantly give my full measure in my mathematical work, and to produce a work and give birth to a vast, powerful and fruitful vision, it is to nothing other than this fidelity that I owe it, to this absence of any concern for myself. conform to standards, thanks to which I abandon myself with total confidence to the original knowledge drive, without pruning it or amputating anything that makes it strong and fine and undivided.

However, it is not creativity and its sources that are at the center of attention in this meditation “The Burial (2) — or the Key to Yin and Yang”, but rather “the conflict”, the state of blocking creativity, or dispersion of creative energy through the confrontation, in the psyche, of antagonistic forces (most often occult). The aspects of violence, of (apparently) “gratuitous” violence, “for pleasure”, had disconcerted me more than once in the Funeral, and brought to the surface a host of similar real-life situations. The experience of this violence was in my life like “the hard, irreducible core of the experience of conflict”. Never before had I confronted the formidable mystery of the very existence and universality of this violence in human existence in general, and in mine in particular. It is this mystery that is the center of attention throughout the second half (the “yin” or “decline” side) of the meditation on yin and yang.

It is during this part of the meditation that a deeper vision of the meaning of the Burial, and of the forces expressed there, gradually emerges. It is also the part of Récoltes et Semailles which was the most fruitful, it seems to me, in terms of knowledge of

(**) This “fidelity to my original nature” was by no means total. For a long time, it was limited to my mathematical work, while everywhere else and particularly in my relationships with others, I followed the general movement by valuing and giving primacy to the traits in me felt to be “manly”, and by repressing the traits “feminine”. This is discussed in some detail in the group of notes “Story of a Life: A Cycle in Three Movements” (n° 107–110), which practically opens the Key to Yin and Yang.

myself, by putting me in contact with neuralgic questions and situations, and by making me feel precisely this “neuralgic” character, which until last year had remained evaded.

Once at the end of this interminable “digression” on yin and yang, I was still left, more or less, with my “two or three notes” still to write (plus one or two others, at most, one of which already had its obvious name “The four operations”...), to have finished with *Récoltes et Semailles*. We know the rest: these “few last notes” ended up making up the longest part of *Harvests and Seedlings*, at almost five hundred pages. This is therefore the “fourth wave” of the movement. It is also the third and last part of the *Burial*, and I gave it the name “The Four Operations”, which is also that of the group of notes (“The four operations (on a remains)”) which constitutes the heart of this fourth breath of reflection. This is, in *Récoltes et Semailles*, the “investigation” part in the strictest sense of the term – with this grain of salt, however, that this investigation is not limited to the pure “technical” aspect, to the “detective” in short, but that reflection is driven above all, as everywhere else in *Récoltes et Semailles*, by the desire to know and understand. The tone is certainly more “muscular” than in the first part of the *Funeral*, where I was still, a little, rubbing my eyes and wondering if I was dreaming or what! This does not prevent the fact that the facts brought to light throughout the pages often come at the right time, to illustrate on the spot many things which had only been touched upon in passing here or there, without being embodied in precise and striking examples. It is in this part also that the mathematical digressions take an important place, stimulated by a renewed contact (by the necessities of the investigation) with a substance that for fifteen years I had lost sight of. There are also, at the other end of the spectrum, live accounts of the misadventures of my friend Zoghman Mebkhout (to whom this part is dedicated), at the hands of a high-flying and unscrupulous “mafia”. , which he had in no way dreamed of when embarking on the subject (admittedly fascinating, and seemingly innocuous) of the cohomology of varieties of all kinds. For a succinct common thread through the intricate maze of notes, sub-notes, sub-sub-notes... of this entire “investigation” part, I refer you to the table of contents (notes 167 to 1767), and to the first of the notes in the packet, “The detective — or the investigation”. I point out, however, that this note, dated April 22, was then a little “overtaken by events”, since, through twists and turns, this investigation which I then believed was (practically) completed, continued gradually. for two more months.

This fourth wind lasted for more than four months in a row, from mid-February until the end of June. It is in this part of the reflection above all, through meticulous and obstinate “work on pieces”, that a concrete, tangible contact with the reality of the Burial is established little by little over the days and pages. ; that I manage to “familiarize” myself with him, in short, somewhat, notwithstanding the visceral reactions of refusal that he had aroused (and which he continues to arouse) in me, obstructing a real acquaintance . This long reflection begins with a retrospective on Deligne's visit (which has already been discussed in this letter), and it ends with the “last minute” reflection on my relationship with Serre and on the role of Serre in the Burial (*). It was to have tacitly put Serre “out of the question”, in favor of this “taboo” of which I have already spoken, which now seems to me the most serious lacuna which remained in my understanding of the 'Funeral, until last month - and it is this “last minute” reflection which suddenly appears to me as the most important thing that this “fourth wind” of Récoltés et Semailles has brought me, for a less tenuous, more fleshed-out apprehension of the Funeral and the forces expressed there.

11. Movement and structure.

I think I have finished going over the most important things that I wanted to tell you about Harvests and Seeds, to let you already know “what it is about”, surely, I am sure. have said more than enough to allow you to judge whether you consider that the letter of (more than) a thousand pages which must follow “concerns you”, or not - and consequently, whether or not you are going to continue your reading. In case it is “yes”, it seems useful to me to attach a few more explanations (of a practical nature, in particular) about the form of Harvests and Sowing.

This form is the reflection and expression of a certain spirit, which I tried to “transmit”

(*) In parts c., of the note “The family album” (n^o 173), the last of which is dated June 18 (exactly ten days ago). There is a single note or portion of a note whose date is later (namely, “five theses for a massacre - or filial piety”, dated the following day, June 19). You will note that in this 1767, fourth of Récoltes et Semailles, or “investigation part”, unlike what happens for the others, the notes often follow each other in a logical rather than chronological order. Thus, the last two notes of the Funeral (forming the final “De Profundis”) are dated April 7, two and a half months before the note I have just cited. I still point out that apart from the “investigation” part proper of the Burial (3) (notes n^os 167 – 1767), forming the “fifth phase” of the Funeral ceremony (including the Key of Yin and Yang is the second), the notes follow each other in the order in which they were written, with rare exceptions.

in the preceding pages. Compared to my past publications, if there is a new quality that appears in *Récoltes et Semailles*, and also in “*À la Pursuit des Champs*” from which it comes, it is undoubtedly spontaneity. Certainly, there are common threads, and major questions, which give coherence and unity to the entire reflection.

However, this continues day by day, without a pre-established “program” or “plan”, without there ever being a question of determining in advance “what had to be demonstrated”. My purpose is not to demonstrate, but rather to discover, to penetrate further into an unknown substance, to condense what is still only anticipated, suspected, glimpsed. I can say, without any exaggeration really, that in this work, there is not a single day nor a single night of reflection that took place in the field of the “expected”, in terms of the ideas, images, associations that were present at the moment when I sat down in front of the blank sheet, to stubbornly pursue a stubborn “thread”, or to pick up another one which had just appeared. Each time, what appears in the reflection is other than what I would have been able to predict, if I had ventured to try to describe in advance as best I could what I believed I saw before me. Most often, reflection takes paths that were entirely unforeseen at the start, leading to new landscapes, just as unforeseen. But even if she sticks to a more or less planned itinerary, what the journey reveals to me over the hours differs as much from the image I had when I set out, as does a real landscape. , with its play of cool shadow and warm light, its delicate and changing perspective according to the hiker's steps, and these innumerable sounds and these nameless perfumes carried by a breeze which makes the grasses dance and the forests sing... — that such a living, elusive landscape differs from a postcard, however beautiful and successful, however “right” it may be.

It is the reflection continued in one go, over the course of a day or a night, which constitutes the undivided unity, the living and individual cell in a way, in the whole of reflection (*Récoltes and Seeds*, in this case). This is to each of these units (or these “notes” (*), forming melody...) what the body of a living organism is to each of its

(*) Originally, when writing *Fatuity and Renewal*, the name “note” was for me synonymous with “annotation”, playing the role of a basic page note. For reasons of typographical convenience, I preferred to reject these annotations at the end of the text (notes 1 to 44, pages 141 and 171). One of the reasons for doing this was that some of these “notes” or “annotations” extend over one or more pages, and become longer even than the text they are supposed to comment on. As for the undivided “units” of the “first draft” of the reflection, for lack of a better name I then called them “sections” (less daunting than “paragraphs”!).

This situation, and the structure of the text, changes with the next part, which was initially called

individual cells, of infinite diversity, each filling a place and a function that belongs only to it.

Sometimes, however, in the same reflection continued in one go, we subsequently perceive important caesuras, which distinguish several such units or messages, each of which then receives its own name and thereby acquires an identity and a professional autonomy. -close. At other times, however, a reflection which had been cut short for one reason or another (most often fortuitous), is spontaneously continued the next day or two days later; or a reflection continued over two or more consecutive days nevertheless appears, in retrospect, as if it had continued in one go; it would seem that only the need for sleep obliged us, reluctantly, to include something

"The Burial", and which became "The Burial (1)" (or "The Dress of the Emperor of China"). This reflection led to the double-note "My orphans" and "Refusal of an inheritance — or the price of a contradiction" (notes n^os 46, 47, pages 177, 192), coming as an annotation to the final "section" of *Récoltes et Semailles* (or rather, of what was to be its part I, or Fatuity and Renewal), "The weight of a past" (n^o 50, p. 131). Subsequently, other annotations were added to this same section (notes n^os 44 and 50), and other notes still coming as annotations to "My orphans", which in turn gave birth to new annotating notes; without counting, this time, real footnotes, when the planned annotations were (and remained, once put in black and white) of modest dimensions. Thus, theoretically, this whole part of *Récoltes et Semailles* (which was then supposed to constitute the second and final part) appeared as a set of "notes" to the "section" "Weight of a past". Through the acquired inertia, this subdivision into "notes" (instead of "sections") was still maintained in the three following parts, where I use jointly, as a means of annotation for a "first draft" of the reflection, both the footnote (when its dimensions permit), and the subsequent note to which reference is made in the text.

Typographically, the "note" is distinguished from the "section" (used in RS I as the basic unit of "first") etc (comprising the note jet" of the reflection) by a sign such as (¹), (² number placed in parentheses and "in the air", following widespread usage for references to annotations), placed either at the beginning of the note in question, or as a reference to the appropriate place in the text which refers to it. The sections are designated by Arabic numerals from 1 to 50 (excluding forbidding indices and superscripts, as I was led to use for the notes, by imperatives of a practical nature). That said, we can say that there is no essential difference between the function of the "sections" in the first part of *Récoltes et Semailles*, and that of the "notes" in the later parts. The comments I make about this function in this part of my letter ("Spontaneity and structure") apply equally well to the "sections" of RS I, even though I use the name

common "notes".

For other details and conventions, particularly concerning the reading of the table of contents of the *Funeral* (1), I refer to the Introduction, 7 (The Order of Funerals), and in particular pages xiv–xv.

caesura (in a way “physiological”), marked only by a concise indication of date (or even by several) between such consecutive paragraphs of the “note” envisaged, which is then distinguished as such by a unique name.

Thus, each of the notes of Récoltes et Semailles has its own individuality, a face and a function which distinguish it from any other. For each one, I tried to express its own particularity through its name, supposed to restore or evoke the essential, or at least something essential, of what it “has to say”. I truly recognize each one, before anything else, by her name, and it is by this name also that I call her, each time subsequently I need her assistance.

Often the name presented itself to me spontaneously, before I even thought of it. It is her unexpected appearance which signals to me, then, that this note that I am still writing is about to be completed - that she has said what she had to say, the time to finish the paragraph that I am currently writing... Often also, the name appears, just as spontaneously, when rereading the notes from the day before or the day before, before continuing my reflection. Sometimes it changes somewhat during the days or weeks following the appearance of the new note, or it is enriched with a second name that I had not thought of at first. Many notes have a double name, expressing two different, sometimes complementary, views of his message. The first of these double names that presented itself to me, from the beginning of “Fatuité et Renouveau”, is “Meeting with Claude Chevalley — or freedom and good feelings” (n° 11).

Only twice did I already have a name in mind before starting a note — and both times, moreover, it was disrupted by subsequent events!

It is only with hindsight, weeks or even months, that an overall movement and a structure appear in the set of notes following each other from day to day. I tried to grasp both by various groupings and sub-groupings of notes, each of them with its own name, which gives it its own existence and its function or its message; a bit like the organs and members of the same body (to use the image from earlier), and such parts of its members. Thus, in “the Whole” Harvests and Sowing, there are the five “parts” which I have already spoken about, each of which has a structure of its own: Fatuity and Renewal is grouped into eight “chapters” I to VIII (*), and all of the three parts forming

the Burial (which also emerged gradually over the months...) is made up of a long and solemn Procession of twelve "Corteges" I to XII. The last of these, or rather the "Funeral Ceremony" (that is its name) towards which the eleven previous Processions had headed (without really suspecting anything, surely...), is of truly gigantic, commensurate with the Work of which it dedicates the solemn Funeral: it encompasses almost the entirety of RS III (The Burial (2)) and the entirety of RS IV (The Burial (3)), with its nearly eight hundred pages and in one hundred and fifty notes (while initially, this famous ceremony was only planned to include two!). Conducted with skill (and with his well-known modesty...) by the Grand Officiant himself, the ceremony continues in nine "parts" or separate liturgical acts, opened by the Funeral Eulogy (one would have suspected), and ending (as it should) in the final De Profundis. Two others among these "times", one named "The Key to Yin and Yang", the other "The Four Operations", each constitute (by far) the largest part of the part (III or IV) of *Récoltes et Semailles* in which it is inserted, and also gives its name to it.

Throughout *Récoltes et Semailles*, I took care (like the apple of my eye!) of the table of contents, constantly reorganizing it to take into account the ever-renewed influx of unforeseen notes (*), and make it reflect as finely as I could the overall movement of the reflection and the delicate structure that emerges there. It is in parts 3part and especially IV (which we have just discussed), "The Key" and "The Four Operations", that this structure is found to be the most complex and the most overlapping.

To preserve the text's character of spontaneity, and the unexpected aspects of the reflection as it continued and was actually experienced, I did not want to precede the notes by their name, so that each time this only appeared after the fact.

This is why I advise you, at the end of reading each note, to refer to the table of

(*) In *Fatuity and Renewal*, I occasionally refer to these chapters as "parts" of Harvest and Sowing, which should not be confused, of course, with the five parts already discussed, and which only appeared later.

(*) Among these unforeseen notes, there are notably those which "come from a footnote which has taken on prohibitive dimensions". Most often, I placed it immediately after the note to which it relates, giving it the same number assigned an exponent or even as necessary - which avoids the prohibitive task of having to renumber at the same time the 'set of all subsequent notes already written! These notes, coming from one footnote to another, are preceded in the table of contents by the sign ! (at least in the Burial (1)).

subjects to learn what this note is called; and also, on occasion, to be able to appreciate at a glance how it fits into the reflection already pursued, or even into that still to come. Otherwise you risk losing yourself hopelessly in a seemingly indigestible and heterogeneous set of notes with sometimes bizarre, not to say off-putting, numbering (*); like a traveler lost in a foreign city (bizarrely pushed there at the whim of generations and centuries...), without a guide or even a plan to help him find his way (**).

12. Spontaneity and rigor.

Spontaneity and rigor are the two sides “shadow” and “light” of the same undivided quality. It is only from their marriages that this particular quality of a text, or of a being, is born, which we can try to evoke by an expression like “quality of truth”.

If in my past publications, spontaneity has been (if not absent, at least) minimal, I do not think that by its late flowering in me, rigor has become less for all that. Rather, the full presence of its yin companion gives a new dimension and fecundity.

This rigor is exercised with respect to itself, ensuring that the delicate “sorting” that it must carry out in the multitude of what passes into the field of consciousness, to constantly decant the significant or the essential of the fortuitous or the accessory, does not thicken and freeze in automorphisms of censorship and complacency. Only curiosity, the thirst for knowledge in us awakens and stimulates such vigilance without heaviness, such liveliness, against the immense, omnipresent inertia of the “(so-called) natural slopes”, carved out by ready-made ideas. , expressions of our fears and our conditioning.

And this same rigor, this same vigilant attention is also directed towards spontaneity as towards what takes on its aspects, to make room for, here again, these “slopes” which are all natural, certainly, and distinguish them from what truly springs from the deep layers of being, from the original drive for knowledge and action, bringing us to

(*) For the reason for such numbering, which may seem absurd at times, I refer you to the previous footnote to this inexhaustible letter.

(**) In the manuscript intended for printing, I intend to include throughout the text the names of “chapters” and other groupings of notes and sections, to the sole exclusion of the notes (or sections) themselves. But even then, occasional recourse to the table of contents seems essential to me, so as not to get lost in a jumble of hundreds of notes, following one another in single file over more than a thousand pages...

meeting the world.

At the level of writing, rigor is manifested by a constant concern to identify as finely, as faithfully as possible, using language, the thoughts, feelings, perceptions, images, intuitions... that he it is a question of expressing, without being satisfied with a vague or approximate term where the thing to be expressed has clearly defined contours, nor with a term of artificial precision (and by that, just as distorting) to express something which remains surrounded by the mists of what is still only present. When we try to capture it as it is in the moment, and only then does the unknown thing reveal its true nature to us, and even in the full light of day perhaps, if it is made for the day and that our desire encourages it to strip itself of its veils of shadow and mists. Our role is not to pretend to describe and fix what we ignore and which escapes us, but to humbly, passionately become aware of the unknown and the mystery which surround us on all sides.

This means that the role of writing is not to record the results of research, but rather the process of research itself — the labors of love and the works of our loves with Our Mother the World , the Unknown, who relentlessly calls us into Her to know Her again in Her inexhaustible Body, everywhere in Her where the mysterious paths of desire carry us.

To reflect this process, the flashbacks, which nuance, clarify, deepen and sometimes correct the “first draft” of the writing, or even a second or third, are part of the very process of discovery. They form an essential part of the text and give it its full meaning. This is why the “notes” (or “annotations”) placed at the end of Fatuity and Renewal, and to which reference is made here and there during the fifty “sections” which constitute the “first draft” of the text, are a inseparable and essential part of it.

I strongly advise you to refer to it as you go along, and at least at the end of reading each section where one or more references to such “notes” appear. It is the same for the footnotes in the other parts of *Récoltes et Semailles*, or for the references, in such a “note” (constituting here the “main text”), to such a later note, which therefore makes “return” function on it, or annotation. This, along with my advice not to separate yourself from the table of contents, is the main reading recommendation that I can make to you.

One last, practical question which will close (a little prosaically) this letter which it is time to end. There was a bit of “panic” at times, to prepare the different

Harvest and Seed booklets for printing by the Duplication Service at the University, in time for the printing to take place (if possible) before the summer holidays. In haste, there is a whole sheet of last minute footnotes, to be added to booklet 2 (The Burial (1) — or The Dress of the Emperor of China), which “skipped”. It was mainly a matter of rectifying certain material errors, which only appeared recently, during the writing of the Four Operations. There is one of these footnotes which is more substantial than the others, and which I would like to point out here. This is an annotation to the note “The victim — or the two silences” (n^o 78 , page 304). This note, where I tried, among other things, to identify my impressions (all subjective, of course) about the way in which my friend Zoghman Mebkhout “internalized” at that time the iniquitous spoliation for which he was paying the price, was felt by him as unfair towards him, while I almost seemed to put him “in the same bag” with his despoilers. What is certain is that in this note, which does not claim to give anything other than impressions linked to a particular “moment”, I present only one sound of the bell, leaving it unsaid (and as something self-evident, no doubt) certain other sounds just as real (and less debatable perhaps). Still, reflection on this delicate subject deepens considerably, a year later, in the note “Roots and Solitude” (n^o 1713). This did not give rise to reservations on the part of Zoghman. Other elements of reflection on this same subject are also found in the two notes “Three milestones — or innocence”, and “The dead pages” (n^o s 171 (x) and (xii)). These three notes are part of “The Apotheosis”, which is the part of the Four Operations devoted to the operation of appropriation and misappropriation of the work of Zoghman Mebkhout.

All that remains for me to do is wish you good reading — and I look forward to reading you in turn!

Alexandre Grothendieck

Epilogue postscript — or context and prerequisites for a debate

February 1986

13. The bottle spectrograph.

It's been seven months since this Letter was written, and almost four months since it was sent, with the "pavement" that goes with it. And with a dedication from my hand in each(*).

Like a "bottle in the sea", or rather, like a whole bunch of such wandering bottles, my message landed and circulated even in the most remote corners of this mathematical microcosm which was familiar to me. And through the direct and indirect echoes that come back to me over the days, weeks and months, I find myself unexpectedly as if in front of a vast x-ray of the mathematical environment, which would be taken by a sprawling spectacle, of which my innocent "bottles" would be so many traveling antennas. Suddenly (noblesse oblige!), I, who nevertheless do not lack something to occupy myself, find myself faced with the new task of deciphering the radio and reporting, as best I can, what I read there. . This will be for a sixth (and last, I promise!) part of *Récoltes et Semailles*. This will therefore crown, if God gives me life, "the great sociological work of my old days". For now, a few first comments.

To welcome my modest, very artisanal flotilla, what seems to dominate from afar is the half-joyous, half-snarling tone, to the tune of "here comes Grothendieck who is becoming paranoid in his old age", or "here goes one that takes itself seriously" — and that's it! However, I only had one letter in this style(**), plus two others in that of hushed and self-delighted derision(***). Most of my mathematician recipients, including those who were my students, responded with silence(****) — a silence that speaks volumes to me.

(*) There are a few rare exceptions, including mainly colleagues whom I do not know personally, and who only received issues 0 and 4 of the provisional print run, as a bonus for their active participation in my Funeral.

(**) This letter comes from one of those who were my students, and moreover, one of my co-interred.

(***) From two of my former work colleagues at Bourbaki, one of whom is one of the elders who welcomed me with warm kindness when I started, (****)) For one hundred and thirty-one mailings to mathematicians, there have so far been fifty-three among the recipients who gave a sign of life, if only to acknowledge receipt. Among these, there are six of my ex-students — I have not had any sign of life from any of the other eight.

This does not prevent the fact that I have already had a voluminous correspondence. Most of the letters are in tones of polite embarrassment, which are often intended to be friendly, as if out of a concern for decorum. Two or three times I felt, behind this embarrassment and as if sifted by it, the warmth of a feeling still alive. Most often, when embarrassment is not expressed by protests of good feelings (on one's own behalf, or that of others), it is through compliments — I have never received so many in my life ! To the tune of the “great mathematician”, “superb pages” (on creativity “and all that”), “indisputable writer”, and so on. For good measure, I even received a well-felt (and in no way ironic) compliment on the richness of my inner life. Needless to say, in all these letters, my correspondent was careful not to get to the heart of any question and even less, to get personally involved in it; the tone would rather be that of one who had been “asked to give his opinion” (to use the terms of one of these letters), on a somewhat scabrous affair and what is more, hypothetical or even imaginary, and in any case and above all, a matter which does not concern him personally. When, however, he pretends to touch on one of these questions, it is with his fingertips and to keep it as far away from him as he can - whether thanks to the good advice given to me, or by careful conditionals, or by the commonplaces used when we don't really know what to say, or in any other way. Some still suggested that there were perhaps not very normal things that happened - while taking care to leave in the greatest vagueness what and who it was...

I also had frankly warm feedback from fifteen or sixteen of my old and new friends. Some expressed an emotion, without wanting to hide it or silence it. These echoes, and others just as warm coming to me from outside the mathematical environment, will have been my reward for a long and solitary work, done not only for myself, but for everyone.

And among the approximately one hundred and thirty colleagues who received my Letter, there were three who responded to it, in the full sense of the term, by involving themselves, instead of limiting themselves to a distant comment on the events of the century. I received yet another such response from a non-mathematician correspondent. These were real responses to my message. And that was also my best reward.

14. Three feet on a plate.

Several of my mathematician colleagues and friends have expressed the hope that *Récoltes et Semailles* opens a broad debate in the mathematical environment, on the state of morals in this environment, on the ethics of the mathematician, and on the meaning and purpose of his work. For the moment, the least we can say is that it's not going anywhere. From now on (and to make the proper play on words) the debate on a Funeral seems to be automatically replaced by the burial of a debate!

This does not prevent, whether we like it or not and despite the silence and apathy of the majority, that a debate is indeed open. It is unlikely that it will ever take on the scale of a real public debate, or even (God forbid!) the pomp and stiffness of the “official” debate. In any case, many are those who have already taken the lead quickly, to close it deep within themselves before even having learned about it, strong in the eternal and immutable consensus that “all is for the best in the best of all worlds” (mathematics, in this case). Perhaps, however, a challenge will end up coming from outside, gradually, by “witnesses” who, not being part of the same environment, are not prisoners of its group consensus, and who therefore do not feel (even deep down) personally blamed.

In almost all the feedback received, I see the same confusion regarding the two preliminary questions: what is the “debate” posed (at least tacitly) by *Récoltes et Semailles*; and who is able to read it and comment on it, or: to form an opinion with full knowledge of the facts. In this regard, I would like to mark three “reference points” here. This will certainly not prevent those who insist on confusion from continuing to maintain it. At least, for those who would like to know what it's all about, perhaps this will help them not to be distracted by all-out sound effects (including even the best intentioned...). a) Such sincere friends assure me that “everything will work out in

the end” (where “everything”, I imagine, means “things” which have unfortunately been damaged...); that I only had to make my return, “impose myself with new work”, give conferences etc. — and the others would do the rest. We will generously say “We were still a little unfair with this sacred Grothendieck”, and rectify the situation discreetly and with more or less conviction(*); or even pat him on the shoulder with a paternal air and call him “great mathematician”, his-

(*) I have already had occasion to note several such discreet signs, showing that we have taken good note that the lion has woken up...

squid toy an all in all respectable person, who unfortunately pretends to get angry and make unwanted waves.

It is in no way a question, as friends suggest, of “letting go of ballast” or of letting go of some. For my part, I have no need for compliments or even sincere admirers, and no need for “allies” either, for “my” cause or for any cause whatsoever. It is not about me, which carries me wonderfully, nor about my work, which speaks for itself, even to deaf people. If this debate also concerns, among other things, my person and my work, it is simply as revealing of something else, through the reality of a Burial (one of the most revealing indeed).

If there is “someone” who seems to me to inspire a feeling of alarm, worry and urgency, it is in no way me, nor even any of my “co-buried”. But it is a collective being, both elusive and very tangible, which we often talk about and which we are careful never to examine, and which is called “the mathematical community”.

Over the past few weeks, I have come to see her as a flesh-and-blood person, whose body is suffering from deep gangrene. The best food, the most chosen dishes, in it turn into poison, which causes evil to spread and become more entrenched. However, there is an irresistible bulimia to gorge herself more and more, surely as a way of keeping herself off guard, about an illness that she would not want to know about at any cost. Whatever you say to him is wasted effort — even the simplest words have lost their meaning. They cease to carry a message, and only serve to trigger the triggers of fear and refusal... b) Most of my colleagues or former friends, even well-disposed ones, when they venture an opinion, surround

themselves with cautious conditionals, such as “if it were true that... it would indeed be unacceptable” — just to go back to bed happy. However, I thought I was clear...

With the hindsight of seven months, I can now specify that for almost all of the facts reported and commented on in *Récoltes et Semailles*, their reality is not the subject of any controversy. I will return later to the few rare exceptions, which will also be noted as such. each in its place. For all other facts, after the writing of the primitive version of *Récoltes et Semailles*, a careful confrontation with some of those principally concerned (namely, Pierre Deligne, Jean-Pierre Serre and Luc Illusie) made it possible to eliminate the errors of detail, and to arrive at an unambiguous agreement regarding the material facts themselves

same(*)).

Thus, the debate does not relate in any way to the reality of the facts, which is not in question, but to the question whether the practices and attitudes described by these facts should be considered as accepted and as “normal”, or not.

These are practices that in my testimony I describe (perhaps wrongly...) as scandalous: as abuses of trust or power and as blatant dishonesty, reaching more than once the dimension of the iniquitous and the shameless. The rather unimaginable thing that I still had to learn, after having become aware of these facts (unthinkable even fifteen years ago), is that a large majority among my mathematician colleagues, and even among those who were my students or friends, today considers these practices as normal and perfectly honorable.

c) There is a second way many of my colleagues and former friends maintain confusion. It's to the tune of: “sorry, but we're not specialists in this matter — don't ask us to take note of facts, which (providentially...) go over our heads...”.

I affirm, on the contrary, that to become aware of the main facts, there is no need to be a “specialist” (sorry too!), nor even to know your multiplication table or the Pythagorean theorem. Not even having read “Le Cid” or the Fables of La Fontaine.

A normally developed ten-year-old child is just as capable as the most renowned specialist (or even better than him...)(**).

Allow me to illustrate this point with just one example, the “first come” taken from the Burial(***). There is no need to know the ins and outs of the multifaceted and very delicate mathematical notion of “pattern”, nor to have only a certificate of studies, to become aware of the following few facts, and to make a judgment

(*) I am happy to express my gratitude to all three, for the good will they have shown on this occasion, and acknowledge them for their total good faith, in all matters relating to material facts.

(**) Of course, it is not for the ten-year-old child that I wrote *Récoltes et Semailles*, and to address him I would choose language that is familiar to him.

(***) This is the first “major operation” of Burial that I discovered, on April 19, 1984, where the name “Burial” was also imposed on me. On this subject, see the two notes written on the same day, “Remembrance of a dream — or the birth of motives”, and “The Burial — or the New Father” (ReS II, n^os 51, 52). There is also the complete reference to the book in question.

About them.

1 ¶) Between 1963 and 1969 I introduced the notion of “motive”, and I developed around this notion a “philosophy” and a “theory”, which remained partially conjectural. Rightly or wrongly (it doesn't matter here), I consider the theory of patterns to be the most profound thing I have contributed to the mathematics of my time. The importance and depth of “motivic yoga” is no longer contested by anyone today (after ten years of almost complete silence on the subject, immediately after my departure from the mathematical scene).

2 ¶) In the first and only book (published in 1981), devoted essentially to the theory of patterns (and where this name, introduced by me, appears in the title of the book), the one and only passage which can to make the reader suspect that my modest person is linked directly or indirectly to some theory which could resemble that developed at length in this book, is found on page 261. This passage (of two and a half lines) consists to explain to the reader that the theory developed there has nothing to do with that of a man named Grothendieck (theory mentioned there for the first and last time, without any other reference or precision).

3 ¶) There is a famous conjecture, called the “Hodge conjecture” (no matter what it is actually about), the validity of which would imply that the so-called “other” theory of motives developed in the brilliant volume, is identical to (a very particular case of) that which I had developed, in full view of everyone, almost twenty years before.

I could add a 4 ¶) that the most prestigious among the four co-signatories of the book was my student, and that it was from none other than me that he learned over the years the brilliant ideas that he presents there as if he had just found them just now(*), and 5 ¶) that these two circumstances are common knowledge among well-informed people, but that one would search in vain in the literature a written trace attesting that the said brilliant author could have learned something through my mouth(*), and that 6 ¶) the delicate question of arithmetic which (according to what the main author explained to me in person) constitutes the central problem of the book (and without my name being mentioned), was identified by me in the sixties, in the wake of “yoga of patterns”, and that it is through me that the author

(*) I do not intend to say that there are not ideas in this book, and even beautiful ideas, due to this author or the other co-authors. But the entire problem of the book, and the conceptual context which gives it its meaning, and even including the delicate theory of $\tilde{y}$ -categories (wrongly called “Tannakian”), which technically constitutes the heart of the book, are my work.

(*) With the exception, however, of a line in a report from Serre's pen, in 1977, which will be discussed in his place.

was aware of it; and I could stack more 7ÿ and 8ÿ etc (which I certainly do not fail to do in its place).

The above will suffice for my purpose, which is this. To become aware of such facts and make a judgment about them, there is no need for particular “skills” — it is not at that level “that it happens”. The faculty that is at stake here, apart from sound reason (devolved in principle to everyone) is what I would call the feeling of decency.

The book in question is now one of the most cited in mathematical literature, and its “main author”, one of the most prestigious mathematicians of the time. That said, and in full view, by far the most remarkable thing to me now about this story is that no one among the countless readers of this book, including those who know first-hand what is going on, and who were my students, or my friends - that no one saw anything abnormal. There is not one in any case, until today when I write these lines, who has come forward to me to express the slightest reservation(**) about this prestigious book.

As for those, among my colleagues and former friends, who have never held this book in their hands and who use it to plead incompetence, I tell them: there is no need to be a “specialist” to ask for the volume in the first mathematical library you come across, leaf through it, and see for yourself what is not disputed by anyone...

15. Gangrene – or the spirit of the times (1).

This “operation reasons” is only one among four “major operations” of the same water, and among a host of others of lesser scale and in the same spirit. It is by no means the “biggest” of the collective mystifications which flesh out my “picture of morals” of an era, nor especially the most iniquitous. It consisted only of plundering the rich's flock, thanks to his absence (or his death...), and not of coming (in general indifference) to strangle for pleasure and before his eyes, the poor man's sheep. And even in the mathematical language which has now entered common use, seemingly innocuous names of books, notions or statements cited at any time, are in themselves already a mystification or an imposture (*), and bear witness in their own way to the disgrace of a

(**) There were altogether two colleagues (including Zoghman Mebkhout) who expressed such “reservations” to me. Neither can be considered “readers” of this book. They looked at it out of curiosity, just to realize...

(*) I am thinking here, above all, of the unusual acronym “SGA 41/2” (fractional numbers are useful!), which is a

era.

If I believe I have ever done useful work for the “mathematical community”, it is to have brought to the full light of day a certain number of inglorious facts, which were lurking in the shadows. The kind of facts, surely, that everyone encounters almost every day, from near or far. How many of them have taken the leisure to stop even for a moment, to smell the air and to look?

The person who found himself exposed to the haughtiness of some and the dishonesty of others (or the same people), perhaps flattered himself that this was a very special misfortune, assigned to him. Confronting his experience with my testimony, perhaps he will feel that this “bad luck” is also a name that he gave to a spirit of the times, which weighs on him as it weighs on everyone. And (who knows!) perhaps this will encourage him to get involved in a debate, which concerns him as much as it concerns me.

But if this “dirty laundry” that “I spread in the public square” arouses nothing other than the joyless sneer of some and the polite embarrassment of others, in the indifference of all, a situation which was troubled will have become very clear. (At least for those who still care about using their eyes.) The traditional consensus of good faith and decency (**), in the relationship between mathematicians and in that of the mathematician to his art, would henceforth be things of the past, “outdated”. Without any international association of mathematicians having to solemnly proclaim it, it would nevertheless be a thing understood from now on and almost official: from now on, everything is allowed, without any more reservation or limitation, for the “brotherhood by co-optation” of those who have power in the mathematical world. All the shenanigans of ideas to lead by the tip of the nose the apathetic reader who only asks to believe, all the traffic in authorship, and the bogus quotes between friends and the silence for those dedicated to silence, and the cronyism and falsifications of all kinds and even the grossest plagiarism in full view of all - yes and amen to everything, with blessing, by word or by silence (when not with active participation and em-

double imposture in itself (and one of the most cited acronyms in contemporary mathematical literature), and with the names “Verdier duality” or “Verdier dual”, “Deligne–Grothendieck conjecture”, or finally “category tannakiennes” (where Tannaka, for once, is not in question, because he was never consulted...). This will be discussed in more detail later.

(**) When I speak of these “consensus of good faith and decency”, I do not mean to say that they were never transgressed. But even though they were transgressed, it was indeed “transgressions” that were in question, and the consensuses themselves remained no less accepted.

in a hurry), of all the “big names” and all the big and small bosses in the mathematical public square. Yes and amen to the “new style” which is all the rage there! What was once an art has now become, by (almost) unanimous agreement, a fair of confusion and strife, under the watchful eye of the leaders.

There was a time when the exercise of power, in the world of mathematicians, was limited by unanimous and intangible consensus, expression of a collective feeling of decency. This consensus and this feeling would now be obsolete and outdated things, certainly unworthy of the glorious era of computers, space cells and the nuclear bomb.

thunders

This would now be something acquired and sealed: power, for the brotherhood of those who have, is a discretionary power.

16. Honorable amends – or the spirit of the times (2).

In the Letter, I have explained myself sufficiently, I think, about the spirit in which I wrote *Récoltes et Semailles*, to make it very clear that I in no way claim to do the work of a historian. It is a testimony of good faith, concerning a first-hand experience, and a reflection on this experience. Testimony and reflection are available to everyone, including the historian, who can use it as one material among others. It is then up to him to submit this material to a critical analysis, in accordance with the canons of rigor of his art.

It is appropriate, of course, to distinguish between facts in the restricted sense (“raw facts” or “material facts”), and the “evaluation” or “interpretation” of these facts, which gives them a meaning, which does not is not the same, for one observer (or co-actor) and for another. Roughly speaking, we can say that the “testimony” aspect of *Récoltes et Semailles* concerns the facts, and that its “reflection” aspect concerns their interpretation, that is to say my work to give them meaning. Among the “facts” forming the testimony, I also include the “psychic facts”, and in particular the feelings, associations and images of all kinds of which my testimony is the reflection, whether these take place in a more or less remote past, or at the time of writing.

For the facts that I describe or report on in *Récoltes et Semailles*, I distinguish three kinds of sources. There are the facts that memory restores to me, more or less precise or more or less vague from one occasion to another, and sometimes distorted. Regarding them, I can feel

guarantor for the provisions of truth at the time of writing, but in no way for the absence of any error. On the contrary, I had the opportunity to note a certain number of them, errors of detail which I point out in their place by subsequent footnotes. There are, on the other hand, written documents, notably letters and especially scientific publications in due form, to which I refer on occasion with all desirable precision. Finally, there is the testimony of third parties. Sometimes it complements my own memories, allowing me to revive them, clarify them and, sometimes, correct them. On certain rare occasions (to which I will return later), this testimony brings me entirely new information compared to that which was already known to me. When I happen to echo such testimony, this does not mean that I had the opportunity to verify its accuracy and merits throughout, but simply that it inserted itself plausibly enough into the rich fabric of facts known to me at first hand, to lead to my conviction (rightly or wrongly...) that this testimony corresponded, essentially, to the truth.

For an attentive reader, I think that there will be no difficulty, at any time, in making "the distinction" between the reporting of the facts and the interpretation of them, and (in the first case) to discern, among the three sources that I have just described, which one comes into play.

* *

*

When I alluded just now to the testimony of a third person, which I echoed without having been able to "verify its merits along the entire line", it is that of Zoghman Mebkhout, on the subject of the vast operation of sleight of hand around his work. Among the "material facts" that I report in *Récoltes et Semailles*, the only ones which are now subject to controversy or which, according to my own judgment at present, require rectification, are certain of the facts attested by the sole testimony of Mebkhout. To end this postscript, I would like to present here critical comments about the version of the "Mebkhout affair" presented in the provisional edition of *Récoltes et Semailles*. More detailed comments and corrections will be included, each in their appropriate place, in the printed edition (constituting the definitive text of *Récoltes et Semailles*).

The "Mebkhout version" of which I wanted to interpret, seems to me to consist of the essentials in the two theses below:

1 $\ddot{y}$) Between 1972 and 1979, Mebkhout would have been alone(*), in general indifference and drawing inspiration from my work, to develop the “philosophy of $\mathbb{A}$ -Modules”, as a new theory of “cohomological coefficients” in my opinion.

2 $\ddot{y}$) There would have been a unanimous consensus, both in France and at the international level, to hide his name and his role in this new theory, once its scope began to be recognized.

This version was strongly documented, on the one hand by the publications of Mebkhout, quite convincing, on the other hand by numerous publications of other authors (and in particular, by that of the Proceedings of the Luminy Colloquium of June 1981), where the deliberate intention of sleight of hand cannot be in any doubt. Finally, the more detailed details that Mebkhout subsequently provided me with (and which I echo in the section “The Burial (3) — or the Four Operations”), without being directly verifiable, were however entirely consistent with a certain general atmosphere, the reality of which could no longer leave me in any doubt.

I have just become aware of several new facts(*), which show that there is reason to strongly qualify point 1 $\ddot{y}$) above. The isolation in which Mebkhout found himself(**) was indeed real, but it was relative isolation. In France there was the work of JP Ramis on the same subject (work about which Mebkhout said nothing to me), and above all, it appears that certain important ideas developed and brought to fruition by Mebkhout, and of which he attributes paternity, could be due to Kashiwara(***). So this makes

(*) Except for Kashiwara's constructibility theorem from 1975, the importance of which in the theory is in no way contested. But according to Mebkhout's version, this would be Kashiwara's one and only contribution to the emerging theory. This (inaccurate) version was corroborated by the absence of other publications by Kashiwara, where he would have alluded at least to some of the main ideas.

(*) I am grateful to Pierre Schapira and Christian Houzel for kindly drawing my attention on these facts, and on the tendentious nature of my presentation of the Mebkhout–Kashiwara dispute.

(**) This isolation came above all from the indifference of my ex-students for the ideas and work of Mebkhout, who stubbornly pretended to be inspired by an “ancestor” doomed to oblivion by unanimous consensus ...

(***) The most important of these ideas is that of the “correspondence” (to use the new style jargon) called “Riemann–Hilbert” for the $\mathbb{A}$ -Modules. The relevant conjecture was proven by Mebkhout, and also (according to what Schapira told me) by Kashiwara (while Mebkhout assured me that his demonstration was the only one published). The question of priority for the demonstration remains nebulous for me, and I renounce spending the rest of my days clarifying it...

As for the sister statement in terms of $\mathbb{A}$ -Modules, there does not seem to be the slightest doubt that the authorship

implausible or doubtful some of the episodes of the Kashiwara–Mebkhout dispute, as they are reported in the Mebkhout version of which I have become the (too) faithful interpreter.

There is no doubt that in terms of “work on parts”, as well as in the conception of some of the ideas that he was able to bring to fruition, Mebkhout was one of the main pioneers of the new theory of π -Modules, perhaps even the main pioneer; the only one in any case who invested body and soul in this task, the true scope of which still eluded him, as it eluded everyone. And it is also true that the escapotage operation which took place around this work, an operation culminating with the Luminy Colloquium, remains for me one of the great disgraces of the century in the mathematical world. But it would be wrong to claim (as I did in good faith) that Mebkhout was the only one to carry out the task. On the other hand, he was the only one to have the honesty and the courage to clearly state the importance of my ideas and my work in his work and in the emergence of the new theory.

This is not the place, in this postscript, to go into more detail on this affair - I will do so in its place, including comments likely to shed light on the psychological context of the “Mebkhout version”. If the “Mebkhout–Kashiwara dispute” is of interest to me, it is only to the extent that it sheds light on the general atmosphere of an era. And for me, even in its very distortions and by the forces which played to make them emerge, the “Mebkhout version” also appears, among other less questionable materials that I bring to the “record of an era”, an eloquent “sign of the times”.

It remains for me to make honorable amends for the levity, by presenting a table of the Mebkhout–Kashiwara dispute which only took into account the testimony and documents provided by Mebkhout, and this, as if this version could not be the subject of any doubt. This version presented a third person in a ridiculous, even odious, light, all the more reason to exercise caution. For my carelessness and for this lack of healthy prudence, I hereby offer my most sincere apologies to Mr. Kashiwara.

for the idea and for the demonstration belongs to Mebkhout.

INTRODUCTION

1. Dream and achievement.

It will be three years ago in July, I had an unusual dream. If I say “unusual”, that is an impression that only appeared afterwards, when thinking about it upon waking up. The dream itself came to me as the most natural, the most obvious thing in the world, without fanfare - even to the point that when I woke up, I almost didn't pay attention to it, pushed it without further ado. forgotten to move on to “the agenda”. Since the day before, I had embarked on a reflection on my relationship with mathematics. It was the first time in my life that I took the trouble to go and see it — and again, if I went there at that moment, it was because I was really almost obliged and forced to do so! There were such strange, not to say violent, things that had happened in the preceding months and years, sort of explosions of mathematical passion bursting into my life without warning, that he It was really no longer possible to continue not looking at what was happening.

The dream I'm talking about had no storyline or action of any kind. It consisted of a single image, still, but at the same time very alive. It was the head of a person, seen in profile. She was seen looking from right to left. He was a middle-aged man, beardless, with wild hair forming around his head like a halo of strength. The impression above all that emanated from this head was that of a youthful, joyful strength, which seemed to spring from the supple and vigorous arc of the neck (which we guessed more than we saw). The expression on his face was more that of a mischievous rascal, delighted with whatever move he had just made or was thinking of doing, than that of a mature man, or of someone who had eaten something, ripe or not. What emerged above all was an intense, contained joy of living, bursting into play...

There was not a second person present, an “I” who would have looked at or contemplated this other, of whom only the head could be seen. But there was an intense perception of this head, of what was emanating from it. Nor was there anyone to feel impressions, comment on them, name them, or to attach a name to the person perceived, to designate them as “so and so”. There was only this very living thing, this man's head, and an equally living, intense perception of this thing.

As for waking up, without deliberate intention, I remembered the dreams of the past night, the vision of this man's head did not stand out on the number with any particular intensity,

she didn't push herself forward to shout or whisper to me: it's me you need to look at! When this dream appeared in the field of my rapid glance at the dreams of the night, in the warm tranquility of the bed, I of course had this reflex of the waking mind to put a name to what had been seen. I didn't have to look, I just had to ask the question to know immediately that this man's head which had been there in this dream was none other than mine.

She's not bad, I thought then, you still have to do it, see yourself in a dream like that, as if it were someone else! This dream came here a bit as if, while walking and by the greatest chance, I had come across a four-leaf clover, or even a five-leaf clover, to marvel at it for a few moments as it should, and to continue my way as if nothing had happened.

At least that's how it almost happened. Fortunately, as has happened to me many times in situations of this kind, I nevertheless and by conscience noted down in black and white this little "not bad" incident, starting a reflection which was supposed to continue on the launched from that of the day before. Then, one thing led to another, the reflection of that day limited itself to plunging me into the meaning of this unpretentious dream, of this unique image, and of the message about myself that it brought me.

This is not the place to dwell on what this one-day meditation taught and gave me. Or rather, what this dream taught me and brought me, once I had put myself in the position of attention, of listening which allowed me to welcome what he had to tell me. A first immediate fruit of the dream and of this listening was a sudden influx of new energy. This energy carried the long-term meditation which continued in the following months, against stubborn internal resistance, which I had to dismantle one by one through patient and stubborn work.

In the five years since I began to pay attention to some of the dreams that came to me, this was the first "messenger dream" which did not present itself under the appearance, now recognizable, of such a dream, with means impressive scenes, and an exceptional, sometimes overwhelming, intensity of vision. This one was all that was "cool", with nothing to force the attention, even discretion – it was take it, or leave it, without fuss...

A few weeks earlier there had come to me a messenger dream in the old style, on the dramatic and even wild tuning fork, which brought a sudden and immediate end to a long period of mathematical frenzy. The only apparent connection between the two dreams is that

in neither there was an observer. In a parable of lapidary force, this dream showed something that was happening in my life at the time, without me taking the trouble to pay attention to it - a thing that I was even taking great care to ignore, to be honest.

It was this dream that made me understand the urgency of a work of reflection, in which I engaged a few weeks later, and which then continued for almost six months.

I have the opportunity to talk about it a little in the last part of this reflection-testimony "Harvests and Sowing", which opens the present volume and gives it its name (*).

If I began this introduction by evoking this other dream, this image-vision of myself ("Traumgesicht meiner selbst" as I called it in my notes in German), it is because in recent weeks the thought of this dream came back to me more than once, while the meditation "on a mathematician's past" was moving towards its end. To tell the truth, in retrospect, the three years that have passed since this dream appear to me as years of settling and maturation, towards an accomplishment of its simple and clear message. The dream showed me "as I am". It was also clear that in my waking life I was not fully who the dream showed me - weights and stiffness coming from afar were (and still are) very often an obstacle to me being fully and simply myself. . During these years, when the thought of this dream rarely returned to me, however, this dream must have acted in a certain way. It was not at all as some kind of model or ideal that I would strive to resemble, but as a discreet reminder of a joyful simplicity which "was me", which manifested itself in many ways, and which was called to free herself from what continued to weigh on her and to fully blossom. This dream was a delicate and vigorous link at the same time, between a present still weighed down by many weights from the past, and a very close "tomorrow" that this present contains in germ, a "tomorrow" which is me from now on, and which has always been in me surely...

Surely, if in these last weeks this rarely mentioned dream has been very present again, it is because at a certain level which is not that of a thought which probes and analyzes, I must have "known" that the work that I was doing and bringing to its end, work which took up and deepened this other work of three years ago, was a new step towards the fulfillment of the message about myself that it brought me.

This is now for me the main meaning of *Récoltes et Semailles*, of this intense work of

(*) See in particular section 43, "The spoilsport boss — or the pressure cooker".

almost two months. Only now that it is completed do I realize how important it was that I did it. During this work, I experienced many moments of joy, often mischievous, joking, exuberant joy. And there were also moments of sadness, and moments when I relived frustrations or sorrows that had affected me painfully in recent years — but there was not a single moment of bitterness. I leave this job with the complete satisfaction of someone who knows that he has completed a job. There is no thing so “small” that I have avoided it, or that it would have been important to me to say and that I would not have said, and which in this moment would leave in me the residue of dissatisfaction, of regret, however “small” they may be.

When writing this testimony, it was clear to me that it will not please everyone. It is even quite possible that I found a way to displease everyone without exception. However, this was in no way my intention, nor even to displease anyone. My intention was simply to look at simple and important things, everyday things, from my past (and sometimes my present too) as a mathematician, to finally discover (better late than never!) and without the shadow of 'a doubt or a reservation, what they were and what they are; and, along the way, say in simple words what I saw.

2. The spirit of a journey.

This reflection which ended up becoming “Récoltes et Semailles” had begun as an “introduction” to the first volume (currently being completed) of “À la Pursuit des Champs”, this first mathematical work that I have intended for publication since 1970 I wrote the first few pages at a low point, in June last year, and I picked up this reflection less than two months ago, at the point where I left off. I realized that there was quite a bit to look at and say, so I was expecting a relatively fleshed-out introduction, of thirty or forty pages. Then, during the nearly two months that followed, until now when I am writing this new introduction to what was first an introduction, I believed every day that it was the day in which I finished this work, or that it would be the next day or the day after at worst. As for after a few weeks I started to approach the hundred page mark, the introduction was promoted to “introductory chapter”. After a few more weeks, when the dimensions of said “chapter” found themselves far exceeding those of the other chapters of the volume in preparation (all completed at the time of writing these lines, except the last), I finally understood that its place was not in

a math book, that this reflection and this testimony would definitely be cramped there. Their real place was in a separate volume, which will be volume 1 of these “Mathematical Reflections” which I intend to continue in the years to come, following the momentum of the Pursuit of the Fields.

I would not say that *Récoltes et Semailles*, this first volume in the Mathematical Reflections series (which will be followed by the two or three volumes of Pursuit of the Fields, to begin with) is an “introductory” volume to the Reflections. Rather, I see this first volume as the foundation of what is to come, or better said, as the one which gives the background note, the spirit in which I undertake this new journey, which I intend to continue in the years to come, and which will take me I cannot say where.

To conclude these clarifications regarding the main part of this volume, some indications of a practical nature. The reader will not be surprised to find in the text of *Récoltes et Semailles* occasional references to the “present volume” — implied, the first volume (*Histoire de Modeles*) of the Pursuit of the Champs, of which I believe still writing the introduction. I did not want to “correct” these passages, wanting above all to preserve the text's spontaneity, and its authenticity of testimony not only to a distant past, but also to the very moment in which I am writing.

It is also for the same reason that my edits of the first draft of the text were limited to correcting blunders of style or sometimes confusing expression which were detrimental to the understanding of what I wanted to express. These alterations sometimes led me to a clearer or finer understanding than when writing the first draft. Slightly substantial modifications of it, to qualify it, clarify it, complete it or (sometimes) correct it, are the subject of around fifty numbered notes, grouped at the end of the reflection, and which constitute more than a quarter of the text (*). I refer to it by acronyms like (Among these notes, I have distinguished around ') etc... twenty which seemed to me of comparable importance (by their length or their substance) to that of any of the fifty “sections” or “paragraphs” into which the reflection was spontaneously organized. These longer notes were included in the table of contents, after the list of fifty sections. As was to be expected, for some of the longer notes, it was found the need to add one or more notes to the note. These are then included following it, with the same type

(*) (May 28) This is the text of the first part of *Récoltes et Semailles*, “Fatuity and Renewal”. The second part was not written at the time of writing.

of references, except for fairly short notes, which then appear on the same page in "footnotes page", with references such as (*) or (**).

I had great pleasure in giving a name to each of the sections of the text, as well as to each of the most substantial notes - not to mention that later, it even turned out to be essential to find my way there. It probably goes without saying that these names were found afterwards, whereas by starting a section or a note that was a little long I would not have known say for none what would be its essential substance. It is the same, a fortiori, for names (like "Work and discovery", etc.) by which I designated the eight parts I to VIII into which I subsequently grouped the fifty sections which make up the text.

For the content of these eight parts, I will limit myself to very brief comments. Both first I (Work and discovery) and II (The dream and the Dreamer) contain elements of a reflection on mathematical work, and on the work of discovery in general. My person is involved in it in a much more episodic and much less direct way than in the following parts. It is these above all which have the quality of testimony and meditation. Parts III to VI are above all a reflection and a testimony on my past as a mathematician "in the mathematical world", between 1948 and 1970. The motivation which animated this Meditation was above all the desire to understand this past, in an effort to understand and accept a present in certain sometimes disappointing or confusing aspects. The parts VII (The Child is Having Fun) and VIII (The Solitary Adventure) rather concern the evolution of my relationship to mathematics since 1970 until today, that is to say since I left "the world of mathematicians" never to return there. I examine in particular the motivations, and the forces and circumstances, which led me (to my own surprise) to resume a "public" mathematical activity (by writing and publishing Mathematical Reflections), after an interruption of more than thirteen years.

3. Compass and luggage.

I would have to say a few words about the two other texts which constitute with Harvests and Seeds this volume of the same name.

The "Outline of a Program" provides an outline of the main themes for reflection mathematics that I have pursued over the last ten years. I count at least develop some of them a little in the years to come, in a series of informal reflections which I have already had occasion to speak about, the "Mathematical Reflections". This

sketch is the textual reproduction of a report that I wrote last January to support my application for a researcher position at the CNRS. I have included it in the present volume, because obviously this program far exceeds the possibilities of my modest person, even if I were given to live another hundred years, and I chose to use them to continue as far as I can on the themes in question.

The "Thematic Sketch" was written in 1972 on the occasion of another application (for a professorship at the Collège de France). It contains a sketch, by theme, of what I then considered to be my main mathematical contributions. This text reflects the mood in which it was written, at a time when my interest in mathematics was marginal, to say the least. Also this sketch is little better than a dry and methodical enumeration (but which fortunately does not aim to be exhaustive...). It does not seem carried by a vision or by the breath of a desire - as if these things that I review there as if by acquisition of conscience (and these were indeed my dispositions) had never been touched by a living vision, nor by a passion to bring them to light when they were still only glimpsed behind their veils of mist and shadow...

If, however, I have decided to include here this uninspiring report, I fear, it is above all to shut the mouths (assuming that this is possible) to certain high-flying colleagues and a certain fashion, who since my departure of a world that was common to us affect to look down on what they kindly call "grothendieckeries". This, it seems, is synonymous with bombast on things too trivial for a serious mathematician of good taste to agree to waste certainly precious time on them. Perhaps this indigestible "digest" will seem more "serious" to them! As for the texts of my pen which are animated by a vision and a passion, they are not for those whom a fashion maintains and justifies in a complacency, making them insensitive to the things which enchant me. If I write for others than for myself, it is for those who do not find their time and their person too precious to pursue without ever tiring the obvious things that no one deigns to see, and to rejoice in the intimate beauty of each of the things discovered, distinguishing it from all others known to us in its own beauty.

If I wanted to situate the three texts which constitute the present volume in relation to each other, and the role of each in this journey on which I am embarked with the Reflections Mathematics, I could say that the reflection-testimony *Récoltes et Semailles* reflects and

describes the spirit in which I undertake this journey and which gives it its meaning. The Outline of a Program describes my sources of inspiration, which set a direction if not certainly a destination for this journey into the unknown, somewhat like a compass, or a vigorous thread of thought. Ariadne. Finally, the Thematic Sketch quickly reviews a piece of baggage, acquired in my past as a mathematician before 1970, at least part of which will be useful and welcome in this or that stage of the journey (like my cohomological algebra reflexes). and topology are essential to me from now on in the Pursuit of the Fields). And the order in which these three texts follow each other, as well as their respective lengths, reflect (without deliberate intention on my part) the importance and weight that I give to them in this journey, the first stage of which is nearing its end. .

4. A journey in pursuit of the obvious. . .

I still need to say a few more detailed words about this journey undertaken a little over a year ago, the Mathematical Reflections. I explain in some detail, in the first eight sections of *Récoltes et Semailles* (ie in parts I and II of the reflection), about the spirit in which I undertake this journey, and which, I think, is apparent now in the present first volume, as also in the one which follows it (the History of Models, which is volume 1 of the Pursuit of the Fields), currently being completed. It therefore seems pointless to me to dwell on this subject in this introduction.

I certainly cannot predict what the journey will be like, something I will discover as it continues. I do not currently have an itinerary planned even in broad terms, and I doubt that one will emerge soon. As I said previously, the main themes which will undoubtedly inspire my reflection are outlined more or less in the "Outline of a Program", the "compass text". Among these themes, there is also the main theme of the Pursuit of the Fields, that is to say the "fields", which I hope to cover (and leave it at that) during this year. again, in two or perhaps three volumes. On the subject of this theme I write in the Sketch: "... it is a bit like a debt which I would discharge towards a scientific past where, for around fifteen years (between 1955 and 1970), the development of cohomological tools has been the constant Leitmotif in my work on the foundations of algebraic geometry". This is therefore, among the planned themes, the one which is most strongly rooted in my scientific "past". It is also the one that has remained present as a regret throughout these fifteen years, like the lacuna

most blatant of all perhaps the work that I had left to do when I left the mathematical scene, and which none of my students or friends of yesteryear bothered to fill in.

For more details on this work in progress, the interested reader can refer to the relevant section in the Outline of a Program, or to the introduction (the real one this time!) of the first volume, currently being completed, from the Pursuit of the Fields.

As another legacy of my scientific past which is particularly close to my heart, there is above all the notion of motive, which is still waiting to emerge from the night where it has remained maintained, for a good fifteen years although it has been his appearance. It is not excluded that I end up getting to work on the foundations which are necessary here, if no one better placed than me (by virtue of a younger age, as well as by the tools and knowledge at their disposal) decides to do so in the next few years.

I take this opportunity to point out that the fortune (or rather, the misfortune...) of the notion of motive, and of some others among those that I have brought to light and which among all seem to me (potentially) the most fruitful, are the subject of a retrospective reflection of nearly twenty pages, forming the longest (and one of the very last) "notes" to *Récoltes et Semailles* (*). I subsequently subdivided this note into two parts ("My orphans" and "Refusal of an inheritance - or the price of a contradiction"), in addition to the three "sub-notes" which follow it (*). All of these five consecutive notes are the only part of *Récoltes et Semailles* where mathematical notions are evoked other than by passing allusions. These notions become the opportunity to illustrate certain contradictions within the world of mathematicians, which themselves reflect contradictions in the people themselves. I thought at one point of separating this sprawling note from the text from which it comes, to join it to the Thematic Sketch. This would have had the advantage of putting it into perspective, and breathing a little life into a text that looks a little too much like a catalog. However, I refrained from doing so, in the interest of preserving the authenticity of a testimony of which this meganote, whether I like it or not, is indeed a part.

To what is said in *Récoltes et Semailles* on the dispositions in which I approach the "Reflections", I would like to add here only one thing, on which I have already expressed myself in one of the notes ("The snobbery of young people - or the defenders of purity"), when I write:

(*) This double note (n^os 46, 47) and its subnotes were included in the second part "The Burial" of *Récoltes et Semailles*, which constitutes a direct continuation.

(*) These are sub-notes n^os 48, 49, 50 (note n^o 48 was added later).

“My ambition as a mathematician throughout my life, or rather my joy and my passion, have constantly been to discover obvious things, and this is my only ambition also in the present work” (À la Pursuit des Champs). This is also my only ambition for this new journey that I have been pursuing for a year with the *Réflexions*. It was no different in these Harvests and Sowing which (for my readers at least, if there are any) open this journey.

5. A welcome debt.

I would like to conclude this introduction with a few words about the two dedications to present volume “Harvests and Sowing”.

The dedication “to those who were my students, to whom I gave the best of myself — and also the worst” was present in me at least since last summer, and in particular when I wrote the first four sections of what was still supposed to be an introduction to a mathematical work. This means that I knew well, in fact for several years already, that there was a “worse” to examine — and now was the time or never! (But I had no idea that this “worse” would end up leading me through a meditation of almost two hundred pages.)

On the other hand, the dedication “to those who were my elders” only appeared along the way, as did the very name of this reflection (which also became that of a volume). This revealed to me the important role they played in my life as a mathematician, a role whose effects remain alive today. This will no doubt appear clearly enough in the pages that follow, so that there is no point in dwelling on it here. These “elders”, in (approximate) order of appearance in my life when I was twenty, are Henri Cartan, Claude Chevalley, André Weil, Jean-Pierre Serre, Laurant Schwartz, Jean Dieudonné, Roger Godement, Jean Delsarte . The ignorant newcomer that I was was greeted with kindness by each of them, and subsequently many of them gave me lasting friendship and affection. I must also mention here Jean Leray, whose kind welcome during my first contact with the “world of mathematicians” (in 1948/49) was also a valuable encouragement. My reflection revealed a debt of gratitude towards each of these men “from another world and another destiny”. This debt is in no way a burden. His discovery came as a joy, and made me lighter.

End of March 1984

(May 4 — ... June)

6. The Funeral.

An unforeseen event relaunched a reflection that was brought to fruition. He ushered in a cascade of discoveries large and small over the past weeks, gradually unveiling a situation that had remained unclear and sharpening its edges. This led me in particular to enter in a detailed and in-depth manner into events and situations which had previously only been mentioned in passing or by allusion. Suddenly the “retrospective reflection of around fifteen pages” on the vicissitudes of a work, which was discussed previously (Introduction, 4), took on unexpected dimensions, increasing by some two hundred additional pages. .

By the force of circumstances and by the internal logic of reflection, I was led along the way to involve others as much as myself. The one who is involved more than anyone else (apart from myself) is a man with whom I have had a friendship of almost twenty years. I wrote of him (euphemism (*)) that he had “acted a bit like a student”, in the very first years of this affectionate friendship rooted in a common passion, and for a long time and in my heart I saw in him a sort of “legitimate heir” of what I believed I could bring to mathematics, beyond a published work that remained fragmentary. Many will have already recognized him: it is Pierre Deligne.

I do not apologize for making public with these notes, among other things, a personal reflection on a personal relationship, and for thus involving him without having consulted him. It seems important to me, and healthy for everyone, that a situation that has remained hidden and confused for a long time is finally brought to light and examined. In doing so, I provide a testimony, subjective of course and which does not claim to exhaust a delicate and complex situation, nor to be free of errors. Its first merit (like that of my past publications, or those on which I am currently working) is to exist, available to those it may interest. My concern was neither to convince, nor to protect myself from error or doubt behind only so-called “patent” things. My concern is to be true, saying things as I see or feel them, in each moment, as a means to deepen them and to understand.

The name “The Burial”, for all the notes relating to the “Weight of a Past”, imposed itself with increasing force during the reflection (*). I play it

(*) On the meaning of this “euphemism”, see the note “Being apart”, n

role of the anticipated deceased, in the funeral company of the few mathematicians (much younger) whose work takes place after my “departure” in 1970 and bears the mark of my influence, by a certain style and by a certain approach to mathematics. At the forefront of these is my friend Zoghman Mebkhout, who had the heavy privilege of having to face all the handicaps of the one treated as a “student of Grothendieck after 1970”, without having had the advantage of contact with me and my encouragement and advice, while he was only a “student” of my work through my writings. It was at the time when (in the world that he haunts) I was already a figure of “deceased” to the point that for a long time the very idea of a meeting apparently did not present itself, and that a ongoing relationship (both personal and mathematical) only ended up being established last year.

This did not prevent Mebkhout, going against the grain of tyrannical fashion and the disdain of his elders (who were my students) and in almost complete isolation, from creating original and profound work, through an unforeseen synthesis of ideas. from Sato's school and mine. This work provides a new take on the cohomology of analytical and algebraic varieties, and carries the promise of a large-scale renewal in our understanding of this cohomology. There is no doubt that this renewal would have been accomplished now and for years, if Mebkhout had found among those ideally suited for this the warm welcome and unreserved support that they had previously received from me. At least, since October 1980 his ideas and work have provided the inspiration and technical means for a spectacular reboot of the cohomological theory of algebraic varieties, finally emerging (apart from Deligne's results around Weil's conjectures) a long period of stagnation.

Incredible and yet true thing, his ideas and results have been used for almost four years by “everyone” (just like mine), while his name remains carefully ignored and kept quiet by the very people who know his work firsthand. hand and use it essential in their work. I do not know if at any other time mathematics has experienced such disgrace, when some of the most influential or prestigious among its followers set the example, amid general indifference, of contempt for the most universally accepted rule. in the ethics of the profession of mathematician.

(*) Towards the end of this reflection, another name presented itself, expressing another striking aspect of a certain picture which had gradually revealed itself to my eyes over the past five weeks. This is the name of a tale, to which I will return in its proper place: “The dress of the Emperor of China”...

I see four men, mathematicians of brilliant means, who had and who are entitled with me to the honors of this funeral through silence and disdain. And I see in everyone the sting of contempt for the beautiful passion that had animated them.

Apart from these, I especially see two men, both placed in the limelight on the mathematical public square, who officiate at the funeral in a large company and who at the same time (in a more hidden sense) are buried and with their own hands, at the same time as those they deliberately bury. I have already named one of them. The other is also a former student and a former friend, Jean-Louis Verdier. After my "departure" in 1970, contact between him and I was not maintained, apart from a few hasty meetings at the professional level. This is undoubtedly why he only appears in this reflection through certain acts of his professional life, while the possible motivations for these acts, at the level of his relationship to me, are not examined and escape me elsewhere entirely.

If there is one pressing question which has imposed itself on me throughout the past years, which has been a profound motivation for *Récoltes et Semailles* and which has also followed me throughout this reflection, it is that of the part that belongs to me in the advent of a certain spirit and certain morals which make possible disgraces like the one I have mentioned, in a world which was mine and with which I had identified for more than twenty years of my life as a mathematician. Reflection made me discover that by certain attitudes of conceit in me, expressed by a tacit disdain of colleagues with modest means, and by a complacency towards myself and such mathematicians provided with brilliant means, I have not not foreign to this spirit which I see displayed today among those whom I had loved, and among those also to whom I taught a profession which I loved; those whom I loved badly and taught badly and who today set the tone (when they do not make the law) in this world which was dear to me and which I left.

I feel a wind of self-importance, cynicism and contempt blowing. "He breathes without worrying about "merit" or "demerit", burning with his breath humble vocations as well as the most beautiful passions... I understood that this wind is the prolific harvest of blind and careless seeds that I helped to sow. And if his breath returns to me and to what I had entrusted to other hands, and to those whom I love today and who have dared to claim or only be inspired by me, this is a return of things about which I have no reason to complain, and which has a lot to teach me.

7. Funeral arrangements.

Under the name "The Burial", I have therefore grouped in the table of contents the imposing parade of the main "notes" relating to this seemingly innocuous section "The weight of a past" (s. 50), thus giving full meaning to the name which immediately stood out to me for this final section of the "first draft" of *Récoltes et Semailles*.

In this long procession of notes with multiple relationships, those which joined it over the past four weeks (notes (51) to (97) (*)) stand out as the only ones dated (from April 19 to May 24). (*). It seemed most natural to me to give them in the chronological order in which they follow one another in the reflection (**), rather than in some other so-called "logical" order, or in the order of appearance of the references to these notes in earlier notes. To be able to find this last order (in no way linear) of filiation between participating notes, I followed (in the table of contents) the number of each by that of the note (among those which precede it) where it is made of first reference to it (***), or (failing that) by the number of that of which it constitutes an immediate continuation (****). (This last relationship is indicated in the text itself by a reference acronym placed at the end

(*) It is necessary to add the previous [°] 104, of May 12, 1984. Notes n [°] 98 et seq. (with the exception of note n [°] 104) constitute the "third breath" of the reflection, from September 22, 1984. They are also dated.

(*) In a series of consecutive notes written on the same day, only the first is dated. The other undated notes are notes n[°] s 44 to 50 (forming processions I, II, III). Notes n[°] s 46, 47, 50 are from March 30 or 31, notes n[°] s 44, 48, 49 of the first half of April, finally note n[°] 44 is dated (May 10).

sometimes made a small inversion in this chronological order, for the benefit of a "so-called logical" order, when it seemed to me that the overall impression of the process of reflection was not distorted. As the only exceptions, however, I point out eleven notes (the number of which is preceded by the sign!) from notes of b. from p. subsequent to a note and which have taken on prohibitive dimensions, and which I have placed each following the note to which it relates (except note n [°] 98, relating to n [°] 47).

(***) When the reference to a note (such as (46)) is found in the section "The weight of a past" itself, it is the number (50) of the latter, placed in parentheses, which is placed after that of the note, as in 46 (50).

(****) The number of a note which is an immediate continuation of a previous note (which numbers are then follow) is preceded by the sign * in the table of contents. Thus *47, 46 indicates that note n immediate [°] 47 is a continuation of note n [°] 46 (which is not here, moreover, the one which immediately precedes it, which is the note n [°] 469).

I finally underlined in t. m. the numbers of the notes which are not followed by another number, that is to say those which represent a "new departure" of the reflection, not being inserted in a specific place of the

of the first note, such as (ÿÿ47) placed at the end of the last line of the note (46), which refers to the note (47) which continues it.) Finally, certain clarifications of a somewhat technical nature to a note are grouped at the end of it into sub-notes numbered by indices consecutive to the number of the original note - as in the sub-notes (461) to (469) of the note (46) "My orphans ".

To somewhat structure the overall ordering of the Funeral and to allow one to recognize oneself in the multitude of notes that crowd together, it seemed appropriate for the occasion to include in the procession some gravely suggestive subtitles, each preceding and leading a long or short procession of consecutive notes linked by a theme common.

I thus had the pleasure of seeing ten (*) processions assembled one by one, in a long solemn procession coming to honor my funeral - some humble, others imposing, some contrite and others secretly in jubilation, as it cannot be otherwise on such an occasion. So here we come: the posthumous student (whom everyone makes a point of ignoring), the orphans (freshly exhumed for the occasion), Fashion and its illustrious Men (I deserved that), the motifs (latest born and last exhumed of all my orphe-lins), my friend Pierre modestly leading the most important procession, closely followed by the Unanimous Agreement of (silently) concerting notes and by the Colloquium (known as "Pervers") in full force (standing out from the posthumous student, alias the Unknown Student, by funeral processions carrying flowers and wreaths); finally, to end the imposing parade with dignity, here again comes the Student (by no means posthumous and even less unknown) aka the Boss, followed by the busy troop of my students (equipped with shovels and ropes) and finally the Van Funeral (showing four beautiful solidly screwed oak coffins, not counting the Gravedigger)... ten processions finally in full force (it was about time), moving slowly towards the Funeral Ceremony.

The highlight of the Ceremony is the Eulogy, served with perfect skill by none other than my friend Pierre himself, presiding over the funeral in response to everyone's wishes and to general satisfaction. The Ceremony ends in a final and definitive De Profundis (at least we hope), sung as a sincere thanksgiving by the late deceased himself, who

thought already made.

(*) (September 29) In fact, there are ultimately twelve processions, including the Funeral Van (X), and "The deceased (still not deceased)" (XI) who just at the last minute sneaks into the procession again...

unbeknownst to everyone, survived his impressive funeral and even took some of it, to his complete satisfaction - which satisfaction forms the final note and the final chord of the memorable Funeral.

8. The end of a secret.

During this final stage (we hope) of the reflection, it appeared to me the interest of attaching in an "Appendix" to the present volume 1 of Mathematical Reflections two other texts, of a mathematical nature, in addition to the three of which it was discussed previously (*).

The first is the reproduction of a report commented in two parts, which I had made in 1968 and 1969 on the work of P. Deligne (some of which remains unpublished even today), corresponding to a mathematical activity at IHES during the three years 1965/67/68.

The other text is a sketch of a "six variances form", bringing together the common features of a formalism of duality (inspired by the duality of Poincaré and that of Serre) that I had identified between 1956 and 1963, form which turned out to have a "universal" character for all situations of cohomological duality encountered to date. This formalism

(*) In addition, I am thinking of adding to the Thematic Sketch (see "Compass and baggage", Introduction, 3) a "commentary" giving some details about my contributions to the "themes" which are briefly reviewed there, and also about the influences which played in the genesis of the main key ideas in my mathematical work. The retrospective of the last six weeks has already revealed (to my own surprise) the role of Serre as a "detonator", for the start of most of these ideas, as also for some of the "major tasks" that I had set myself, between 1955 and 1970.

Finally, as another text of a mathematical nature (in the common sense), and the only one which appears (incidentally) in the non-technical text "Harvest and Seeds", I point out the subnote and I explain ^{§ 871} in the note "The massacre" (n^o 87), where with care that it deserves a "discrete" (conjectural) variant of the familiar Riemann—Roch—Grothendieck theorem in the coherent context. This conjecture appeared (among a number of others) in the closing presentation of the SGA 5 seminar of 1965/66, a presentation of which there remains no trace (nor many others) in the volume published eleven years later under the name SGA 5. The vicissitudes of this crucial seminar in the hands of some of my students, and the links of these with a certain "operation SGA 41/2", are gradually revealed during the reflection continued in notes n^{os} 63, 67, 67, 68, 68, 84, 85, 85, 86, 87, 88.

As another note giving fairly extensive mathematical comments, on the advisability of identifying a common "topossical" framework (as far as possible) for the known cases where we have a duality formalism known as "the six operations", I also indicates the sub-note "risks", n

^{§ 81}.

^{§ 812} to the note "Thesis on credit and insurance all

seems to have fallen into disuse with my departure from the mathematical scene, to the point that to my knowledge no one (apart from me) has yet taken the trouble to write even the list of fundamental operations, of the fundamental canonical isomorphisms to which these these give rise, and essential compatibilities between them.

This sketch of a coherent form will be for me the first obvious step towards this “vast overall picture of the dream of patterns”, which for more than fifteen years “waits for the bold mathematician who is willing to paint it”. To all appearances, this mathematician will be none other than myself. It is indeed high time that what was born and entrusted in privacy almost twenty years ago, not to remain the privilege of a single person but to be available to all, finally emerges from the night of secrecy. , and is born once again in the full light of day.

It is very true that only one, apart from me, had an intimate knowledge of this “yoga of patterns”, having learned it from my mouth over the days and years which preceded my departure. Among all the mathematical things that I had the privilege of discovering and bringing to light, this reality of patterns still appears to me as the most fascinating, the most charged with mystery — at the very heart of deep identity. between “geometry” and “arithmetic”. And the “yoga of patterns” to which this long-ignored reality led me is perhaps the most powerful instrument of discovery that I have released in this first period of my life as a mathematician.

But it is also true that this reality, and this “yoga” which strives to understand it as closely as possible, had in no way been kept secret by me. Absorbed by the imperative tasks of writing the foundations (which everyone since then has been very happy to be able to use as is in their everyday work), I did not take the few months necessary to write a vast outline of all of this yoga of patterns, and thus make it available to everyone.

However, in the years preceding my unexpected departure, I did not fail to talk about it at random meetings and to anyone who would listen, starting with my students, who (apart from one of them) have forgotten it as everyone has forgotten it. If I spoke about it, it was not to place “inventions” which would bear my name, but to draw attention to a reality which manifests itself at every step, as soon as we are interested in the cohomology of algebraic varieties and in particular, their “arithmetic” properties and the relationships between them of the different cohomological theories known to date. This reality is as tangible as that of the “infinitely small” once was, perceived long before the appearance of rigorous language which made it possible to grasp it perfectly and “establish” it. And to understand reality

reasons, today we are in no way short of a flexible and adequate language, nor of consummate experience in the construction of mathematical theories, which our predecessors lacked.

If what I once shouted from the rooftops fell on deaf ears - and if the disdainful silence of one echoed the silence and lethargy of all those who pretend to be interested in cohomology (and who yet have eyes and hands just like me...), I cannot hold responsible this one alone who chose to keep for himself the "benefit" of what I had entrusted to him at the time. intention of all. It is clear that our era, whose unbridled scientific productivity rivals that invested in armaments or in consumer goods, is very far from this "bold dynamism" of our predecessors of the seventeenth century, who "did not did not beat around the bush" to develop a calculation of the infinitesimals, without letting themselves be stopped by the concern whether this calculation was "conjectural" or not; nor wait for some prestigious man among them to deign to give them the green light, to grab hold of what everyone saw with their own eyes and felt first hand.

9. The stage and the Actors.

By its own internal structure and by its particular theme, "The Burial" (which now forms more than half of the text of *Récoltes et Semailles*) is to a large extent and from a logical point of view independent of the long reflection which precedes it . This, however, is a very superficial independence. For me this reflection, around a "funeral" gradually emerging from the mists of the unsaid and the present, is inseparable from that which had preceded it, from which it came and which gives it all its meaning. Started as a quick "passing" glance at the vicissitudes of a work that I had somewhat (much) lost sight of, it became, without having planned or sought it, a meditation on a relationship important in my life, leading me in turn to a reflection on the fate of this work in the hands of "those who were my students". Separating this reflection from that from which it spontaneously arises seems to me a way of reducing it to a simple "table of morals" (or even, to a settling of scores in the mathematical "beau monde").

It is true that if we insist on it, the same reduction to a "table of morals" can be made for *Récoltes et Semailles* as a whole. Certainly, the customs which prevail at a given time and in a given environment and which contribute to shaping the lives of the men who are part of it, have

their importance and deserve to be described. However, it will be clear to an attentive reader of *Récoltes et Semailles* that my aim is not to describe morals, that is to say a certain scene, changing over time and from one place to another, on which our actions take place. This scene to a large extent defines and delimits the means available to various forces within us, allowing them to express themselves. While the stage and the means it provides (and the "rules of the game" it imposes) vary infinitely, the nature of the deep forces within us which (at the collective level) shape the scenes and which (at the level of the person) expressed on them, seems to be the same from one environment or from one culture to another, and from one era to another. If there is one thing in my life, apart from mathematics and the love of women, whose mystery and attraction I have felt (lately, it is true), it is the hidden nature of these few forces which have the power to make us act, for the "better" as well as for the "worse", to bury and to create.

10. An act of respect.

This reflection which eventually took the name "The Funeral" began as an act of respect. A respect for things that I had discovered, that I saw condense and take shape in nothingness, of which I was the first to know the taste and vigor and to which I gave a name, to express and the knowledge I had of them, and my respect. To these things, I gave the best of myself. They were nourished by the strength that rests in me, they grew and flourished, like multiple and vigorous branches springing from the same living trunk with vigorous and multiple roots. These are living and present things, not inventions that we can make or not make - things closely united in a living unity which is made of each of them and which gives to each its place and its meaning, an origin and an ending. I had left them a long time ago and without any worry or regret, because I knew that what I left behind was healthy and strong and had no need of me to grow and flourish further and multiply, according to its nature. own nature. It wasn't a bag of coins that I left behind, which could be stolen, nor a pile of tools, which could rust or rot.

However, over the years, while I thought I was far from a world that I had left behind, came back to me here and there even in my retirement like puffs of insidious disdain and discreet derision, designating some of those things that I knew strong and beautiful, who had their place and their unique function that no other thing could ever fulfill. I them

felt like orphans in a hostile world, a world sick with the disease of contempt, attacking what is without armor. It is in these dispositions that this reflection began, as an act of respect towards these things and therefore towards myself - as the reminder of a deep link between these things and me: he who likes to affect disdain towards one of these things which were nourished by my love, it is me that he likes to disdain, and everything that comes from Me.

And it is the same for the one who, knowing first hand this link which connects me to a certain thing which he learned from none other than me, pretends to consider this link negligible or to ignore this link or to claim (was -this tacitly and by omission) on his own behalf or on that of others an artificial "authorship". I see it very clearly as an act of contempt for a thing born of the worker as well as for the obscure and delicate work which allowed this thing to be born, and for the worker, and above all (in a more hidden and more essential) for itself.

If my "return to math" were only to serve to remind me of this link and to arouse in me this act of respect in front of everyone – in front of those who pretend to disdain and in front of indifferent witnesses – this return will not have been useless.

It is true that I had really lost touch with the written and unwritten (or at least unpublished) work that I had left behind. When I began this reflection, I saw the branches quite clearly, without really remembering, however, that they were part of the same tree.

Strangely enough, it was necessary for little by little to reveal to my eyes the picture of a ransacking of what I had left behind, to rediscover in me the sense of the living unity of what was thus ransacked and dispersed. One took some crowns and the other a tool or two to take advantage of them or even to use them - but the unity which makes life and the true strength of what I had left, it escaped each and everyone. However, I know one well who has deeply felt this unity and this force, and who deep within himself still feels it today, and who likes to disperse the force that is in him to want to destroy this unity that he felt in others through his work. It is in this living unity that the beauty and creative virtue of the work resides. Notwithstanding the destruction, I find them intact as if I had just left them — except that I have matured and see them today with new eyes.

If, however, something is vandalized and mutilated, and stripped of its original strength, it is in those who forget the strength that rests in themselves and who imagine themselves ransacking a thing at their mercy, while they only cut themselves of the creative virtue of what is at their disposal as it is at the disposal of all, but in no way at their mercy nor in the power of

person.

So this reflection, and through it this unexpected “return”, will also have made me reconnect with a forgotten beauty. It is having fully felt this beauty which gives full meaning to this act of respect which is clumsily expressed in the note “My orphans” (*), and which I have just reiterated with full knowledge of the facts here.

(*) This note (n ̃ 46) is chronologically the first of all those which appear in The Burial.

HARVESTING AND SOWING

Reflections and testimony
on a past as a mathematician

about

Alexandre GROTHENDIECK

First part :

FACTUALITY AND RENEWAL

To those who were my elders
who welcomed me fraternally
in this world that was theirs
and which became mine

To those who were my students
to whom I gave the best of myself
and also the worst...

HARVEST AND SOWING (I)

Fate and Renewal

(Summary)

I Work and discovery

1. The child and the Good Lord
2. Error and discovery
3. Unspeakable labors
4. Infallibility (of others) and contempt (of oneself)

II The dream and the Dreamer

5. The forbidden dream
6. The Dreamer
7. The legacy of Galois
8. Dream and demonstration

III Birth of fear

9. The welcome stranger
10. The “Mathematical Community”: fiction and reality 11.
Meeting with Claude Chevalley, or: freedom and good feelings 12. Merit and
contempt 13. Strength and
depth 14. Birth of fear
15. Harvests and sowing

IV The double face

16. Swamps and front rows 17.
Terry Mirkil 18.
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The world without love
20. A world without conflict?
21. A well-kept open secret 22. Bourbaki, or
my great luck — and its downside 23. De Profundis

24. My farewells, or: strangers

V Teacher and students

25. The student and the Program

26. Rigor and rigor 27. The

blunder — or twenty years later 28. The
unfinished harvest

29. The Enemy Father (1)

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31. The power to discourage 32.

Mathematician ethics

VI Harvests

33. The note — or the new ethics 34. The silt
and the spring

35. My passions 36.

Desire and meditation 37.

Wonder 38. Drive to return

and renewal 39. Beautiful by night, beautiful by day

(or: the Augean stables)

40. Sports mathematics 41. The merry-
go-round is over!

VII The Child is having fun

42. The child

43. The spoilsport boss — or the pressure cooker 44. We're turning
the tide again!

45. The Guru-not-Guru — or the three-legged horse

VIII The solitary adventure

46. The forbidden fruit 47.

The solitary adventure 48.

Gift and welcome 49.

Observation of a division

50. The weight of a past

NOTES for the first part of Récoltes et Semailles (*)

1. My friends from Survive et Vivre 2. Aldo	6 (11)
Andreotti, Ionel Bucur 3. Jesus and the	11 (14)
twelve apostles 4. The Child and the	19 (25)
master	23 (26)
5. Fear of playing 6. The	23" (29)
two brothers	23" (29)
7. Failure of teaching (1)	23iv (31)
8. Ethical consensus — and control of information 9. "Youth snobbery", or the	25 (32)
defenders of purity 10. A hundred irons in the fire, or: there is no point in drying	27 (33)
out!	32 (36)
11. The Helpless Embrace 12.	34 (37)
The Visit	40 (45)
13. Krishnamurti, or liberation becoming hindrance 14. The salutary	41 (45)
uprooting	42 (45)

(*) The notes in the section "The weight of a past" (section 50) do not appear in this list but form the second part of Récoltes et Semailles (notes n° s 44 to 97).

June 1983

1. The child and the Good Lord.

The mathematical notes on which I am working now are the first in thirteen years that I have intended for publication. The reader will not be surprised that after a long silence, my style of expression changed. This change of expression is not, however, the sign of a change in the style or method of work (1), and even less that of a transformation which would have taken place in the very nature of my mathematical work.

Not only has it remained the same - but I have acquired the conviction that the nature of the work of discovery is the same from one person who discovers to another, that it is beyond differences that infinitely varying conditionings and temperaments create.

Discovery is the child's privilege. It's the little child that I want to talk about, the child who is not yet afraid of making mistakes, of appearing stupid, of not being serious, of not being like everyone else. He is also not afraid that the things he looks at have the bad taste of being different from what he expects of them, from what they should be, or rather: from what he is of course they are. It ignores the silent and unwavering consensus that is part of the air we breathe — that of all sensible people well known as such.

God knows there have been sensible people, well known as such, since the dawn of time!

Our minds are saturated with a heterogeneous "knowledge", a tangle of fears and laziness, cravings and prohibitions, information from all sources and push-button explanations — a closed space where information and cravings pile up. and fears without the sea wind ever rushing in. Apart from routine know-how, it would seem that the main role of this "knowledge" is to evacuate a living perception, an awareness of the things of this world. Its effect is above all that of immense inertia, of an often overwhelming weight.

The little child discovers the world as he breathes — the ebb and flow of his breathing makes him welcome the world into his delicate being, and makes him project himself into the world that welcomes him. The adult also discovers, in these rare moments when he has forgotten his fears and his knowledge, when he looks at things or himself with wide open eyes, eager to know, new eyes - the eyes of a child.

* *

God created the world as he discovered it, or rather he creates the world eternally, as he discovers it — and he discovers it as he creates it. He created the world and creates it day after day, starting over millions of millions of times, without respite; by groping, making mistakes millions of millions of times and correcting the situation, without tiring... Each time, in this game of probing things, of the response of things ("it's not bad this here", or: "there you are totally screwing up", or "it works like clockwork, keep it up"), and the new probe rectifying or repeating the previous probe, in response to the response previous..., with each back and forth in this infinite dialogue between the Creator and Things, which takes place in every moment and in all places of Creation, God learns, discovers, He becomes aware of things more and more more intimately, as they take on life and form and transform in His hands.

Such is the process of discovery and creation, such has it been for all eternity it seems (as far as we can know). It has been such, without man having had to make his late entry on the scene, barely a million years or two ago, and getting his hands dirty - with, lately, the consequences annoying as we know.

It happens that one or the other of us discovers this thing or that. Sometimes he then rediscovers in his own life, with wonder, what it is to discover. Everyone has within themselves everything they need to discover everything that attracts them in this vast world, including this wonderful capacity that is within them — the simplest, most obvious thing in the world! (One thing, however, that many have forgotten, like we have forgotten to sing, or to breathe like a child breathes...)

Everyone can rediscover what discovery and creation are, and no one can invent it. They were there before us, and are what they are.

2. Error and discovery.

To return to the style of my mathematical work strictly speaking, or to its "nature" or to its "approach", they are now like those that the good God himself taught each of us without words, God knows when, long before we were born perhaps. I do like him. This is also what everyone does instinctively, as soon as curiosity pushes them to know a certain thing above all others, a thing which is therefore invested by this desire, this thirst...

When I'm curious about something, mathematical or otherwise, I question it. I question him, without worrying if my question is perhaps stupid or if it will seem so, without it being at all costs carefully considered. Often the question takes the form of a statement — a statement which, in truth, is a probe. I believe it more or less, in my assertion, it depends of course on the point where I am in understanding the things that I am looking at. Often, especially at the start of a research, the statement is downright false — you still had to make it to be able to convince yourself of it. Often, it was enough to write it for it to be obvious that it was false, whereas before writing it there was a vagueness, like uneasiness, instead of this obviousness. This now allows us to return to the charge with less ignorance, with a question-affirmation perhaps a little less “off the mark”. Even more often, the statement taken literally turns out to be false, but the intuition which, still clumsily, tried to express itself through it is correct, while remaining vague.

This intuition will gradually decant itself from an equally unformed matrix of false or inadequate ideas, it will gradually emerge from the limbo of the misunderstood which only asks to be understood, of the unknown. which only asks to let itself be known, to take a form that is unique to itself, to refine and sharpen its contours, as the questions that I ask of these things in front of me become more precise or more relevant, to understand them more and more closely.

But it also happens that through this approach, the repeated probes converge towards a certain image of the situation, emerging from the mists with features marked enough to lead to the beginning of a conviction that this image expresses reality well - whereas However, this is not the case when this image is tainted by a major error, likely to profoundly distort it. The work, sometimes laborious, which leads to the detection of such a false idea, from the first “takeoffs” observed between the image obtained and certain patent facts, or between this image and others which also had our confidence - this work is often marked by an increasing tension, as one approaches the knot of contradiction, which from vague at first becomes more and more glaring - until the moment when it finally bursts, with the discovery of error and the collapse of a certain vision of things, occurring as an immense relief, as a liberation. The discovery of the error is one of the crucial moments, a creative moment above all, in any work of discovery, whether it is mathematical work, or work of self-discovery.

It is a moment when our knowledge of the thing probed is suddenly renewed.

Fearing error and fearing the truth are one and the same thing. He who fears to be wrong is powerless to discover. It is when we fear making mistakes that the error within us becomes immutable like a rock. Because in our fear, we cling to what we once decreed “true”, or to what has always been presented to us as such. When we are moved, not by the fear of seeing an illusory security disappear, but by a thirst for knowledge, then error, like suffering or sadness, crosses us without ever freezing, and the trace of its passage is a renewed knowledge.

3. Unspeakable labors.

It is surely no coincidence that the spontaneous process of any true research almost never appears in the texts or discourse which are supposed to communicate and transmit the substance of what has been “found”. Texts and speeches are most often limited to recording “results”, in a form which to ordinary mortals must make them appear as so many austere and immutable laws, inscribed for all eternity in the granite tables of a sort of library. giant, and dictated by some omniscient God to initiates-scribes-scientists and the like; to those who write scholarly books and no less scholarly articles, those who transmit knowledge from the top of a chair, or in the more restricted circle of a seminar. Is there a single class book, a single manual for the use of schoolchildren, high school students, students, or even “our researchers”, which can give the unfortunate reader the slightest idea of what is research - if it is not precisely the universally received idea that research is when you are very knowledgeable, when you have passed lots of exams and even competitions, the big heads what, Pasteur and Curie and the Nobel Prizes and all that... We other readers or listeners, ingesting as best we can the Knowledge that these great men were willing to record for the good of humanity, we are only just good (if we work hard) at take our exam at the end of the year, and again...

How many are there, including among the unfortunate “researchers” themselves, in need of theses or articles, including even among the most “learned”, the most prestigious among us — who therefore has the simplicity of seeing that “searching” is nothing more or less than questioning things, passionately — like a child who wants to know how he or his little sister came into the world. That seeking and finding, that is to say: questioning and listening, is the simplest, most spontaneous thing in the world, of which no one in the world has the privilege. It is a “gift” that we all received from the cradle — made to express and flourish

under an infinity of faces, from one moment to another and from one person to another...

When we venture to make such things heard, we reap from one as well as from the other, from the most dunce sure of being a dunce, to the most learned sure of being learned and well above ordinary mortals, the same half-embarrassed, half-understood smiles, as if we had just made a joke that was a little rough around the edges, as if we were displaying a naivety stitched with white thread; that's all very well and good, you don't have to spit on anyone, that's understood - but you shouldn't push it anyway - a dunce is a dunce and it's not Einstein or Picasso

Faced with such unanimous agreement, I would have had grace to insist. Decidedly incorrigible, I have lost yet another opportunity to remain silent...

No, it is surely no coincidence that, with a perfect ensemble, instructive or edifying books and manuals of all kinds present "Knowledge" as if it had come out dressed from head to toe by the brilliant brains who recorded it. for our benefit. We cannot say that it is bad faith either, even in the rare cases where the author is "in the know" enough to know that this image (which his text cannot fail to suggest) does not correspond in any way. to reality. In such a case, it happens that the presentation presents more than a collection of results and recipes, that a breath passes through it, that a living vision animates it, which sometimes is then communicated from the author to the reader attentive. But a tacit consensus, of considerable force it seems, means that the text does not leave the slightest trace of the work of which it is the product, even when it expresses with lapidary force the sometimes profound vision of the things which is one of the true fruits of this work. To tell the truth, at certain moments I myself have vaguely felt the weight of this force, of this silent consensus, during my project to write and publish these "Mathematical Reflections". If I try to fathom the tacit form that this consensus takes, or rather that which the resistance

takes in me to my project, triggered by this consensus, the term "indecent" immediately comes to me. The consensus, internalized in me I cannot say since when, tells me (and this is the first time that I take the trouble to draw out in the light of day, in the field of my gaze, what he mutters to me with a certain insistence for weeks, if not months): "It is indecent to display in front of others, even publicly, the ups and downs, the messy gropings around the edges, the "dirty laundry" in short, of a job of discovery. It just wastes the reader's valuable time. In addition, it will add pages and pages that will have to be composed and printed - what a waste, at the price of the printed paper.

scientist ! You really have to be very vain to flaunt things that have no personal interest like that, as if even my screw-ups were remarkable things – an opportunity to show off, in short.” And even more secretly: “It is indecent to publish the notes of such a reflection, as it really continues, just as it would be indecent to make love in a public square, or to expose, or even to let hanging around, the sheets stained with blood from the labors of childbirth... ”.

The taboo here takes the form, insidious and compelling at the same time, of the sexual taboo. It is at the moment of writing this introduction that I begin to glimpse only its extraordinary force, and the scope of this extraordinary fact itself, attesting to this force: that the true process of discovery, of such simplicity disconcerting, a childish simplicity, shows through practically nowhere; that it is silently evaded, ignored, denied.

This is the case even in the relatively innocuous field of scientific discovery, not that of his will or anything like that, thank God — a “discovery” in short good to be put into everyone's hands, and which (one might believe) has nothing to hide...

If I wanted to follow the “thread” that presents itself there, a thread by no means tenuous but all that there is thick and strong — surely it would lead me much further than the few hundred pages of homologico-homotopic algebra that I will eventually finish it and deliver it to the printer.

4. Infallibility (of others) and contempt (of oneself).

It was definitely a euphemism, when earlier I cautiously noted that “my style of expression” had changed, even suggesting that there was nothing there that could surprise: you understand well, when we have not not written for thirteen years, it's not the same as before, the “style of expression” must change, obviously... The difference is that before I “expressed myself” (sic) like everyone the world: I did the work, then I did it again backwards, carefully erasing all the erasures. Along the way, new erasures, shaking up all the work, sometimes worse than during the first draft. So you have to do it again — sometimes three times, even four times, until everything is perfect. Not only no dodgy corners or sweepings pushed surreptitiously under a suitable piece of furniture (I've never liked sweeping in corners, as long as you take the trouble to sweep); but above all, when reading the final text, the certainly flattering impression that emerged from it (as from any other scientific text) was that the author (my modest person in this case) was infallibility incarnate. Infallibly, he fell right on “the” good notions, then on “the” good statements, following one another

in the purr of a well-oiled engine, with demonstrations that “fell” with a dull thud, each exactly at its moment!

Let us judge the effect produced on a reader who suspects nothing, a high school student, say, learning the Pythagorean theorem or quadratic equations, or even one of my colleagues from research or education institutions. so-called “higher” education (to the wise, hello!) struggling (let's say) over the reading of such an article by such and such a prestigious colleague! This kind of experience is repeated hundreds, thousands of times throughout the life of a schoolchild, even a student or a researcher, amplified by the appropriate concert in the family as in all the media in all countries. of the world, the effect is the one that can be predicted. We see it in ourselves as in others, as long as we take the trouble to pay attention to it: it is the intimate conviction of our own worthlessness, in contrast to the competence and importance of people. who know” and people “who do”.

This intimate conviction is sometimes compensated, but in no way resolved or defused, by the development of an ability to memorize misunderstood things, or even by that of a certain operational skill: multiplying matrices, “putting together” a French composition with “thesis” and “antithesis”... It is, in short, the capacity of the parrot or the learned monkey, more prized today than it ever was, sanctioned by coveted diplomas, rewarded by comfortable careers.

But even the one with diplomas and a good position, covered with honors perhaps, is not fooled, deep down, of these artificial signs of importance, of “value”. Nor even the rarer one, who has invested his all in the development of some true gift, and who in his professional life has known how to give his measure and do creative work - he is not convinced, deep down -himself, by the brilliance of his notoriety, by which he often wants to deceive himself and others. The same never-examined doubt inhabits both of them just like the first dunce that comes along, the same conviction of which perhaps they will never dare to take note.

It is this doubt, this intimate unexpressed conviction, which pushes both of them to constantly surpass themselves in the accumulation of honors or works, and to project onto others (on those above all on whom they have some power...) this self-contempt which eats away at them in secret - in an impossible attempt to escape from it, by the accumulation of “proofs” of their superiority over others (2).

February 1984

5. The forbidden dream.

I am taking the opportunity of a three-month interruption in the writing of the Pursuit of the Fields, to resume the Introduction at the point where I left it last June.

I have just reread it carefully, more than six months later, and added a few subtitles.

In writing this Introduction, I was well aware that this type of reflection could not fail to give rise to numerous “misunderstandings” — and it would be futile to try to get ahead of them, which would simply amount to accumulating more above the first ones!

The only thing I would add on this subject is that it is in no way my intention to go to war against the style of scientific writing established by age-old usage, which I myself have practiced with assiduity for more than twenty years of my life, and taught to my students as an essential part of the profession of mathematician. Rightly or wrongly, even today I consider it as such and continue to teach it. Surely I would even be rather old-fashioned, with my insistence on work done to the end, hand-sewn from start to finish, and without making allowances for any slightly dark corner. If I have had to add water to my wine over the past ten years, it is by force of circumstances! “Writing in form” remains for me an important stage of mathematical work, both as an instrument of discovery, to test and deepen an understanding of things which otherwise remains approximate and fragmentary, and as a means of communicating such an understanding. From a didactic point of view, the rigorous mode of exposition, the deductive mode therefore, which in no way excludes the possibility of painting vast pictures, offers obvious advantages of conciseness and ease of reference. These are indeed real and significant advantages, when it comes to presentations aimed at mathematicians, let's say, and more particularly, at mathematicians who are already sufficiently familiar with certain ins and outs of the subject treated, or others nearby.

These advantages, on the other hand, become entirely illusory for a presentation aimed at children, young people or adults who are absolutely not “in the know” in advance, whose interest is not already aroused. , and who moreover, most often, are (and will remain, and for good reason...) in total ignorance of what the true process of a work of discovery is. Readers, to put it better, who are unaware of the very existence of such work, within the reach of everyone gifted with curiosity and common sense - this work from which is constantly born and reborn

our intellectual knowledge of things in the Universe, including that which is expressed in imposing orderings such as Euclid's "Elements", or Darwin's "Origin of Species". Complete ignorance of the existence and nature of such work is almost universal, including among teachers at all levels of education, from schoolteacher to university professor. This is an extraordinary fact, which appeared to me in full light during the reflection begun last year with the first part of this Introduction, at the same time as I then glimpsed the deep roots therefore confusing...

Even though it would be aimed at readers who are perfectly "in the know" from all points of view, there remains one important thing that the "de rigueur" mode of exposition refuses to communicate. It is also something that is completely frowned upon in the circles of serious people, like us scientists in particular! I want to talk about the dream. Of the dream, and of the visions that it whispers to us — impalpable like it at first, and often reluctant to take shape. Long years, or even a lifetime of intense work, will perhaps not be enough to see a dream vision fully manifest, to see it condense and polish to the hardness and brilliance of a diamond. This is our work, workers by hand or by spirit. When the work is completed, or some part of the work, we present the tangible result in the brightest light we can find, we rejoice in it, and often take pride in it. However, it is not in this diamond, which we have cut for a long time, that we find what inspired us in cutting it. Perhaps we have fashioned a tool of great precision, an effective tool - but the tool itself is limited, like everything made by the hand of man, even when it seems large to us. A vision, nameless and without outlines at first, as tenuous as a shred of mist, guided our hand and kept us bent over the work, without feeling the hours or perhaps the years pass. A shred that detached itself noiselessly from a bottomless Sea of mist and darkness... What is limitless in us is She, this Sea ready to conceive and give birth incessantly, when our thirst for Her fertile. From these marriages the Dream emerges, like the embryo nestled in the nourishing womb, awaiting the obscure labors which will lead it towards a second birth, in the light of day.

Woe to a world where dreams are despised - it is also a world where what is deep within us is despised. I don't know if other cultures before ours — that of television, computers and transcontinental rockets — professed this contempt. It must be one of

many points by which we distinguish ourselves from our predecessors, whom we have so radically supplanted, eliminated in other words from the surface of the planet. I have not been aware of another culture, where the dream is not respected, where its deep roots are not felt by all and recognized. And is there any major work in the life of a person or a people that was not born from dreams and nourished by dreams before coming to light? Among us, however (do we even have to say already: everywhere?) respect for dreams is called “superstition”, and it is well known that our psychologists and psychiatrists have taken the measure of dreams in terms of hardly enough to clutter up the memory of a small computer, surely. It is also true that no one “in our area” knows how to light a fire anymore, nor dares in their house to see their child born, or their mother or father die — there are clinics and hospitals that are there for that, God. thank you... Our world, so proud of its power in atomic megatons and in the quantity of information stored in its libraries and in its computers, is undoubtedly also the one where the impotence of each person, this fear and this contempt in the face of things simple and essential of life, has reached its climax.

Fortunately the dream, just like the original sexual drive in even the most repressive society, dies hard! Superstition or not, he continues by stealth to stubbornly whisper to us a knowledge that our waking mind is too heavy, or too pusillanimous to comprehend, and to give life and lend wings to the projects that he has inspired in us.

If I suggested earlier that the dream was often reluctant to take shape, this is an appearance, which does not really get to the bottom of things. The “reluctance” would rather come from our mind in its waking state, in its ordinary “plate” — and even then the term “reluctance” is a euphemism! It would rather be a deep distrust, which covers an ancestral fear — the fear of knowing. Speaking of the dream in the literal sense of the term, this fear is all the more active, it creates a more effective screen, as the message of the dream touches us more closely, as it is fraught with the threat of a profound transformation of our person, if by chance it were to be heard. But we must believe that this distrust is present and effective even in the relatively innocuous case of the mathematical “dream”, to the point that all dreams seem banned not only from texts (I do not know of any in any case where there is a trace of them).), but also discussions between colleagues, in small groups, or even one-on-one.

If this is so, it is certainly not that the mathematical dream would not exist or would no longer exist — our science would then have become sterile, which is in no way the case. Surely the

The reason for this apparent absence, this conspiracy of silence, is closely linked to this other consensus - that of carefully erasing all traces and all mention of the work by which our knowledge of the world is discovered and renewed. Or rather, it is one and the same silence that surrounds both the dream, and the work that it arouses, inspires and nourishes. To the point that the very term "mathematical dream" will seem nonsense to many, driven as we are so often by push-button clichés, rather than by the direct experience that we can have of a very simple reality, daily, important.

6. The Dreamer.

In fact, I know well from experience that when the mind is eager to know it, instead of running away from it (or approaching it with a patented grid in hand, which amounts to the same thing), the dream is not in no way reluctant to "take shape" — to allow himself to be described delicately and to deliver his message, always simple, never stupid, and sometimes overwhelming. On the contrary, the Dreamer in us is an incomparable master for finding, or creating from scratch, from one occasion to another, the language best suited to circumventing our fears, to shaking off our torpor, with varying scenic means. endlessly, from the absence of any visual or sensory element whatsoever, to the most breathtaking displays. When He manifests Himself, it is in no way to evade, but to encourage us (almost always to no avail, without His benevolence ever tiring...) to emerge from ourselves, from the heaviness in which He manifests Himself. sees us stuck, and which He sometimes enjoys, casually, parodying in comical colors. Listening to the Dreamer in us means communicating with ourselves, against the powerful barriers that would deny us at all costs.

But who can do more, can do less. If we can communicate with ourselves through the medium of dreams, revealing ourselves to ourselves, surely it must be possible in an equally simple way to communicate to others the by no means intimate message of the mathematical dream, let's say, which does not no resistance forces of comparable power come into play. And to tell the truth, what else have I done in my past as a mathematician, if not follow, "dream" to the end, until their most manifest, most solid, indisputable manifestation, shreds of dream detaching one by one from a heavy and dense fabric of mists? And how many times have I stamped with impatience at my own obstinacy in jealously polishing down to the last facet each precious or half-precious stone in which my dreams were condensed, rather than following a deeper impulse: that of following the multi-arcana

forms of the mother tissue — at the undecided confines of the dream and its patent incarnation, “publishable” in short, according to the canons in force! I was also on the point of following this impulse, of launching into a work of “mathematical science fiction”, “a sort of waking dream” on a theory of “motives” which remained at that moment purely hypothetical - and which has remained so until today and for good reason, due to the failure of another “waking dreamer” to embark on this adventure. It was towards the end of the sixties, when my life (without me suspecting it in the least) was about to take a completely different turn, which for around ten years would relegate my mathematical passion to a marginal, even disowned, place.

But all in all, “A la Pursuit des Champs”, this first publication after fourteen years of silence, is in the spirit of this “waking dream” which was never written, and from which it seems to have taken the provisional continuation. Certainly, the themes of these two dreams are as dissimilar, at least at first sight, as is possible for two mathematical themes; without taking into account that the first, that of motifs, would seem to be on the horizon of what could be “feasible” with the means at hand, while the second, the famous “champs” and others, seem entirely to be within reach. These are dissimilarities that we could call fortuitous or accidental, and which will perhaps disappear much sooner than we expect (3). They have relatively little impact, it seems to me, on the kind of work to which one or the other theme can give rise, since it is precisely a question of “dream awake”, or, to put it in less provocative terms: to continue the work of conceptual roughing up until an overall vision of sufficient coherence and precision, to lead to the more or less complete conviction that the vision corresponds well, for the most part, to the reality of things. In the case of the theme developed in the present work, this should mean, more or less, that the detailed verification of the validity of this vision becomes a matter of pure profession. This can certainly require considerable work, with its share of cleverness and imagination, and undoubtedly also unexpected twists and perspectives, which will make it something other, fortunately, than purely routine work (a “long exercise”, as André Weil would say).

This is the kind of work, in short, that I have done and redone to satiety in the past, that I have at my fingertips and that there is therefore no point in me redoing in the years that still remain ahead of me. . To the extent that I am once again investing myself in mathematical work, it is on the borders of the “waking dream” that my energy will surely be best used. In this

choice, it is not a concern for profitability that inspires me (assuming that such a concern can inspire anyone), but precisely a dream, or dreams. If this new impulse in me must prove to be a bearer of strength, it is in the dream that he will have drawn it!

7. The legacy of Galois.

It would seem that among all the natural sciences, it is only in mathematics that what I called "the dream", or "the waking dream", is subject to an apparently absolute prohibition, more than two thousand years old. In other sciences, including sciences deemed "exact" like physics, dreams are at least tolerated, even encouraged (depending on the era), under names it is true that are more "sortable" such as: "speculations", "hypotheses" (such as the famous "atomic hypothesis", resulting from a dream, sorry for a speculation of Democritus), "theories"... The transition from the status of the dream-which-dares-not-say-its-name to that of "Scientific truth" is achieved by imperceptible degrees, by a consensus which gradually broadens. In mathematics, on the other hand, it is almost always (today at least) a question of sudden transformation, by virtue of the magic wand of a demonstration (⁴). At the time when the notion of mathematical definition and demonstration was not, as today, clear and the subject of a (more or less) general consensus, there were nevertheless visibly important notions which had an ambiguous existence - such as that of "negative" number (rejected by Pascal) or that of "imaginary" number. This ambiguity is reflected in the language still used today.

The progressive clarification of the notions of definition, statement, demonstration, mathematical theory, was very beneficial in this respect. She made us aware of all the power of the tools, yet childishly simple, that we have at our disposal to formulate with perfect precision that which could seem unformulable - by the sole virtue of a sufficiently rigorous use of everyday language, with little close. If there is one thing that has fascinated me about mathematics since my childhood, it is precisely this power to encompass in words, and to express in a perfect way, the essence of such mathematical things which at first glance present themselves in such an elusive form, or so mysterious that they seem beyond words...

An unfortunate psychological repercussion, however, of this power, of the resources offered by perfect precision and demonstration, is that they have further accentuated the traditional taboo with regard to the "mathematical dream"; that is to say with regard to everything which does not present itself

would not be under the conventional aspects of precision (even at the expense of a broader vision), guaranteed “good complexion” by formal demonstrations, or otherwise (and increasingly in these times...) by demonstration sketches, supposed to be able to be put into shape. Occasional conjectures are strictly tolerated, provided that they satisfy the precision conditions of a questionnaire, where the only accepted answers would be “yes” or “no”. (And on condition, it is needless to say, that the one who allows himself to do it is well established in the mathematical world.) To my knowledge, there has been no example of the development, on an “experimental” basis, of a mathematical theory which would be explicitly conjectural in its essential parts. It is true that according to modern canons, all the calculation of “infinitely small” developed from the seventeenth century, which has since become differential and integral calculus, would take on the appearance of a waking dream, which would ultimately have transformed into serious mathematics. only two centuries later, by the wave of Cauchy's magic wand. And this inevitably reminds me of the waking dream of Evariste Galois, who had no luck with this same Cauchy; but this time it took less than a hundred years for another wave of the wand, this time from Jordan (if I remember correctly), to give voice to this dream, renamed for the occasion “Galois theory”.

The observation that emerges from all this, and which is not to the advantage of “mathematics 1984”, is that it is fortunate that people like Newton, Leibnitz, Galois (and I am sure many, not being knowledgeable in history...) were not encumbered by our current canons, at a time when they were content to discover without taking the leisure to canonize!

The example of Galois, who came there without my calling, touches a sensitive chord in me. I seem to remember that a feeling of fraternal sympathy towards him was awakened from the first time I heard about him and his strange destiny, back when I was still a high school student or student, I think. . Like him, I felt within myself a passion for mathematics — and like him I felt like an outsider, a stranger in the “beautiful world” which (it seemed to me) had rejected him. However, I myself ended up being part of this beautiful world, to leave it one day, without regret... This somewhat forgotten affinity reappeared to me very recently and in a completely new light, while I was writing the “Outline of a Program” (on the occasion of my application for admission as a researcher to the National Center for Scientific Research). This report is devoted mainly to an outline of my main themes of reflection over the past ten years. Of all these themes, the one that fascinates me the most, and which I intend to develop especially in the coming years, is the very type of a mathematical dream, which

also joins the “dream of patterns”, of which it provides a new approach. In writing this Sketch, I remembered the longest mathematical reflection that I have pursued in one go over the last fourteen years. It continued from January to June 1981, and I called it “The Long March through Galois Theory”. One thing led to another, and I became aware that the waking dream that I had been pursuing sporadically for several years, which had ended up taking the name of “Anabelian algebraic geometry”, was none other than a continuation, “an ultimate outcome of the theory of Galois, and undoubtedly in the spirit of Galois”.

When this continuity appeared to me, at the moment of writing the passage from which the quoted line is taken, a joy came over me, which has not dissipated. It was one of the rewards of work carried out in complete solitude. His appearance was as unexpected as the more than warm welcome received recently from two or three colleagues and former friends who were nevertheless well “in the know”, one of whom was actually my student, to whom I had had the opportunity to speak, “hotly” again and with the joy of my heart, about these things that I was discovering...

This reminds me that taking up Galois's legacy today surely also means accepting the risk of the solitude that was his in his time. Perhaps times change less than we often think! However, this “risk” does not pose a threat to me. If it happens that I am saddened and frustrated by the affectation of indifference or disdain of those I have loved, on the other hand, never for many years has solitude, mathematical or otherwise, -she weights. If there is a faithful friend that I constantly aspire to find when I leave her, it's her!

8. Dream and demonstration.

But let's return to the dream, and to the ban that has struck it in mathematics for millennia. This is perhaps the most inveterate among all the a-prioris, often implicit and rooted in habits, decreeing that one thing “is math” and another, not. It took millennia before things as childish and omnipresent as the groups of symmetries of certain geometric figures, the topological forms of certain others, the number zero, the sets found admission into the sanctuary! When I talk to students about the topology of a sphere, and the shapes that are deduced from a sphere by adding handles — things that do not surprise young children, but which confuse them because they think they know what “maths” is — the first spontaneous echo I receive is

: but that's not math! Maths of course, is the Pythagorean theorem, the heights of a triangle and second degree polynomials... These students are not stupider than you or me, they react as people have always reacted until to all the mathematicians in the world today, except people like Pythagoras or Riemann and maybe five or six others. Even Poincaré, who was not the first to come, managed to prove with a well-felt philosophical A plus B that infinite sets were not math! Surely there must have been a time when triangles and squares weren't math - they were designs that kids or pottery artisans traced on the sand or in the clay of vases, don't be confused...

This fundamental inertia of the mind, stifled by its "knowledge", is certainly not unique to mathematicians. I am moving away somewhat from my subject: the prohibition which affects the mathematical dream, and through it, everything which does not present itself under the usual aspects of the finished product, ready for consumption. The little that I have learned about other natural sciences is enough to make me realize that a prohibition of similar rigor would have condemned them to sterility, or to a tortuous progression, a bit like in the Middle Ages when it there was no question of chipping away at the letter of the Holy Scriptures. But I also know well that the deep source of discovery, just like the process of discovery in all its essential aspects, is the same in mathematics as in any other region or thing in the Universe than our body and our mind can know. To banish the dream is to banish the source—to condemn it to an occult existence.

And I also know well, through an experience which has not been denied since my first and youthful loves with mathematics, this: in the deployment of a vast or deep vision of mathematical things, it is this deployment of a vision and understanding, this progressive penetration, which constantly precedes the demonstration, which makes it possible and gives it its meaning. When a situation, from the most humble to the most vast, has been understood in its essential aspects, the demonstration of what is understood (and the rest) falls like a ripe fruit. While the demonstration plucked like a still green fruit from the tree of knowledge leaves an aftertaste of dissatisfaction, a frustration of our thirst, in no way quenched. Two or three times in my life as a mathematician I have had to resolve, for lack of anything better, to pluck the fruit rather than pick it. I'm not saying that I did wrong, or that I regret it. But what I knew how to do best and what I loved best, I took willingly and not by force. If mathematics has given me joy in abundance and continues to

fascinate me in my mature age, it is not by the demonstrations that I would have been able to extract from her, but by the inexhaustible mystery and the perfect harmony that I feel in her, always ready to reveal herself to a hand and a loving gaze.

9. The welcome stranger.

The time seems right for me to express myself about my relationship to the world of mathematicians. This is something quite different from my relationship to mathematics. This existed and was strong from a young age, well before I even suspected that there existed a world and an environment of mathematicians. A whole complex world, with its learned societies, its periodicals, its meetings, symposiums, congresses, its primas-donnes and its taskmasters, its power structure, its gray eminences, and the no less gray mass of taxable and corvéable people, in need of thesis or articles and of those also, rarer, who are rich in means and ideas and come up against closed doors, despairing of finding the support of one of these powerful, pressed and feared men who have of this magical power: to publish an article...

I discovered the existence of a mathematical world when I arrived in Paris in 1948, at the age of twenty, with in my meager suitcase a Bachelor of Science degree from the University of Mont-pellier, and a manuscript with lines tight, written on both sides, without margins (paper was expensive!), representing three years of solitary reflections on what (I later learned) was then well known under the name of "measurement theory" or "the complete Lebesgue". Having never met anyone else, I believed, until the day I arrived in the capital, that I was the only one in the world to "do math", the only mathematician therefore. (It was the same thing for me, and has remained the same until today.) I had juggled with the sets that I called measurable (without having, moreover, encountered a set which is not...) and with convergence almost everywhere, but I didn't know what a topological space is. I remained a little lost in a dozen non-equivalent notions of "abstract space" and compactness, found in a small booklet (by someone called Appert, I believe, in Actualités Scientifiques et Industrielles), on which I had fallen God knows how. I had not yet heard, in a mathematical context at least, strange or barbaric words like group, body, ring, module, complex, homology (and so on!), which suddenly, without warning, flooded in on me all at the same time. The shock was severe!

If I "survived" this shock, and continued to do math and even make it my job, it is because in those ancient times, the mathematical world hardly resembled what it did.

has since become. It is also possible that I had the chance to land in a more welcoming corner than another of this unsuspected world. I had a vague recommendation from one of my professors at the Faculty of Montpellier, Mr. Soula (no more than his colleagues he had seen me often in his classes!), who had been a student of Cartan (father or son, I can't really say anymore). As Elie Cartan was then already "out of the picture", his son Henri Cartan was the first "fellow man" that I had the good fortune to meet. I had no idea then how auspicious this was! I was welcomed by him with this courtesy imbued with goodwill which distinguishes him, well known to the generations of normaliens who had the chance to cut their very first teeth with him. He must not have realized the full extent of my ignorance, judging by the advice he then gave me to guide my studies. Whatever the case, his benevolence was visibly aimed at the person, not at the baggage or possible donations, nor (later) at a reputation or notoriety...

In the year that followed, I was the host of a course by Cartan at the "School" (on the differential formalism on varieties), to which I clung tightly; that also of the "Cartan Seminar", as an amazed witness to the discussions between him and Serre, with great bursts of "Spectral Suites" (brr!) and drawings (called "diagrams") full of arrows covering the entire painting. It was the heroic era of the theory of "bundles", "shells" and a whole arsenal whose meaning totally escaped me, while I nevertheless forced myself as best I could to ingest definitions and statements and to check the demonstrations. At the Cartan Seminary there were also periodic appearances by Chevalley and Weil, and on the days of the Bourbaki Seminars (bringing together around twenty or thirty total participants and listeners), we saw a group of friends arrive there, like a group of friends. not very noisy, the other members of this famous Bourbaki gang: Dieudonné, Schwartz, Godement, Delsarte. They all spoke informally to each other, spoke the same language which almost completely escaped me, smoked a lot and laughed freely, the only thing missing was the crates of beer to complete the atmosphere - it was replaced by chalk and sponge. A completely different atmosphere from Leray's classes at the Collège de France (on Schauder's theory of the topological degree in infinite-dimensional spaces, poor me!), which I was going to listen to on the advice of Cartan. I had gone to see Mr. Leray at the Collège de France to ask him (if I remember correctly) what his course would be about. I don't remember the explanations he was able to give me, nor if I understood anything - only that there too I felt a kind welcome, addressed to the first stranger who came. It was this and nothing else, surely, that made me go to this course and take part in it.

bravely hooked, as at the Cartan Seminar, while the meaning of what Leray exposed there escaped me almost completely.

The strange thing is that in this world where I was a newcomer and where I hardly understood the language and spoke it even less, I did not feel like a stranger. While I hardly had the opportunity to speak (and for good reason!) with one of these merry fellows like Weil or Dieudonné, or with one of these more distinguished-looking gentlemen like Cartan, Leray, or Chevalley, I felt yet accepted, I would almost say: one of them. I do not remember a single occasion when I was treated with condescension by one of these men, nor an occasion when my thirst for knowledge, and later, again, my joy of discovery, found itself rejected by a complacency or disdain (5). If it had not been like this, I would not have “become a mathematician” as they say — I would have chosen another profession, where I could give my measure without having to face contempt...

While “objectively” I was a stranger to this world, just as I was a stranger in France, a link nevertheless united me to these men from another environment, from another culture, from another destiny. : a common passion. I doubt that in this crucial year when I discovered the world of mathematicians, one of them, not even Cartan of whom I was a little student but who had many others (and less abandoned ones!), perceived in me this same passion that inhabited them. To them, I must have been one in a mass of lecture and seminar listeners, taking notes and clearly not in the know. If perhaps I distinguished myself in some way from the other listeners, it was because I was not afraid to ask questions, which most often denoted above all my phenomenal ignorance of both language and mathematical matters. The answers could be brief, even surprised, the astounded wacko that I was then never encountered a rebuff, a “put back in my place”, neither in the unpretentious environment of the Bourbaki group, nor in the more austere setting of the Leray course at the Collège de France. In these years, since I arrived in Paris with a letter for Elie Cartan in my pocket, I have never had the impression of finding myself facing a clan, a closed, even hostile world. If I have known, known well, this interior contraction in the face of contempt, it is not in this world; not at that time, at least. Respect for the person was part of the air I breathed there. There was no need to earn respect or prove oneself before being accepted and treated with some kindness. Strangely perhaps, it was enough to be a person, to have a human face.

10. The "Mathematical Community": fiction and reality.

No wonder then if, from that year perhaps deep within me, and more and more clearly in any case during the years that followed, I felt a member of this world, to which I took pleasure in refer to it under this name, loaded with meaning for me, "mathematical community". Before writing these lines, there never arose the opportunity to examine the meaning I gave to this name, even though I identified to a large extent with this "community". It is clear now that this represented for me nothing more nor less than a sort of ideal extension, in space and time, of this benevolent world which had welcomed me, and had accepted me as one of the their; a world, moreover, to which I was linked by one of the great passions which dominated my life.

This "community", with which I gradually identified, was not an entirely fictitious extrapolation of this mathematical environment which had first welcomed me. The initial environment expanded little by little, I mean: the circle of mathematicians that I was led to frequent regularly, moved by themes of common interest and by affinities of people, went expanding in the ten or twenty years following this first contact. In concrete terms, it is the circle of colleagues and friends, or rather this concentric structure of colleagues to whom I was closest (first Dieudonné, Schwartz, Godement, later especially Serre, later still people like Andreotti, Lang, Tate, Zariski, Hironaka, Mumford, Bott, Mike Artin, not to mention the people of the Bourbaki group which also gradually expanded, and students who came to me from the sixties -ante...), to other colleagues whom I had the opportunity to meet here and there and to whom I was linked more or less closely by more or less strong affinities - it is this microphone-cosm therefore, constituted by chance encounters and affinities, which represented the concrete content of this name charged for me with warmth and resonance: the mathematical community. When I identified with it as a living, warm entity, it was in fact with this microcosm that I identified.

It was only after the "big turning point" of 1970, the first awakening I should say, that I realized that this cozy and friendly microcosm represented only a very small portion of the "mathematical world", and that the traits that I liked to attribute to this world, which I continued to ignore, in which I had never thought of being interested, were fictitious traits.

During these twenty-two years, this microcosm itself had changed

face, in a surrounding world which was also changing. I too certainly, over the years and without realizing it, had changed, like the world around me. I don't know if my friends and colleagues noticed this change more than I did, in the surrounding world, in their own microcosm, and in themselves. I can't say either when and how this strange change happened - it probably came insidiously, stealthily: the famous man was feared. I myself was feared - if not by my students or by my friends, or by those who knew me personally, at least by those who only knew me through my notoriety, and who themselves did not feel protected by my notoriety. comparable.

I only became aware of the fear that rages in the mathematical world (and just as much, if not even more, in other scientific circles) following my "awakening" almost fifteen years ago. During the fifteen years that had preceded, gradually and without suspecting it, I had entered the role of "big boss", in the world of mathematical Who is Who. Without even realizing it, I was a prisoner of this role, which isolated me from everyone except a few "peers" and a few students (and then again...) who definitely "wanted it". It was only once I left this role that at least part of the fear surrounding it fell away. Tongues were loosened, which had been silent before me for years.

The testimony they brought to me was not only that of fear. It was also one of contempt. The contempt especially of those in power towards others, a contempt which arouses and fuels fear.

I hardly had the experience of fear, but of contempt, in times when a person's person and life did not weigh heavily. It had pleased me to forget the time of contempt, and now it came back to my good memory! Perhaps it had never stopped, while I had simply been content to change the world (as it seemed to me), to look elsewhere, or simply: to pretend to see nothing, hear nothing, apart from the fascinating and endless mathematical discussions? In those days, I finally accepted learning that contempt was rife all around me, in this world that I had chosen as mine, with which I had identified, which had had my support and which had pampered me.

11. Meeting with Claude Chevalley, or: freedom and good feelings.

Perhaps the preceding lines may give the impression that I was upset

by the testimonies which, almost overnight, began to flow to me. However, this is not the case. These testimonies were recorded at a level that remained superficial. They were simply added to other facts that I had just learned, or that I knew while avoiding paying attention to them until then. Today, I would express the lesson I learned then: “scientists”, from the most famous to the most obscure, are people just like everyone else! I had taken pleasure in imagining that “we” were something better, that we had something extra — it took me a year or two to get rid of this decidedly tenacious illusion!

Among the friends who helped me, only one was part of the environment I had just left with no intention of returning (6). It's Claude Chevalley. While he did not give speeches and was not interested in mine, I think I can say that I learned from him more important and more hidden things than the one I just said. At the time when I saw him quite regularly (the days of the “Survivre” group, which he had joined with half-hearted conviction), he often confused me. I can't say how, but I felt that he had a knowledge that eluded me, an understanding of certain essential and very simple things, which can certainly be expressed in simple words, but without understanding. *passes*” from one to the other. I realize now that there was a difference in maturity between him and me, which often meant that I felt at odds with him, in a sort of dialogue of the deaf which was not the fact of a lack of mutual sympathy or esteem. Without him having expressed himself in these terms (as far as I remember), it must have been clear to him that the “questioning” (on the “social role of the scientist”, of science, etc...) to which I then arrived, either alone, or through the logic of a common reflection and activity within the “Survivre” group (subsequently become “Survivre et Vivre”) — that these questionings remained at the superficial background.

They were about the world I lived in, sure, and the role I even played in it — but they didn't really involve me in any deep way. My vision of myself, during these turbulent years, did not change one bit. It was not then that I began to get to know myself. It was only six years later that for the first time in my life I got rid of a stubborn illusion, not about others or the surrounding world, but about myself. It was another awakening, of greater significance than the first which had prepared it. It was one of the first in a whole “cascade” of successive awakenings, which, I hope, will continue in the years that remain to me

vested.

I don't remember Chevalley ever alluding to self-knowledge, or "self-discovery," to put it better. In retrospect, however, it is clear that he must have started getting to know himself a long time ago. Sometimes he would talk about himself, just a few words about this or that, with disconcerting simplicity. He's one of two or three people I haven't heard come out of cliché. He spoke little, and what he said expressed, not ideas that he had adopted and made his own, but a perception and a personal understanding of things. This is surely why he often disconcerted me, already at the time when we still met within the Bourbaki group. What he said often challenged ways of seeing that were dear to me, and which for this reason I considered "true". There was an inner autonomy in him that I lacked, and that I began to perceive obscurely during the days of "Survive et Vivre". This autonomy is not of the order of the intellect, of discourse.

It is not something that we can "adopt", like ideas, points of view, etc... The idea would never have occurred to me, fortunately, of wanting to "make my own" this autonomy perceived in another person. I had to find my own autonomy. It also means: that I learn (or relearn) to be myself. But in those years, I had no idea of my lack of maturity, of inner autonomy. If I ended up discovering it, surely the meeting with Chevalley was among the ferments that worked in me in silence, while I was embarked on major projects. It was not speeches or words that sowed this ferment. To sow him, it was enough for a person I met by chance to do without speeches, and be content to be themselves.

It seems to me that at the beginning of the seventies, when we met regularly on the occasion of the publication of the bulletin "Survivre et Vivre", Chevalley tried, without insistence, to communicate to me a message that I was then too clumsy to grasp, or too locked in my activist tasks. I was dimly aware that he had something to teach me about freedom—about inner freedom. While I tended to operate on the basis of great moral principles and had begun to sound this trumpet from the first issues of *Survive*, as a matter of course, he had a particular aversion to moralizing discourse. I think that was the thing that confused me the most about him, at the beginning of *Survive*. For him, such a speech was just an attempt at constraint, superimposed on a multitude of other external constraints stifling

the person. We can of course spend our lives discussing such a way of seeing, the pros and cons. It completely disrupted mine, animated (as one suspects) by the most noble and generous feelings. I was saddened, it was incomprehensible to me that Chevalley, for whom I had the greatest esteem and with whom I found myself a bit like a comrade in arms, would take pleasure in not sharing these feelings! I did not understand that the truth, the reality of things, is not a question of good feelings, nor of points of view or preferences. Chevalley saw one thing, everything that was simple and real, and I didn't see it. It's not that he had read it somewhere; there is nothing in common between seeing something and reading something about it. You can read a text with your hands (in Braille writing) or with your ears (if someone reads to you), but you can only see the thing itself with your own eyes. I don't think Chevalley had better eyes than me. But he used them, and I didn't. I was too caught up in my good feelings and the rest to have the leisure to look at the effect of my good feelings and principles on my own person and on that of others, starting with my own children.

He must have seen that I often didn't use my eyes, that I didn't even have the slightest desire to do so. It's strange that he never let me know. Or did he do it, without me hearing? Or did he abstain, judging that it was wasted effort? Or maybe the idea wouldn't even have occurred to him - it was my business after all and not his, whether I used my eyes or not!

12. Merit and contempt.

I would like to examine more closely, in the light of my own limited experience, when and how contempt took hold in the world of mathematicians, and more particularly in this "microcosm" of colleagues, friends and students which had become like my second homeland. And at the same time, see what my part was in this transformation.

It seems to me that I can say, without any reservation, that I did not encounter in 1948–49, in the circle of mathematicians of which I spoke previously (whose center for me was the initial Bourbaki group), the slightest trace of contempt, or simply disdain, condescension, towards myself or any other of the young people, French or foreign, who came there to learn the profession of mathematician. The men who played a leading role there, through their position or their prestige, such as Leray, Cartan, Weil, were not feared by me, nor I believe by any of my comrades. Aside from Leray and Cartan, who

were very “distinguished gentlemen”, it even took me a good while before realizing that each of these rascals who showed up there without ceremony, addressing Cartan as a friend and visibly “in the know”, was a university professor just like Cartan himself, in no way aimed like me from hand to mouth but received astronomical emoluments for me, and was moreover a mathematician of stature and international audience.

Following a suggestion from Weil, I spent the next three years in Nancy, which at that time was a bit like Bourbaki's headquarters, with Delsarte, Dieudonné, Schwartz, Godement (and a little later also Serre) teaching there. the University. There were only a handful of four or five young people there with me (among whom I remember Lions, Malgrange, Bruhat, Berger, unless I'm confused), so we were much less “drowned in the crowd” than in Paris. The atmosphere was even more familiar, everyone knew each other personally, and we all spoke informally to each other I think. When I search my memory, however, this is where there is the first and only case where I saw before me a mathematician treat a student with undisguised contempt. The unfortunate man had come for the day, from another city, to work with his boss. (He had to prepare a doctoral thesis, which he ended up passing honorably, and he has since acquired a certain notoriety, I believe.) I was quite blown away by the scene. If someone had allowed such a tone with me for even a second, I would have slammed the door in their face just as sharply! In this case, I knew the “boss” well, I was even there with him, not the student whom I only knew by sight. My eldest had, in addition to an extensive culture (not only mathematical) and an incisive mind, a sort of peremptory authority which at that time (and for quite a long time afterwards, until the beginning of the 70s) m 'impressed. He had a certain influence over me. I don't remember if I asked him a question about his attitude, only the conclusion I drew from the scene: it was that this unfortunate student must really be a bad person to deserve to be treated in this way. - something like that. I did not say to myself then that if the student was indeed bad, this was a reason to advise him to do something else, and to stop working with him, but in no case to treat him with contempt. I had identified with the “strong in math” such as this prestigious elder, at the expense of the “nullities” who it would be legitimate to despise. I then followed the well-trodden path of connivance with contempt, which suited me, by highlighting the fact that I was accepted into the brotherhood of meritorious people, strong in math! (7)

Of course, no more than anyone else, I would have said to myself in clear terms: people who try to do math without succeeding are to be despised! If I had heard someone say something about this water, around this time or at any other time, I would have taken it back in a beautiful way, sincerely sorry for such phenomenal spiritual ignorance. The fact is that I was immersed in ambiguity, I was playing on two tables which did not communicate: on the one hand the beautiful principles and feelings, on the other: poor guy, you really have to be bad to be treated like that (implied: it's not me that this kind of mishap could happen to, that's for sure!).

It finally seems to me that the incident that I reported, and especially the (seemingly innocuous) role that I played in it, is in fact typical of an ambiguity in me, which followed me throughout my life as a mathematician in the twenty years that followed, and which only dissipated in the aftermath of the "awakening" of 1970 (8), without me clearly detecting it before even today, while writing these lines. It's a shame that I didn't realize it at the time. Perhaps the time was not ripe for me. Still, the testimonies which then reached me about the reign of contempt, to which I had chosen to turn a blind eye, did not implicate me personally, nor indeed any of the colleagues and friends in the most close to me of my dear microcosm (9). It was more like: ah! how sad it is to have to learn (or: to teach you) such things, who would have thought it, you really have to be a bastard (I was going to say: rubbish, sorry!) to treat living beings in this way -there! Not so different from the other tune in the end, just replace "bad" with "bastard" and "get treated" with "treat" and that's it! And honor, of course, is safe for the champion of good causes!

The thing that stands out clearly from this is my connivance with attitudes of contempt. It goes back at least to the very beginnings of the 1950s, from the years which followed the kind welcome received from Cartan and his friends. If I didn't "see anything" later, when contempt was becoming commonplace almost everywhere, it was because I didn't want to see - any more than in this isolated, and particularly blatant, case, where it was really necessary go all out to pretend not to see or feel anything!

This complicity was in close symbiosis with my new identity, that of a respected member of a group, the group of meritorious people, strong in math. I remember that I was particularly satisfied, even proud, that in this world that I had chosen for myself, which had co-opted me, it was not the social position nor even (but no!) the only reputation that

mattered, it still had to be deserved - even if you were a university professor or academician or whatever, if you were just a mediocre mathematician (poor guy!) you were nothing, which What counted was only merit, deep, original ideas, technical virtuosity, vast visions and all that!

This ideology of merit, with which I had identified without reservation (while it of course remained implicit, unexpressed), still took a serious blow for me in the aftermath, as I said, of the famous awakening of 1970 Besides, I am not sure that she disappeared from that moment without leaving a trace. This would undoubtedly have required me to detect it clearly in myself, whereas I denounced it mainly in others, it seems to me.

It was also Chevalley who was one of the first, with Denis Guedj whom I also knew through *Survivre*, to draw my attention to this ideology (they called it “meritocracy”, or a name like that), and what violence and contempt there was in her. It was because of this, Chevalley told me (it must have been at the time of our first meeting at his place, about *Survivre*), that he could no longer stand the atmosphere in Bourbaki and had stopped putting the feet. I am convinced, looking back on it, that he must have realized that I had indeed been part of this ideology, and perhaps even that there were still traces of it in some corners. But I don't remember him ever implying that. Perhaps here again, he preferred to leave it to me to dot the i's that he was drawing for me, and I waited until today to put them. Better late than never !

13. Strength and thickness.

It is quite possible that the incident that I have reported also marks the moment of an internal shift within me, towards a more or less unconditional identification with the brotherhood of merit, at the expense of people considered worthless, or simply “without genius” as one would have said a few generations before (this term was no longer in vogue in my time): dull, mediocre people — at best “sounding boards” (as Weil wrote somewhere) for the great ideas of those who really matter... The mere fact that my memory, which so often acts as a gravedigger even for episodes which at the moment mobilize considerable psychic energy, has retained this episode, does not connect to no other directly linked memory, and present themselves under such an innocuous appearance, makes plausible this feeling of a “shift” which would have taken place then.

In a meditation less than five years ago, I ended up realizing

that this ideology of “we, the great and noble spirits...”, in a particularly extreme and virulent form, had plagued my mother since her childhood, and dominated her relationship with others, whom she took pleasure in watching from the height of his grandeur with a commiseration that is often disdainful, even contemptuous. I also had unreserved admiration for my parents. The first and only group with which I identified, before the famous “mathematical community”, was the family group reduced to my mother, my father and me, who had the honor of being recognized by my mother as worthy of having them as parents. This means that the seeds of contempt must have been sown in me from my childhood. The moment would perhaps be ripe to follow the vicissitudes, through my childhood and my adult life, of these seeds, and of the harvests of illusion, isolation and conflict in which some of them have raised. But this is not the place here, where I have a more limited design. I think I can say that this attitude of contempt has never taken on in my life a vehemence and a destructive force comparable to those that I saw in the life of my mother (when I took the trouble to look at the life of my parents, twenty-two years after the death of my mother, and thirty-seven years after that of my father). But now is the time or never to examine carefully, here, at least the place of this attitude in my life as a mathematician.

Before that, to place the incident reported in the previous paragraph in its general context, I would like to emphasize this fact, that it is entirely isolated among my memories of the fifties, and even later. Even today, when I observe a sometimes disconcerting erosion of certain elementary forms of courtesy and respect for others in my environment (10), the direct and undisguised expression of contempt for boss to student must be a pretty rare thing. As for the 1950s, I have very few memories that point to a fear that would have surrounded a famous figure, or an attitude of contempt or simply disdain. If I dig into this, I can say that the first time I was received by Dieudonné in Nancy, with the kindness full of delicacy that he always had with me, I was a little stunned. by the way this refined and affable man spoke of his students – all of them idiots, one might say! It was a chore to give them lessons, which it was obvious that they understood nothing... After 1970 I heard the echoes coming from the amphitheater side, and I knew that Dieudonné was indeed feared by the students. Yet while he was known for having strong opinions and for serving them with sometimes thunderous frankness, I never saw him behave in a hurtful or humiliating manner, including in the presence of colleagues for whom he had a poor reputation.

esteem, or at the moments of his legendary angry outbursts, which subsided as quickly and easily as they had arisen.

Without associating myself with the feelings expressed by Dieudonné about his students, I also did not distance myself from his attitude, presented as the most obvious thing in the world, as almost self-evident on the part of a someone who had a passion for mathematics. Helped by the benevolent authority of my elder, this attitude then appeared to me as at least one of the possible attitudes that one could reasonably have towards students and teaching tasks.

It seems to me that for Dieudonné as for me, both imbued with this same ideology of merit, the isolating effect of it was to a large extent neutralized when we found ourselves in front of a person in flesh and blood, whose mere presence silently reminded us of realities more essential than those of so-called "merit", and reestablished a forgotten link. The same thing must have happened to most of our colleagues or friends, no less imbued than Dieudonné or me with the widespread syndrome of superiority. Surely this is still the case today for many of them.

Weil also had the reputation of being feared by his students, and he is the only one in my microcosm, in the fifties, of whom I had the impression that he was feared even among colleagues, by status (or simply temperament) more modest. It happened that he had unanswerable haughty attitudes, which could disconcert the most self-confident. With the help of my susceptibility, this was the occasion once or twice for temporary quarrels. I did not perceive in his manner a nuance of contempt or a deliberate intention to hurt, to crush; rather the attitudes of a spoiled child, taking pleasure (sometimes mischievously) in making people feel uncomfortable, as a way of convincing themselves of a certain power that they exercised. He also had a truly astonishing influence over the Bourbaki group, which he sometimes gave me the impression of leading, a bit like a nursery school teacher over a troop of well-behaved children.

I can only recall one other occasion in the 1950s when I felt a brutal, undisguised expression of contempt. It came from a foreign colleague and friend, about my age. He had unusual mathematical power. A few years before, when this power was already clearly evident, I had been struck by his submission (which seemed almost obsequious to me) to the great professor whose modest assistant he was still. His exceptional means quickly earned him an international reputation.

nationally, and a key position in a particularly prestigious university. He then ruled over a small army of student assistants, apparently just as absolutely as his boss had ruled over him and his comrades. To my question (if I remember correctly) if he had some students (implied: who did a good job with him), he replied, with an air of false casualness (I translate into French): “twelve pieces !” — where “pieces” was therefore the name by which he referred to his students and assistants. It is certainly rare for a mathematician to have such a number of students at the same time doing research under his direction — and surely my

The interlocutor took a secret pride from it, which he tried to hide under this careless air, as if to say: “oh, just twelve coins, no point even talking about it!”. It must have been around 1959, I already had a good body so surely, I still had a heart attack! I had to tell him on the spot one way or another, and I don't think he blamed me.

Perhaps his relationship with his students was not as sinister as his expression might suggest (I did not have the testimony of one of his students), and that he had simply found himself trapped in his childish desire to strut before me in all his glory.

In retrospect, I see that this incident must have marked a turning point in our relations, which had been relations of friendship - I felt in him a sort of fragility, a finesse too, which attracted my affectionate sympathy. These qualities had become blunted, corroded by his position as an important man, admired and feared. After this incident, a feeling of unease remained within me towards him - I definitely didn't feel part of the same world as him...

Yet we were indeed part of the same world — and without realizing it any more than he did, I was certainly growing thicker, too. On this subject, a vivid memory remained for me, taking place at the International Congress in Edinburgh in 1958. Since the previous year, with my work on the Riemann-Roch theorem, I had been promoted to great star status, and (without having to be told it in clear terms then) I was also one of the stars of the Congress. (I gave a talk there on the vigorous start of schema theory that same year.)

Hirzebruch (another star of the day, with his own Riemann—Roch theorem) was giving a keynote speech, in honor of Hodge, who was retiring this year. At one point, Hirzebruch suggested that mathematics was done mainly through the work of young people, more than through that of mature mathematicians. This triggered a general outcry of approval in the Congress hall, where young people formed a majority.

I was delighted and of course very much in agreement, I was exactly thirty years old, that could still pass for young and the world belonged to me! In my enthusiasm I had to shout out loud and type

big hits on the table. I happened to be sitting next to Lady Hodge, the wife of the eminent mathematician who was supposed to be honored on this occasion, as he was about to retire. She turned to me with wide eyes and said a few words, which I no longer remember - but I must have seen reflected in her astonished eyes the tactless thickness which had just been unleashed without held in front of this lady at the end of her life. I then felt something, of which the word "shame" gives a perhaps distorted image – a humble truth rather concerning who I was then. I didn't have to bang the tables anymore that day...

14. Birth of fear.

It was around this time I suppose, when (without having sought it) I began to be seen as a star in the mathematical world, that a certain fear must also have begun to surround me, for a good number of people. unknown or less known colleagues. I suppose it, without being able to place it by a precise memory, by an image which would have struck me and would have fixed itself in my memory, like this incident reported previously (which undoubtedly marked my first encounter with contempt in my environment). 'adoption). The thing must have happened imperceptibly, without attracting my attention, without manifesting itself in any particular, typical incident that memory would have retained, with a lighting perhaps just as deliberately innocuous as for this other incident. What my memory of these years of transition brings back to me "as a whole" is that it was not uncommon for the people who approached me, whether after my seminar, or during a meeting such as the Bourbaki seminar or some symposium or congress, had to overcome a sort of stage fright, which remained more or less apparent during our discussion, if there was any discussion. When it lasted more than a few minutes, this discomfort most often gradually disappeared while we talked and the conversation became lively. Sometimes also, rarely, it must have happened that the embarrassment persisted, to the point of becoming a real obstacle to communication even at the impersonal level of a mathematical discussion, and that I then confusedly felt in front of me a helpless suffering, exasperated with herself. I speak of all this without really "remembering", as if through a fog which, nevertheless, gives me back impressions which must have been recorded, and undoubtedly evacuated gradually. I would be quite incapable of placing in time, other than by a supposition, the appearance of this discomfort, an expression of a fear.

I do not believe that this fear emanated from me personally and that it was limited to an attitude, to behaviors which would have distinguished me from my colleagues. If it had been like that, it seems to me that I would have ended up receiving echoes of it at the beginning of the seventies, when I left a role to which I had lent myself, until then, precisely the role star, "big boss". It was this role I believe, and not my person, that was surrounded by fear.

And this role, it seems to me, with this halo of fear which has nothing in common with respect, did not exist, not yet, at the beginning of the fifties, at least not in the mathematical environment which had welcomed from the very moment I met him, in 1948.

Before this "awakening" in 1970, I would not have thought of describing as "fear" this stage fright, this embarrassment that I was sometimes confronted with, among colleagues who were not part of the most familiar environment. I was embarrassed by it myself when it manifested itself, and then did my best to dissipate it. A remarkable thing, typical of the little attention given to this kind of thing in my dear microcosm: I do not remember a single time, during the twenty years that I have been part of this environment, where the question was been discussed between a colleague and me, or by others in front of me! (11) This "fog" which serves as my memory does not give me back any impression of conscious or unconscious gratification that such situations would have aroused in me. I don't think there was any at the conscious level, but I wouldn't venture to say that I wasn't occasionally touched upon at the unconscious level in the early years. If so, it must have been fleeting, without repercussions in a behavior which would have acted as a fixator for a discomfort. It's certainly not that my conceit was not involved in the role I played! But if I invested in this role without counting, what motivated my ego was not the ambition to impress the "rank colleague", but to constantly surpass myself to force the constantly renewed esteem of my "peers" — and before all others, perhaps, of the elders who had given me credit and had accepted me as one of their own before I could give my measure. It seems to me that the inner attitude that I had towards the fear of which I was the object, that I tried my best to ignore while dissipating it as best I could where it manifested itself — that this attitude can be considered typical throughout the sixties in the environment (the "microcosm") of which I was a part.

The situation has deteriorated considerably further in the ten or fifteen years that have passed since then, judging at least by the signs that reach me from time to time.

time of this world, and the situations of which I have been a close witness, or even sometimes a co-actor. More than once, among even those of my former friends or students who had been dearest to me, I was confronted with the familiar, undeniable signs of contempt; to the desire ("free" in appearance) to discourage, to humiliate, to crush. A wind of contempt has risen, I cannot say when, and is blowing in this world which had been dear to me. He blows, without worrying about "merit" or "demerit", burning with his breath humble vocations as well as the most beautiful passions. Is there only one among my companions of yesteryear, each protected, with "his own", by solid walls, installed (as I was formerly) in the muffled fear which surrounds his person - is there only one who feels this breath? I know one and only one, among my old friends, who felt it and spoke to me about it, without calling him by his name. And another too who perceived it one day as though he was unwilling, only to hasten to forget it the very next day (12). Because feeling this breath and accepting it, for one of my friends from yesteryear as well as for myself, is also agreeing to take a look at oneself.

15. Harvests and sowing.

I do not think, I would no longer think of being indignant at a wind that blows, when I have clearly seen that I am not a stranger to this wind, as a conceit in me would have liked me to believe. And even if I had been a stranger, my indignation would have been a very paltry offering to those who are humiliated as well as to those who humiliate, and whom I loved both.

I have not been a stranger to this wind, through my connivance with contempt and fear, in this world that I had chosen. It suited me to turn a blind eye to these blunders, as to many others, both in my professional life and in my family life. In both, I reaped what I sowed - and what others also sown before me or with me, including my parents (and my parents' parents...) as my new friends from an-tan. And still others besides me are reaping today these seeds which have raised, both my children (and the children of my children), as well as one of my students today, treated with contempt by one of my students of yesteryear.

And there is no bitterness or resignation in me, nor self-pity, when I speak of sowing and harvest. For I have learned that in even the bitter harvest, there is substantial flesh that it is up to us to nourish ourselves with. When this substance is eaten and becomes part of our flesh, the bitterness disappears, which was only the sign of our resistance.

in front of food intended for us.

And I also know that there are no crops that are not also sown with other crops, often more bitter than those that preceded them. Sometimes something inside me still cringes at the seemingly endless chain of careless sowing and bitter harvest, passed down and repeated from generation to generation. But I am no longer overwhelmed or revolted by it as if faced with a cruel and inevitable fate, and even less am I its complacent and blind prisoner, as I was previously. Because I know that there is a nourishing substance in everything that happens to me, whether the sowing is by my hand or that of others - it is up to me to eat and see it transformed into knowledge. And it is no different for my children and for all those I have loved and those I love at this moment, when they reap what I sowed in times of conceit and carelessness, or what I still sow today.

16. Marshes and front rows.

But I have not yet reached the end of this reflection, on the part that was mine in the appearance of contempt and in its progression, in this world to which I continued to lightly refer to by the name of "mathematical community". It is this reflection, I feel now, that the best I have to offer to those I have loved in this world, at the moment when I am preparing, not certainly to return there, but to express myself there again.

What remains for me above all, I believe, is to examine what kind of relationships I maintained with everyone who was part of that world, at the time when I was still part of it as them.

Thinking about it now, I am struck by the fact that there was a whole part of this world that I encountered regularly, and which escaped my attention as if it had not existed. I must have perceived it at that time as a sort of "swamp" without a well-defined function in my mind, not even that of a "sounding board" I suppose — as a sort of gray, anonymous mass of those who in the seminars and conferences invariably sat in the back rows, as if they had been assigned there by birth, those who never opened their mouths during a presentation to hazard a question, certain that they must be sure in advance that their question could only be off the mark. If they asked a question to people like me, reputed to be "in the know", it was in the corridors, when it was visible that "the skills" did not pretend to want to

talk among themselves — they asked their questions quickly and as if on tiptoe, as if ashamed of abusing the precious time of important people like us. Sometimes the question seemed beside the point in fact and I then tried (I imagine) to say in a few words why; often it was also relevant and I also responded to it as best I could, I believe. In both cases it was rare for a question asked in such arrangements (or, I should rather say, in such an atmosphere) to be followed by a second question, which would have clarified or deepened it. Perhaps we, the people in the front rows, were indeed in too much of a hurry in these cases (even though we certainly sometimes tried hard not to appear so) for the fear in front of us to dissipate, and to allow an exchange to arise. I of course felt, just like my interlocutor, that the situation in which we were involved was false, artificial - without my having ever expressed it to myself, and without him either, no doubt, never formulated it. We both functioned like strange automatons, and a strange complicity linked us: that of pretending to ignore the anguish that gripped one of us, obscurely perceived by the other - this particle of anguish in the air charged with anxiety which saturated the place, which everyone surely perceived as we did, and which all chose to ignore with common agreement (13).

This confused perception of anxiety only became conscious for me the day after the first “awakening”, in 1970, at the moment when this “marsh” emerged from the darkness in which I had enjoyed it until then. To keep it in my mind. Without the thing being done by any deliberate decision, without me becoming aware of it on the spot, I then left one environment to enter another – the environment of the “front row” people for the “marsh”: suddenly, most of my new friends were precisely those that a year before I would have tacitly located in this nameless and contourless land. The so-called swamp suddenly came alive and came alive with the faces of friends linked to me by a common adventure — another adventure!

17. Terry Mirkil.

To tell the truth, even before this crucial turning point, I had made friends with comrades (who later became “colleagues”) whom I would undoubtedly have located in the “marsh”, if the question were asked. was asked of me (and if they had not been my friends...). It took this reflection, and for me to search my memories, to remember and for scattered memories to come together. I did

the knowledge of these three friends in the very early days, when I was learning the trade in Nancy like them - at a time therefore when we were still in the same basket, when nothing designated me as an "eminence". It is undoubtedly no coincidence that there were no other such friendships during the twenty years that followed. All four of us were foreigners, that was surely a significant bond - my relationships with the young "normal Malians", parachuted into Nancy like me, were much less personal, we hardly saw each other except at the University. One of my three friends emigrated to South America a year or two later. Like me, he was a research associate at the CNRS, and I had the impression that he himself didn't really know what he was "looking for", his situation at the CNRS was becoming a little tricky, after all. We continued to see or write to each other from time to time, and we ended up losing contact. My relationship with the two other friends was longer lasting, and also stronger, much less superficial. Our mathematical interests played only a very small role in this, if any.

With Terry Mirkil and his wife Presocia, petite and fragile like him, with an air of gentleness in both of them, we often spent evenings in Nancy, and sometimes nights, singing, playing the piano (it was Terry who played then), to talk about music which was their passion, and about other things that were important in our lives. Not the most important, it's true - not those that are always kept so carefully... This friendship has brought me a lot, however. Terry had a finesse, a discernment that I lacked, even though most of my energy was already focused on mathematics. Much more than me, he had kept a sense of simple and essential things - the sun, the rain, the earth, the wind, song, friendship...

After Terry found a position he liked at Dartmouth College, not far from Harvard where I visited frequently (starting in the late 1950s), we continued to meet and write to each other. In the meantime, I knew that he was subject to depressions, which led to long stays in "madhouses", as he called them in the only and laconic letter in which he spoke to me about them, at the following one of these "horrible stays". When we met, it was never discussed — except once or twice very incidentally, to respond to my astonishment that he and Presocia were not adopting a child. I don't think it ever occurred to me that we could talk about the root of the problem, he and I, or even touch on it - probably not even the idea that there were perhaps problems to look at, in my friend's life or in mine... There was a taboo on these things,

unexpressed and impassable.

Gradually, the meetings and letters became less frequent. It is true that I became more and more the prisoner of tasks and a role, and above all of this desire, which had become like a fixed idea, an escape perhaps from something else, to constantly surpass myself in accumulation. works — while my family life was mysteriously, inexorably deteriorating...

When I learned one day, through a letter from a colleague of Terry's at Dartmouth, that my friend had committed suicide (this was a long time after he was already dead and buried...), this news touched me. came as if through a fog, like an echo from a very distant world which I would have left, God knows when. A world in me, perhaps, which had died long before Terry ended his life, devastated by the violence of an anguish that he had not known or wanted to resolve, and that I had not knew or wanted to guess...

18. Twenty years of conceit, or: the tireless friend.

My relationship with Terry was not distorted, at any time I believe, by the difference in our status in the mathematical world, or by a feeling of superiority that I derived from it. This friendship, and one or two others which life gave me in those times (without worrying if I "deserved" it!) was surely one of the rare antidotes then against a secret conceit, fueled by a status social and, even more, by the awareness I had gained of my mathematical power and the value that I myself attached to it. It was not the same in my relationship with the third friend. He, and later his wife (whom he had met around the time we met in Nancy) showed me over all these years a warm friendship, marked by delicacy and simplicity, in all the occasions when we met, in their house or in mine. In this friendship there was obviously no ulterior motive, linked to status or cerebral abilities. However, my relationship with them remained marked for more than twenty years by this deep ambiguity in me, by this division of which I spoke, which marked my life as a mathematician. In their presence, each time anew, I could not help but feel their affectionate friendship and respond to it, almost against my will! At the same time, for more than twenty years I managed this feat of looking at my friend with disdain, from the height of my grandeur. It must have started like this from the first years in Nancy, and for a long time also my prejudice extended to his wife, as if he could not

to be understood in advance that his wife could only be as “insignificant” as him. Between my mother and I, we liked to refer to him only by a mocking nickname, which must have remained engraved in me for a long time after my mother's death, which took place in 1957. It now appears to me that 'at least one of the forces behind my attitude was the ascendancy that my mother's strong personality exercised over me throughout her life, and for almost twenty years after her death, during which I continued to to be imbued with the values that had dominated his own life. The gentle, affable, in no way combative nature of my friend was tacitly classified as “insignificance”, and became the object of mocking disdain. It is only now, taking the trouble for the first time to examine what this relationship was, that I discover the full extent of this frenzied isolation in the face of the warm sympathy of others, which marked it for so long. My friend Terry, no more combative or forceful than this other friend, had the good fortune to be approved by my mother and was not the object of her mockery - and I suspect that this is why my relationship with Terry was able to flourish without internal resistance within me. His investment in mathematics was not more fervent, nor his “gifts” more prominent, without this giving me an excuse to cut myself off from him and his wife through this shell of disdain and self-importance!

What still remains incomprehensible to me in this other relationship is that the affectionate friendship of my friend was never discouraged by the reluctance that he could not fail to feel in me, at each new encounter. However, today I know very well that I was also something other than this shell and this disdain, something other than a cerebral muscle and a conceit that took pride in it. As in them, there was the child in me — the child I pretended to ignore, the object of disdain. I had cut myself off from him, and yet he lived somewhere inside me, healthy and vigorous as on the day I was born. It was surely to the child that the affection of my friends was directed, less cut off from their roots than I was. And it was also he, surely, who answered them in secret, on the sly, when the Great Chief had his back turned...

19. The world without love.

The Big Chef has aged, fortunately, he has crumbled a little, and the kid has since been able to take it more at his ease. As for this relationship with these truly enduring friends, it seems to me that I have put my finger on the most blatant, most grotesque case in my life of the effects of a certain conceit (among others) in a personal relationship. . Maybe I am

still deceiving myself, but I believe that this is also the only case where my relationship with a colleague or a friend in the mathematical environment (or even elsewhere) was invested in a lasting way by conceit, at the place that it is content to manifest itself occasionally, in a discreet and fleeting manner. It seems to me, moreover, that among the many friends I had at the time in the mathematical world and whom I enjoyed spending time with, there is none for whom I could imagine having experienced a similar error, in a relationship with a colleague, friend or not. Among all my friends, I was perhaps the least “cool”, the most “polar”, the least inclined to allow a hint of humor to emerge (it only ended up coming to me late), the most inclined to take themselves terribly seriously. Surely, I would not have sought the company of people like me so much (assuming there were any)!

The surprising thing is that my friends, “marsh” or not “marais”, supported me and even took a liking to me. This is a good and important thing to say here - even though we often only saw each other to discuss maths all hours and days: affection circulated, as it still circulates today, between friends of the moment (according to sometimes fortuitous affinities) and me, since that first moment when I was received with affection in Nancy, in 1949. in the house of Laurent and Hélène Schwartz (where I was a bit part of the family), that of Dieudonné, that of Godement (which at one time I also haunted regularly).

This affectionate warmth which surrounded my first steps in the mathematical world, and which I tended to forget a little, was important for my entire life as a mathematician. It is surely she who gave a similar warm tone to my relationship with the environment that my elders embodied for me. It gave all its strength to my identification with this environment, and all its meaning to this name “mathematical community”.

Obviously, for many young mathematicians today, it is being cut off during their learning time, and often well beyond, from any current of affection, of warmth; to see their work reflected in the eyes of a distant boss and in his parsimonious comments, a bit as if they were reading a circular from the Ministry of Research and Industry, which clips the wings of work and takes away its meaning deeper than that of a sullen and uncertain livelihood.

But I anticipate, in speaking of this disgrace, perhaps the deepest of all, of the mathematical world of the 70s and 80s - the mathematical world where those who were

my students, and the students of my old friends, set the tone. A world where, often, the boss assigns his work subject to the student, like throwing a bone to a dog — that or nothing! As one assigns a cell to a prisoner: this is where you will serve your solitude! Where such meticulous and solid work, the fruit of years of patient effort, is rejected by the smiling contempt of the one who knows everything and has power in his hands: “this work does not amuse me!” and the question is closed. Good for the trash, let's not talk about it anymore...

Such disgraces, I know well, did not exist in the environment I knew, among the friends I haunted, in the fifties and sixties. It is true that I learned in 1970 that this was rather the daily bread in the scientific world outside of maths - and even in maths it was not so rare apparently, the open-faced contempt, the blatant abuse of power (and without recourse), even among certain renowned colleagues whom I had the opportunity to meet. But in the circle of friends that I had naively taken for “the” mathematical world, or at least as a faithful miniature expression of this world, I knew nothing of the sort.

However, the seeds of contempt must have already been there, sown by my friends and by me and which have sprung up in our students. And not only in our students, but also in some of my former companions and friends. But my role is not to denounce or even to fight: we do not fight corruption. To see her in one of my students whom I loved, or in one of my comrades from yesteryear, something in me tightens - and rather than accepting the knowledge that pain brings me, I often refuse the pain and I struggle and take refuge in refusal and an attitude of combat: such a thing has no place to be! And yet it is — and I even know deep down what its meaning is. In more than one way, I am no stranger to it, if a certain student or companion of yesteryear that I loved, likes to discreetly crush another that I love and in whom he recognizes me.

Once again I digress, doubly I could say - as if the wind of contempt only blew around my home! However, it is by his breath on me especially and on those who are near and dear to me that I am touched and know him. But the time is not ripe to talk about it, except to myself only, in silence. Rather, it is time for me to resume the thread of my reflection-testimony, which could well take the name “In pursuit of contempt” – contempt in myself and around me, in this mathematical environment that was mine, in the fifties and sixties.

20. A world without conflict?

I had thought of talking about the “marsh” in a few lines, out of conscience, just to say that it was there but that I did not frequent it — and as so often in meditation (and also in mathematical work), the “nothing” that we look at has revealed itself to be rich in life and mystery, and in previously neglected knowledge. Like this other “nothing”, which was also located in Nancy as by chance (definitely the cradle of my new identity!), the “nothing” of this student who was probably a bit worthless and who was being treated had to be seen as... I thought about it in a flash earlier, when I wrote (a little hastily perhaps?) that “these disgraces” did not yet exist “with us”. Let’s say that this is the one and only incident of the kind that I can report, which resembles (it must be admitted) the “disgrace” to which I was alluding, without dwelling too much on a detailed description. Those who have undergone it know well what I want to talk about, without having to draw a picture. And also those who, without having suffered it, do not rush to close their eyes each time they are confronted with it. As for the others, those who happily despise as well as those who are content to turn a blind eye (as I myself did successfully for twenty years), even an album of drawings would be wasted effort...

It remains for me to examine my personal and professional relationships with my colleagues and my students, during these two decades, and incidentally also, what I was able to know about the relationships of my closest colleagues with each other, and with their students. The thing that strikes me most today is how conflict seems to have been absent from all of these relationships. I must immediately add that this is something which at that time seemed quite natural to me - a bit like the least of things. The conflict, between people of good will, mentally and spiritually adults and all that (the least of things, once again!), had no reason to exist. When there was a conflict somewhere, I looked at it as a kind of regrettable misunderstanding: with the right amount of goodwill and explanation, it could only be resolved as quickly as possible and without leaving any trace! If I chose mathematics as my favorite activity from a young age, it is surely because I felt that it was along this path that this vision of the world had the greatest chance of not clashing with every step has disturbing denials. When we have demonstrated something, after all, everyone is in agreement — that is to say, people of good will and all that, of course.

It turns out that I felt right. And the story of these two decades spent in the

tranquility of the “conflict-free” (?) world of my dear “mathematical community”, is also the story of a long inner stagnation within me; blocked eyes and ears, without learning anything except math or almost - while in my private life (first in the relations between my mother and me, then in the family that I founded soon after his death) there is a silent destruction that at no time during these years have I dared to look at.

But that's another story... The “awakening” of 1970, of which I have often spoken in these lines, was a turning point not only in my life as a mathematician, and a radical change of environment, but a turning point also (within a year) in my family life. It was also the year when for the first time, in contact with my new friends, I risked an occasional glance, still very furtive, at the conflict in my life. It was the moment when a doubt began to arise in me, which matured over the years that followed, that the conflict in my life, and also the one that I sometimes apprehended in the lives of others, was not was not just a misunderstanding, a “blur” that could be removed with a sponge.

This absence (at least relative) of conflict, in this environment that I had chosen as my own, seems to me in retrospect a rather remarkable thing, whereas I ended up learning that conflict rages wherever humans live, in the families as well as in workplaces, whether factories, laboratories or offices of professors or assistants. It almost seems that I fell right on the mark, in September or October 1948, landing in Paris without suspecting anything, on the heavenly and unique island in the Universe, where people live without conflict with each other!

The thing suddenly seems truly extraordinary to me, after everything I have learned since 1970. Surely it deserves to be looked at more closely - is it a myth, or a reality? I see clearly the affection that circulated between so many of my friends and me, and later between students and me, I do not have to invent it - but it almost seems that I am obliged to invent conflict, in this heavenly world from which conflict seems banished!

It's true, in this reflection I still had the opportunity to touch on two conflict situations, each time revealing an inner attitude in me: One is the incident of “the “poor student” in Nancy, of which I do not know the ins and outs between the direct pro-agonists. The other is a situation of conflict within myself, a division, in my relationship to the “tireless friend” — but this has never been expressed in the form of a conflict between people, the only form of generally recognized conflict. Remarkably, in the conventional sense of the term, the relationship between these friends and I was entirely free of

conflict — at no time did she know the slightest cloud. The division was in me, not in them.

I continue the census. One of the first thoughts: the Bourbaki group! During the years when I participated more or less regularly, therefore until the end of the fifties, this group embodied for me the ideal of collective work done with respect both for the seemingly tiny details in this work. -even, that of the freedom of each of these members. At no time did I sense among my friends in the Bourbaki group the shadow of a hint of coercion, whether on me or on anyone else, seasoned member or guest, who came to try out to see if it was going to “hang” between him and the group. At no time is there the shadow of a struggle for influence, whether over differences of point of view on this or that issue on the agenda, or a rivalry for hegemony to be exercised over the group.

The group functioned without a leader, and apparently no one deep down aspired, as far as I could see, to play this role. Of course, as in any group, one member had greater influence over the group, or over other members, than another. Weil played a separate role in this regard, which I have spoken about. When he was present, he was a bit of a “playmaker” (14). Twice I think, my sensibilities were offended, and I left - these are the only signs of “conflict” of which I was aware.

Gradually, Serre exercised influence over the group comparable to that of Weil. During the time I was part of Bourbaki, this did not give rise to situations of rivalry between the two men, and I was not aware of any enmity that would have been established between them later. With the hindsight of another twenty-five years, Bourbaki, as I knew him in the fifties, still seems to me an example of remarkable success in terms of the quality of relationships, in a group formed around a common project. . This quality of the group appears to me to be even rarer than the quality of the books that came out of it.

It has been one of the many privileges of my life, filled with privileges, to have met Bourbaki, and to have been part of it for several years. If I did not stay there, it was in no way because of conflicts or because the quality of which I spoke had deteriorated, but because more personal tasks attracted me even more strongly, and I devoted all of my energy. This departure did not cast a shadow on my relationship with the group, nor on my relationship with any of its members.

I would have to review the conflict situations in which I was involved, which pitted me against one of my colleagues or one of my students, between 1948 and 1970. The only

One thing that stands out a little is the two temporary quarrels with Weil, which have already been discussed. Some fleeting, very fleeting shadows on my relationships in Serre, because of my susceptibility to a certain sometimes disconcerting casualness that he had to cut short when an interview had ceased to interest him, or to express his lack of interest. his interest, even his aversion for a particular work in which I was engaged, or a particular vision of things on which I insisted, perhaps a little too much and too often! It never took on the magnitude of a falling out. Beyond the differences in temperament, our mathematical affinities were particularly strong, and he must have felt as I did that we complemented each other.

The only other mathematician to whom I was linked by a comparable and even stronger affinity was Deligne. In this regard, I remember that the question of Deligne's appointment to IHES in 1969 gave rise to tensions, which I did not then perceive as a "conflict" (which would have been expressed, say, by a quarrels, or by a turning point in a relationship between colleagues).

It seems to me that I have covered everything - that at the level of the conflict between people, visible by tangible manifestations, in the relations between colleagues or between colleagues and students in the environment that I haunted, that's all during these twenty -two years, as incredible as it may seem. Suffice to say, no conflict in this paradise that I had chosen - therefore, we must believe, no contempt? Another contradiction in mathematics?

Definitely, I'll have to take a closer look!

21. A well-kept open secret.

I certainly forgot yesterday some minor episodes, like temporary "colds" in my relationship with a colleague, due in particular to my susceptibility. I should also add three or four occasions when my self-esteem was disappointed, when it happened that colleagues and friends did not remember, in certain of their publications, that a particular idea or result which I had shared with them must have played a role. a role in their work (so it seemed to me). The fact that I still remember it shows that it was a sensitive point, and one that perhaps has not entirely disappeared with age! Except once, I refrained from mentioning it to the interested parties, whose good faith was certainly above all suspicion. The opposite situation must surely have also occurred, without me receiving any feedback. I have not been aware of a case, in my "microcosm", where a question of priority is the occasion for a quarrel or an enmity, nor even for bittersweet remarks between the interested parties. Still, the only

The time I had such a discussion (in a case that seemed blatant to me) there was a sort of spat, which cleared the atmosphere without leaving a residue of resentment. He was a particularly brilliant colleague, who had, among other abilities, that of assimilating with impressive speed everything he heard, and it seems to me that he often had an unfortunate tendency to take the ideas of others as his own. Others that he had just learned from their mouths.

There is a difficulty here which must be found in a more or less strong form among all mathematicians (and not only among them), and which is not only due to the egoic drive which pushes most of us (and I am no exception) to attribute “merits”, both real and supposed. The understanding of a situation (mathematical or otherwise), however we arrive at it, with or without the assistance of others, is in itself a thing of personal essence, a personal experience whose fruit is a vision, necessarily personal too. A vision can sometimes be communicated, but the vision communicated is different from the initial vision. That being said, great vigilance is required to nevertheless discern the part of others in the formation of one's vision. Certainly I myself have not always had this vigilance, which was the least of my worries, even though I expected it in others towards me! Mike Artin was the first and only one who made me understand one day, with the joking air of someone divulging an open secret, that it was both impossible and perfectly vain, to tire oneself out trying to discern what is the “one's own” part, which is the “other's” part when one manages to take a substance head-on and understand something about it. This confused me a little, even though it was not at all in line with the ethics that had been taught to me by example by Cartan, Dieudonné, Schwartz and others. However, I vaguely felt that there was in his words, and just as much in his laughing gaze, a truth that had escaped me until then(*). My relationship with mathematics (and above all, with mathematical production) was strongly invested by the ego, and this was not the case with Mike. He really gave the impression of doing math like a kid having fun, and without forgetting to drink and eat it.

22. Bourbaki, or my great luck – and his dreams.

Even before diving a little further below the visible surface, there is an observation

(*) (September 30) For another aspect of things, see however the note of June 1 (three months later than this text), “Ambiguity” (n° 63), examining the pitfalls of a certain complacency to oneself and to others.

which imposes itself on me now: it is that the mathematical environment that I haunted for two decades, in the 50s and 60s, was indeed a “world without conflict”, in other words! This is something quite extraordinary in itself, and which deserves some attention.

I should clarify right away that this is a very restricted environment, the central part of my mathematical microcosm, limited to my immediate “environment” — the twenty or so colleagues and friends that I met regularly, and to which I was most strongly linked. Reviewing them, I was struck by the fact that more than half of these colleagues were active members of Bourbaki. It is clear that the core and soul of this half-crocosm was Bourbaki — it was, more or less, Bourbaki and the mathematicians closest to Bourbaki. In the 60s I was no longer part of the group myself, but my relationship with some of the members remained as close as ever, notably with Dieudonné, Serre, Tate, Lang, Cartier. I continued to be a regular at the Bourbaki Seminar, or rather, I became one at that time, and it was at that time that I gave most of my presentations there (on the theory of schemas). .

It was undoubtedly in the sixties that the “tone” in the Bourbaki group slipped towards an increasingly pronounced elitism, of which I was surely a part then, and of which for this reason I was not at risk of becoming involved. to notice. I still remember my astonishment, in 1970, upon discovering to what extent the very name of Bourbaki had become unpopular in large layers (unknown to me until then) of the mathematical world, as a more or less synonymous with elitism, dogmatism. narrow, of worship of the “canonical” form at the expense of a living understanding, of hermeticism, of castrating antisponaneity and so on! Moreover, it was not only in the “marais” that Bourbaki had bad press: in the sixties, and perhaps even before, I had heard occasional echoes of it from mathematicians with another turn of mind, allergic to the “Bourbaki style” (15). By joining unconditionally, I was surprised and a little saddened - I who believed that mathematics made minds agree! However, I should have remembered that when I started, it was not always easy or inspiring to ingest a Bourbaki text, even if it was expeditious. The canonical text gave little idea of the atmosphere in which it was written, to say the least. It now seems to me that this is precisely the main gap in the Bourbaki texts - that not even an occasional smile can suggest that these texts were written by people, and people bound by something other than some oath of unconditional loyalty to merciless canons of rigor...

But the question of the shift towards elitism, like that of Bourbaki's writing style, is here a digression. The thing that strikes me here is that this "Bourbakian microcosm" which I had chosen for my professional environment, was a world without conflict. This seems all the more remarkable to me since the protagonists in this environment each had a strong mathematical personality, and many are considered "great mathematicians", each of whom certainly had the weight to form their own microcosm, of which he would have been the center and undisputed leader! (16) It is the cordial and even affectionate coexistence, for two decades, of these strong personalities in the same microcosm and in the same working group, which seems to me to be such a remarkable thing, perhaps unique. This is consistent with the impression of "exceptional success" which had already emerged yesterday at Bourbaki's remarks.

It finally seems that I had this exceptional chance, during my first contact with the mathematical world, to come across the privileged place, in time and in space, where a mathematical environment of exceptional quality had just been formed over the last few years, perhaps unique in this quality. This environment has become mine, and is remained for me the incarnation of an ideal "mathematical community", which probably did not exist any more at that time (beyond the environment which for me embodied it) than at any other in the history of mathematics, if not perhaps in a few equally restricted (like that perhaps, which was formed around Pythagoras in a completely different spirit).

My identification with this environment was very strong, and inseparable from my new identity mathematician, born at the end of the 1940s. It was the first group, beyond the family group, where I was warmly welcomed and accepted as one of them. Another link, of another nature: my own approach to mathematics found confirmation in that of the group, and in those of the members of my new environment. It was not identical to the "Bourbachic" approach, but it was clear that the two were brothers.

This environment, moreover, must have represented for me this ideal place (or close to it!), this place without conflict whose quest had undoubtedly directed me towards mathematics, science among all where any hint of conflict seemed absent to me! And if I spoke earlier about my "exceptional luck", it was present in my mind that this luck had its downside. If it allowed me to develop means, and to give my measure as a mathematician in the environment of my elders who became my peers, it was also a welcome means of escape

facing conflict in my own life, and a long spiritual stagnation.

23. Of the Depths.

This “bourbachic” environment surely had a strong influence on me and on my vision of the world and my place in the world. This is not the place to try to identify this influence, and how it was expressed in my life. I would only say that it does not seem to me at all that my inclinations towards conceit, and their merito-cratising rationalizations, were stimulated by my contact with Bourbaki and by my insertion into the “Bourbachic milieu” — at least not at the end the forties and the fifties. The seeds had been sown in me a long time ago, and would have found opportunity to develop in any other environment. The incident of the “null student” that I reported is in no way typical, quite the contrary, of an atmosphere that would have prevailed in this environment, I repeat, but only of an ambiguous attitude in my own person. The atmosphere in Bourbaki was one of respect for the person, an atmosphere of freedom — that’s at least how I felt; and it was likely to discourage and attenuate any inclination towards attitudes of domination or conceit, whether individual or collective.

This environment of exceptional quality is no more. He died, I cannot say when, without anyone, doubtless, noticing it and sounding its death knell, even in his heart of hearts. I suppose that an imperceptible degradation must have taken place in the people - we all had to “take the bottle”, sit down again. We have become important people, listened to, powerful, feared, sought after. The spark may still have been there, but the innocence was lost along the way. One of us will perhaps find it again before our death, like a new birth - but this environment which welcomed me is no longer, and it would be in vain for me to expect it to resurrect. Everything is in order.

And respect too may have been lost along the way. When we had students, it was perhaps too late for the best to be passed on - there was still a spark, but no more innocence, nor respect, except for “his peers” and for “his own people”. ”.

The wind can rise and blow and burn — we are sheltered behind thick walls, each with “his own”.

Everything is in order...

24. My farewells, or: strangers.

This retrospective of my life as a mathematician takes a completely different path than I had planned. To tell the truth, I wasn't even thinking of a retrospective, but only of saying in a few lines, or even in a page or two, what my relationship was today to this world that I had left, and perhaps also, conversely, what was the relationship to me of my former friends, according to the echoes that reach me from far and wide. I had intended, on the other hand, to examine a little more closely the sometimes strange vicissitudes of some of the ideas and notions that I had introduced during these years of intense mathematical work - I should rather say: the new types of objects and structures that I have had the privilege of seeing and taking from the night of the total unknown into the darkness, and sometimes even into the brightest light of the day! This statement now seems to stand out in what has become a meditation on a past, in an effort to better understand and come to terms with a certain, sometimes confusing, present. Certainly, the planned reflection on a certain "school" of geometry, which was formed under my impulse, and which vanished without (almost) leaving a trace, will wait for a more propitious opportunity(*). In the immediate future, therefore, my concern will be to complete this retrospective on my life as a mathematician in the world of mathematicians, not to elaborate on a work and the fate that was its fate.

During the five days that have just passed, monopolized by tasks other than these notes of reflection, a memory came back to me with a certain insistence. It will serve as an epilogue to *De Profundis* on which I stopped.

It happened towards the end of 1977. A few weeks earlier, I had been cited at the Montpellier Correctional Court for the offense of having "freely accommodated and fed a foreigner in an irregular situation" (i.e. , a foreigner whose residence papers in France are not in order). It was on the occasion of this quote that I learned of the existence of this incredible paragraph of the 1945 ordinance governing the status of foreigners in France, a paragraph which prohibits any French person from providing assistance in any form whatsoever. or to a foreigner "in an irregular situation". This law, which had no analogue even in Hitler's Germany with regard to the Jews, had apparently never been applied in its literal sense. By a very strange "chance", I had the honor of being taken as the first guinea pig for the first implementation of this unique paragraph.

For a few days I remained stunned, as if struck by paralysis, discouraged

(*) This "more auspicious occasion" appeared earlier than expected, and the reflection in question is the subject of the second part, "The Burial", of *Récoltes et Semailles*.

deeply. Suddenly I saw myself returning thirty-five years ago, to times when life did not weigh heavily, especially that of foreigners... Then I reacted, I shook myself. For several months I invested all of my energy in trying to mobilize public opinion, first in my University and in Montpellier, and then at the national level.

It is at this time of intense activity, for a cause which subsequently proved to be lost in advance, that the episode that I could today call that of my farewell takes place.

With a view to action on the national level, I had written to five "personalities" from the scientific world, particularly well-known (including a mathematician), to inform them of this law, which even today still seems to me to be just as incredible that the day I was quoted. In my letter I proposed joint action to demonstrate our opposition to a villainous law, which amounted to outlawing hundreds of thousands of foreigners residing in France, and to designating to the distrust of the population, like lepers, millions of other foreigners, who suddenly became suspects, likely to attract the worst trouble to the French who were not on their guard.

Surprisingly, completely unexpected for me, I received no response from any of these five "personalities". Clearly, I had things to learn...

It was then that I decided to go to Paris, on the occasion of the Bourbaki Seminar where I would not fail to meet many old friends, to first of all mobilize opinion in the mathematical community, which was the most familiar. This environment, it seemed to me, would be particularly sensitive to the cause of foreigners, while all my fellow mathematicians, just like myself, have to deal daily with colleagues, pupils and foreign students, most of whom if not all have had moments of difficulty with their residence papers, and have had to face arbitrariness and often contempt in the corridors and offices of police headquarters. Laurent Schwartz, whom I had informed of my project, told me that I would be given the floor, at the end of the presentations on the first day of the Seminar, to submit the situation to the colleagues present.

This is how I arrived that day, a voluminous packet of leaflets in my suitcase, intended for my colleagues. Alain Lascoux helped me distribute them in the corridor of the Institut Henri Poincaré, before the first session and during the "entr'acte" between the two presentations. If I remember correctly, he had even made a small leaflet of his own - he was one of the two or three colleagues who, having heard about the affair, were moved and contacted me before my trip to Paris, to offer me their help (17). Roger Godement is part

also of the number, he even made a leaflet which titled "A Nobel Prize in Prison?". It was chic for him, but we definitely weren't on the same wavelength: as if the scandal was to attack a "Nobel Prize", rather than the first lamplighter who came along!

There was indeed a crowd on this first day of Bourbaki Seminar, and a lot of people that I had known more or less closely, including Bourbaki's old friends and companions; I think most of them must have been there. Several of my former students too. It must have been almost ten years since I last saw all these people, and I was happy to have this opportunity to see them again, even though it was a lot at once! But we would end up finding ourselves in smaller numbers...

The reunion, however, "wasn't that", that was quite clear from the start. Many hands outstretched and clenched, that's for sure, and many questions "Hey, you here, what wind is blowing?", yes — but there was a sort of indefinable air of embarrassment behind the cheerful tones. Was it because the cause that brought me did not really interest them, even though they had come for a certain tri-annual mathematical ceremony, which required all their attention? Or independently of what brought me, was it my person itself who inspired this embarrassment, a bit like the embarrassment that a defrocked priest would inspire among good-natured seminarians? I can't say—maybe it was both. For my part, I couldn't help but notice the transformation that had taken place in certain faces that had been familiar, even friendly. They had frozen, one would say, or collapsed. A mobility that I had known there seemed to have disappeared, as if it had never been. I found myself as if I were facing strangers, as if nothing had ever linked me to them. Obscurely, I felt that we did not live in the same world. I had thought I would find brothers on this exceptional occasion which brought me, and I found myself in front of strangers. Well brought up, it must be admitted, I don't remember any bittersweet comments, nor any leaflets lying on the ground. In fact, all the leaflets distributed (or almost all) had to be read, curiosity helping.

This does not mean that the villainous law has been put in danger! I had my five minutes, maybe I even took ten, to talk about the situation of those who for me were brothers, called "foreigners". There was an amphitheater crowded with colleagues, quieter than if I had given a mathematical presentation. Perhaps the conviction to speak to them was no longer there. There was no longer, as before, a current of sympathy and interest. There must be people in a hurry among the number, I must have said to myself, I cut it short, offering to

meet immediately, with colleagues who felt concerned, to discuss in more detail what could be done...

When the session was declared adjourned, there was a general rush for the exits — obviously, everyone had a train or metro about to leave, which should not be missed at any cost! In the space of a minute or two, the Hermite amphitheater was empty, it was a miracle! The three of us found ourselves in the large deserted amphitheater, under the harsh lights. Three, including Alain and me. I didn't know the third, one of those unmentionable foreigners again I bet, in dubious company and in an irregular situation to boot! We did not take the time to elaborate at length on the quite eloquent scene which had just unfolded before us. Perhaps I was the only one not to believe my eyes, and my two friends had the delicacy to refrain from commenting on this subject. Obviously, I was disembarking...

The evening ended with Alain and his ex-wife Jacqueline, taking stock of the situation and reviewing what could be done; to get to know each other a little better, too. Neither that day nor later did I take the time to place the episode I had just experienced in relation to the past. It was on that day, however, that I had to understand without words that a certain environment, a certain world that I had known and loved was no longer, only a living warmth that I had thought I would find again. had dissipated, no doubt for a long time. That did not prevent the echoes

that still reached me, year after year, from that world from which the heat had fled, many times disconcerting me, touching me painfully. I doubt that this reflection will change anything for the future - except, perhaps, that I will be less reluctant to be affected in this way...

25. The student and the Program.

I have not finished taking a look at what my relationships with other mathematicians were like, at the time when I felt part of the same world with them, of the same "mathematical community". Above all, it remains for me to examine what my relationships were with my students, as I experienced them, and with others for whom I appeared as an elder.

Generally speaking, I believe I can say, without any reservation, that my relationships with my students have been ones of respect. On this subject at least, I believe, what I received from my elders when I was a student myself has not deteriorated over the years.

As I had the reputation of doing "difficult" maths (a notion it is true of the most sub-

jectives!), and in addition to being more demanding than other bosses (something already less subjective), the students who came to me were quite strongly motivated from the start: "they wanted it"! There was just one student who at the beginning was a little "waiting for a moment", it wasn't really clear if he was going to start - and then yes, he started without me having to push...

As far as I can remember, I accepted every student who asked to work with me. For two of them, it became clear after a few weeks or months. To tell the truth, it now seems to me that my involved blocking situations, which I hastily working style did not suit them. Both times interpreted as signs of inaptitude for mathematical work. Today I would be much more cautious in making such predictions. I had no hesitation in sharing my impressions with the two parties concerned, advising them not to continue in a career which, it seemed to me, did not correspond to their dispositions. In fact, I knew that for at least one of these two students, I had made a mistake - this young researcher subsequently acquired notoriety in difficult subjects, on the borders of algebraic geometry and the theory of numbers. I didn't know whether or not the other student, a young woman, continued after her disappointment with me. It is not excluded that my impression of her abilities, expressed too peremptorily, discouraged her, even though she was perhaps just as capable as anyone else of doing a good job. It seems to me that I had given credit and confidence to these students as well as to the others. On the other hand, I lacked the discernment to make allowances for what were surely signs of blockage, rather than incapacity (18).

From the beginning of the sixties, so for around ten years, eleven students completed a state doctoral thesis with me (19). Having chosen a subject to their liking, they each did their work with gusto, and (so I felt) they identified strongly with the subject they had chosen.

There was, however, an exception, in the case of a student who had chosen, perhaps without real conviction, a subject "that had to be done", but which also had unrewarding aspects, being a challenge. at the technical point, sometimes arduous, even dry, of ideas which were already acquired, while there were hardly any surprises or suspense in perspective (20). Carried away by the necessities of a vast program for which I needed help, I must have lacked psychological discernment in proposing this subject which surely did not suit the particular personality of this student. He for his part must not have really realized what kind of trouble he was getting himself into there! Still, neither he nor I were able to see in time

that it had gotten off on the wrong foot, and that it was better to start again on something else.

Obviously he worked without real conviction, and without giving up an air that was always a little sad, sullen. I think I had already reached a point where I wasn't paying too much attention to these things, which nevertheless (I should have remembered) are day and night in any research work, and not just research! My role then was limited to being bored when the work seemed to drag on, and to utter a "phew!" of relief when it started again, then when finally the planned program ended up being "completed".

It was only years after I woke up in 1970, having had to correspond with this former student (who had become a professor, like everyone else in these good times!), that the idea came to me that definitely something something had gone wrong in this case, that perhaps it was not a total success. Today, it seems to me like a failure, despite the "completed program" (by no means botched!), the diploma, and the position at stake. And I bear a lot of responsibility for putting the needs of a program ahead of those of a person — a person who trusted me. The "respect" that I previously claimed ("without any reservations"), which I would have shown towards my students, remained superficial here, separated from what constitutes the true soul of respect: affectionate attention to the needs of the person, at least to the extent that their satisfaction depended on me.

Need, here, a joy in work, without which it loses its meaning, becomes constraint.

During this reflection, I had the opportunity to speak of a "world without love", and I was looking in my own person for the seeds of this world that I rejected. This is a big one - and I can't say today how it took hold in others. This superficial respect, devoid of attention, of true love, is the "respect" that I also gave to my children.

With them, I had the privilege of seeing this seed rise and see it proliferate. And I also understood, somewhat, that there is no point in balking at the harvest...

26. Rigor and rigor.

If I make the exception of this student, who was certainly no less "gifted" than the others, I can say that the relations between my students and I were cordial, often even affectionate. By force of circumstances, everyone learned to be patient with my two main faults as a "boss": that of having impossible handwriting (yet I believe everyone ended up learning to decipher me) and , a more serious thing certainly (and which I only realized much later), my fundamental difficulty in following the thoughts of others, without me

I didn't first translate it into my own images, and rethink it in my own style. I was much more inclined to communicate to my students a certain vision of things which I had strongly imbued, rather than encouraging in them the emergence of a personal vision, perhaps quite different from mine. . This difficulty in relating to my students has not disappeared even today, but it seems to me that its effects are attenuated, due to the fact that I am aware of this propensity within myself. Perhaps my temperament, innate or acquired, predisposes me more to solitary work, which was mine moreover during the first fifteen years of my mathematical activity (from approximately 1945 to 1960), than to role of "teacher" in contact with students whose mathematical vocation and personality are not fully formed (21). It is also true, however, that since my early childhood I have loved teaching, and that since the sixties until today, the students I have had have played an important place in my life. This also means that my teaching activity, my role as a teacher, has had a great place in my life and continues to have a big place there (22).

During this first period of my teaching activity, there was no apparent conflict between any of my students and me, which would have expressed itself even through a temporary "coldness" in our relations. Only once did I have to tell a student that he lacked seriousness in his work and that I was not interested in continuing with him if it continued like this. He of course knew just as well as I what was going on, he pulled himself together and the incident was brought to an end without a single cloud. Another time, already in the early seventies, when most of my energy was engaged in the activities of the "Survive et Vivre" group, a student to whom I had shown (as is my habit) the thesis report that I had just written on his work, became angry, judging that certain considerations in this report called into question the quality of his work (which was in no way my intention).

This time it was me who rectified the situation without difficulty. It did not occur to me then that this short incident could leave a shadow in our relationship, but I may have been wrong. The relationship between this student and me had been more impersonal than with the other students (apart from the "sad student" I spoke about), a good working relationship without more, without any real warmth that would have passed between We. I do not think, however, that it was an unconscious lack of benevolence in me that would have made me include in my report the considerations that he considered disadvantageous towards him, adding "that he was not going to let slide" the thing as a friend of his, who had already completed his thesis with me, had done. With this other student, naturally sensitive and affectionate, I was linked by a particularly

friendly; if I had included in my report on his thesis the same kind of consideration which had so displeased his comrade, it was surely not for lack of benevolence! Furthermore, for both of them, as for all my students, I would not have given the green light for a defense if I had not been fully satisfied with the work they presented.

None of my students from this period had any difficulty quickly finding a suitable position, once they had completed their thesis.

Until 1970, I had practically unlimited availability for my students (22). When the time was ripe and whenever it could be useful, I spent whole days with one or the other if necessary, working on questions that were not in focus, or reviewing together the successive stages of writing their work. As I experienced these work sessions, it does not seem to me that I ever played the role of "director" making decisions, but that each time it was a joint research, where discussions took place equal to equal, until complete satisfaction of both.

The student brought a considerable investment of energy, incommensurate of course with that which I was called upon to bring myself, who on the other hand had greater experience, and sometimes a more practiced flair.

The thing, however, which seems to me most essential for the quality of any research, whether intellectual or otherwise, is not at all a question of experience. It is the demand made on oneself. The requirement I want to talk about is of a delicate nature, it is not of the order of scrupulous conformity with standards whatever they may be, rigorous or otherwise. It consists of extreme attention to something delicate inside ourselves, which escapes all norms and all measures. This delicate thing is the absence or presence of an understanding of the thing examined. More precisely, the attention I want to talk about is attention to the quality of understanding present at each moment, from the cacophony of a heterogeneous pile of notions and statements (hypothetical or known), to satisfaction total, the completed harmony of perfect understanding. The depth of a research, whether its outcome is a fragmentary or total understanding, is in the quality of this attention. Such attention does not appear as the result of a precept that one follows, of a deliberate intention to "be careful", to be attentive – it arises spontaneously, it seems to me, from the passion to know, it is one of the signs which distinguish the drive for knowledge from its egoistic counterfeits. This attention is also sometimes called "rigor". It is an interior rigor, independent of canons

of rigor which can prevail at a determined moment in a (let's say) determined discipline. If in this book I allow myself to take liberties with canons of rigor (which I have taught and which have their reason for being and their usefulness), I do not believe that this more essential rigor is less there than in my past publications, in canonical style. And if I have been able, perhaps, despite everything, to transmit to my students something of greater value than language and know-how, it is undoubtedly this requirement, this attention, this rigor - if not in the relationship with others and with oneself (although at this level it was lacking for me as much as for anyone else), at least in mathematical work (23). This is, of course, a very modest thing, but perhaps, despite everything, better than nothing.

27. The blunder – or twenty years later.

Except perhaps in the case of the two students I spoke about, with whom a working relationship was not ultimately established, I do not remember that the other students who came to me to ask to work with me, came with "stage fright" or fear. No doubt they must already know me more or less, having followed my seminar at IHES for even a short time. If there was discomfort at the start of our relationship, it ended up dissipating, without leaving any more traces, during the work. I should, however, make two exceptions here. One concerns the student who did not manage to really enjoy his work, and who remained monosyllabic even during our work together. Perhaps it also came at a time when my availability was going to become less, and there were no work sessions with him on pieces, for afternoons and entire days. No, in fact I don't remember such sessions; I rather think that we met mostly casually, for an hour or two, to take stock of where he was. Clearly he was the one who had the worst encounter with me!

The other student on the other hand that I wanted to talk about worked with me at the time when I still had full availability for my students. Our relationship has been cordial from the beginning. He is even one of the few students with whom a friendly relationship was established, those that I happened to see at their house just as they came to my house, a relationship somewhat like family to family. It is true that even in these cases, the relationship always remained on a relatively superficial level, at least as far as I was concerned. On a conscious level, while I already did not realize much of what was happening at home, under my own roof, I ultimately knew almost nothing about the lives of my mathematician friends, students

or not, apart from the names of the wife and children (and even then, I sometimes forgot them, without ever being blamed!). Perhaps I represented an extreme case of “polard”, but I believe that in the mathematical environment that I knew, most if not all relationships, even friendly and affectionate, remained at this superficial level where one ultimately does not know very little about each other, except what is perceived at the level of the unformed. This is one of the reasons, surely, why conflict between people was so rare in this environment, while it is clear to me that division existed within most of my colleagues and friends, and within inside their families, just as much as at home and everywhere else.

I do not believe that my relationship with this student was distinguished from my relationship with others, nor did I have the feeling at the time that conversely, his relationship with me was distinguished from a notable way of that of other students, and in particular of those with whom friendly ties have been established. It is only recently that I have been able to realize that it must have been a stronger relationship than for most of my other students. The visible manifestations of an unexpressed conflict came as an unexpected revelation, almost twenty years after his time as a student. It was only then that I made the connection with a “little” fact long forgotten. For a long time, perhaps even during the entire period (of a few years therefore) when we happened to work together more or less regularly, this student had retained a certain “stage fright”. This manifested itself at each encounter, through signs that were unmistakable. These signs disappeared quite quickly afterwards, during joint work. I was of course bothered by these signs of discomfort, and I felt that he was more so. We both pretended to be ignorant of the matter, as was right. Surely the idea of talking about it would not have occurred to either of them, nor even the idea of paying any attention to a strange situation, obviously worthy of interest! By him as by me, this “stage fright” must have been felt as a simple “blunder”, which had no reason to exist. The “blunder” reminded us regularly, but each time, it had the good taste of disappearing, giving us time to worry about serious things, maths, in peace. — and at the same time to forget “what had no place to be”.

I don't remember stopping once to ask myself any questions about the meaning of the blunder, and I am convinced that it was the same on the side of my student and friend. Without doubt, nothing in what we had both known around us, since our early childhood, could suggest in him or in me the idea of another attitude towards a annoying thing, than that of putting it aside as far as possible, so that it stops

to hinder. In this case it was entirely possible and even easy, and we were in complete agreement that we had seen nothing, felt nothing, heard nothing.

Through many echoes and cross-checks that have come back to me over the past two or three years, I realize, however, that what we had dismissed as having no reason to exist, did not necessarily have to cease to be, and to manifest. What came back to me sometimes has no "place to be" either — and yet "it is", and now can no longer be dismissed out of hand...

28. The unfinished harvest.

Until the moment of the first "awakening", in 1970, the relationships with my students, just like my relationship with my own work, was a source of satisfaction and joy, one of the tangible, indisputable foundations of a feeling of harmony in my life, which continued to give it meaning, while an elusive destruction raged in my family life. At that time, in my eyes, there was no apparent element of conflict in these relationships, none of which was then, at any moment, even fleeting, the cause of frustration or pain. It is something that may seem paradoxical, that the conflict in the relationship with one of my students only became apparent after this famous awakening, after a turning point which gave my life an opening that it did not have. known before, and in my person a little beginning of flexibility perhaps - qualities which, one might think, should be of a nature to resolve or avoid conflict, and not to provoke or exacerbate it.

Looking more closely, however, I see clearly that the paradox is only apparent, and that it disappears, from whatever angle we look at it. The first that comes to mind: for a conflict to have a chance of being resolved, it must first have manifested itself. The stage of manifested conflict represents a maturation compared to that of hidden or ignored conflict, the manifestations of which moreover do exist, and are all the more "effective" as the conflict which is expressed through them remains ignored. Also: for a conflict to manifest itself in a recognizable way, a distance must first be reduced or disappeared. The changes that have taken place in my life for almost fifteen years, during successive "awakenings" in particular, have all been changes, it seems to me, likely to reduce a distance, to erase an isolation. A conflict that has difficulty expressing itself vis-à-vis a prestigious, admired boss, is more comfortable vis-à-vis someone stripped of a position of power (voluntarily by doing so). occurrence), who has exiled himself from a certain environment holding authority and

of prestige, who is less and less perceived as an incarnation or a privileged representative of some entity (such as mathematics), and more and more as a person like the others: a person not only likely to be affected, but who, moreover, is less and less inclined to hide from injuries or sorrows. And thirdly and above all: the evolution that has been mine since the first awakening, especially at that time and in the years which followed, was of a nature to raise (or perhaps awaken) questions, a worry, a "questioning" in the well-ordered universe of my former students.

I had ample opportunity to realize that this was the case not only for them, but also among my friends and companions of yesteryear in the mathematical world, and sometimes even among scientific colleagues who do not know me. only by hearsay.

It must also be said that the resolution of even a slight conflict is a very rare thing. Most often, notwithstanding all truces and surface reconciliations, the growing procession of our conflicts follows us without leaving us in one step throughout our entire lives, only to finally leave us in the sullen hands of the undertakers. I have sometimes had the opportunity to see a conflict resolved somewhat, and sometimes even to see it resolved with knowledge - but until now such a thing has not happened during and on the occasion of my relationship to one of my students, or to one of my friends from yesteryear in the mathematical world. And I also know that it is by no means certain that such a thing would ever happen, even if I were to live another hundred years.

It is a remarkable thing that the very moment of my break with a certain past, I mean the episode of my departure from IHES (from the institution which therefore represented a bit like the "matrix" of the mathematical microcosm which had formed around me) — that this decisive episode was at the same time the first occasion on which a deep antagonism of one of my students towards me was expressed. It is surely this circumstance which made this episode particularly difficult, particularly painful, like a childbirth or a birth which would have taken place in particularly difficult conditions. Of course, I could not then see this episode, the meaning of which escaped me, in the light in which I have since learned to see it. For a long time afterward, this painful surprise remained. However, from the summer of that same year, this bitter departure revealed itself as a liberation - like a door that suddenly opened wide (I just had to push it!) on an unsuspected world, calling me to discover it. And each new awakening since then has also been a new liberation: the discovery of a subjugation, of an inner obstacle,

and the rediscovery of the presence of an immense unknown, hidden behind the familiar appearance of what was supposed to be "known". But also throughout these fifteen years and until today, this stubborn, discreet and unfailing antagonism has followed me, like the only and great lasting source of frustration that I have known in my life. mathematician (23).

I could perhaps say that it was the price I paid for this first liberation, and for those that followed it. But I know well that liberation and inner maturation are things foreign to a "price to pay", that they are not a question of "profits" and "losses".

Or to put it another way: when the harvest is completed, when it is completed, there is no loss - the very thing that seemed "loss" has become "profit". And it becomes clear that I have not yet been able to complete this harvest, which remains, even now as I write these lines, unfinished.

29. The Enemy Father (1).

The kind of students who started working with me after the turn of 1970, in the completely different environment of a provincial university, were also very different from the students before. There were only two left who worked with me at the level of a state doctoral thesis. The work of others was at the level of the DEA or doctoral theses

postgraduate. I should also include a good number of students who were strongly attached to certain introductory "courses" in research, which were an opportunity for them to ask themselves often unforeseen mathematical questions, and sometimes to imagine methods originals to solve them. I encountered the most active participation in some "option courses" for first-year students. Among students, on the other hand, who have already experienced the university atmosphere for several years, a certain freshness, a capacity for interest, for personal vision are already more or less extinguished. Among the students in the optional courses, several clearly had what it took to make an excellent mathematician.

Given the economic situation, I was careful not to encourage any of them to embark on this path, which could nevertheless have attracted them and where they could have excelled.

With the students who took some of my "courses" to prepare for master's degrees, the relationships did not continue, most often, beyond the year. Each time, I had the impression that they quickly became cordial and relaxed, overall. Except for one student afflicted with pervasive "stage fright" (23"), it was the same with the students who were officially supposed to prepare a research work under my direction.

tion, at one level or another. One difference (among many others!) with my students before, is that our relationship was not limited to joint mathematical work. Often the exchange between the student and me involved our persons in a less superficial way (23v). It is therefore not surprising that in this second period of my activity as teacher, the conflicting elements in the relationship with certain students appeared in a way clearer and more direct, even vehement. Among my ex-students from the first period, there were two in whom attitudes of systematic antagonism subsequently appeared. and unequivocally (which I had the opportunity to mention in passing), nevertheless remaining at the level of the unformed, and perhaps even the unconscious. In the second, longer period, it There were three students from whom I was confronted with antagonism. In two of them, this manifested itself acutely.

In one of these students, antagonism appeared overnight in a relationship who had been most friendly, many years after this friend had ceased to be my student. I suspect that the cause of the conflict was not so much my unqualified conduct and personality, but rather a long-repressed dissatisfaction at not having found support for his work (which had been excellent) the welcome he would have been entitled to expect. This was the other side of the doubtful privilege of having had me as boss "after 1970", and he must have been angry with me, without really feeling it. recognize even in one's heart.

In the other student, acute antagonism appeared already after a year and a half of work, in an atmosphere that seemed very cordial. This is the first and only time where a relational difficulty between a student and me appeared at a time when he was still a student. It made it impossible to continue working together, which had nevertheless announced itself under happy auspices, with an enthusiasm of the best omen, for a magnificent theme of reflection, it must be said. I had the feeling that there was in this young researcher an insidious lack of confidence in his ability to do good work (an ability which for me had no doubt), and that the manifestation in the acute pitch of antagonism was a sort of "headlong flight" to take the lead on a failure feared, and place the responsibility in advance on the person of an odious boss (23).

A common aspect to all these appearances of conflict between students and me, in the almost twenty-five years that I have been teaching the profession of mathematician, is a strong ambivalence. In all these cases without exception, the antagonism manifests itself afterwards, often insidiously, in a relationship of sympathy which itself cannot be the subject of any doubt. I can

even to say that in all these cases, as in many others also where a frankly antagonistic component has not manifested itself, my person has exercised and still exercises a strong attraction. It is surely the very force of this attraction which also fuels the force of the antagonism and ensures its continuity. This is still the case, surely, in cases where the antagonism takes the form of violent antipathy, of outraged rejection; as also in another case, at the opposite extreme, where under the strict banner of friendly respect is expressed (when the opportunity is right) an affectation of casual and delicately measured disdain...

Such situations of ambivalence, to tell the truth, are not specific to my relationship with some of my students or ex-students. In fact, they have abounded throughout my entire adult life, since at least the age of thirty (that is, since my mother's death). This has been the case both in my sentimental or married life, as well as in my relationship with men and, more precisely, especially with men who are significantly younger than me. I ended up understanding that something in me, innate or acquired I cannot say enough, seems to predispose me to be a father figure. I have, one must believe, the ideal build and the favorable vibrations that make the perfect adoptive father! It must be said that the role of Father fits me like a glove — as if it had been mine by birth. I will not attempt to count the number of times I have entered into such a role with another person, in perfect tacit agreement on both sides. Most often this distribution of father-son or father-daughter roles remained unspoken, even unconscious, but it also happened that it was formulated more or less clearly. In certain cases also I acted as a father without even having entered a game I believe, in ignorance both consciously and unconsciously of what was going on.

I first became aware of the role of an adopted father in 1972, at the time of “Survive et Vivre”, when I found myself suddenly confronted with an attitude of violent rejection from a young friend. (Interesting coincidence, he was a math student who had dropped out of school!) Something in my behavior towards third parties had disappointed him. I would have been ready without difficulty, I believe, to recognize that his disappointment was well-founded, that I had lacked generosity in this case - but the violence of the reaction then literally blew me away. It was like a sudden outbreak of vehement hatred, which subsided almost immediately, when it became clear that he had not really succeeded in unseating me. (It was a close call, but I kept that to myself...). I don't know how I had the intuition that he was projecting onto my person, duly idealized, unresolved conflicts with his father. This sudden intuition, fallen into oblivion, did not prevent that for years to come,

I continued to take on the role of father with the same conviction, without being in the least suspicious. With of course always the same painful astonishment, not believing my eyes or the rest, when subsequently I saw myself confronted with the signs of conflict, insidious or violent.

It was after six or seven months of intense solitary work on the lives of my parents, making me see them in an unsuspected light, that I understood what was illusory in this role of parent. adoption which would replace (better, it is understood in advance!) a true parent who does indeed exist, and who would be declared (if only by tacit agreement) "defaulting". It is helping others to avoid the conflict where they find themselves, in their relationship with their father let's say, to project it onto a third person (myself in this case) who is entirely foreign to it. Since this meditation, which took place from August 1979 to March 1980, I have been vigilant towards myself, to no longer let myself go with my eyes closed to my unfortunate paternal vocation. This did not prevent the false situation from recurring (as in my relationship with this student with whom I had to stop working) — but now, I believe, without connivance on my part.

If I put aside the case of the student frustrated in these legitimate expectations, there is no doubt for me that in all the other cases where I have been confronted with antagonism from a student or ex-student, it has been the reproduction of the same archetype of conflict with the father: the Father both admired and feared, loved and hated - the Man who must be confronted, defeated, supplanted, perhaps humiliated.. . but also the One that we secretly would like to be, to strip Him of a force to make it our own - another Self, feared, hated and fled...

30. The Enemy Father (2).

It was not the great turning point of 1970 which created antagonisms between certain ex-students and me, against the backdrop of an idyllic and cloudless past. It only made visible antagonisms that could hardly be expressed in the more conventional framework of a typical boss-student (or ex-boss – ex-student) relationship. I suspect that such conflicts must not be uncommon in the scientific community, but that they are more often expressed in more circuitous and less recognizable ways than in the relationships in which I have been involved.

Thinking back, I don't have the impression, ultimately, that in these relationships with my students, I had such a tendency to enter into a paternal role - and even, I am unable to act

pick up a single memory that goes in this direction more or less. As for myself, it seems to me that almost all of the energy that I invested in a relationship with a student was the same that I also invested in mathematics, and in the realization of a vast program. In the first period, I see only one case in which there was in me an interest in the person of a pupil, in the nature of an affinity or sympathy, which had comparable force (otherwise equal) to that of mathematical interest. But even in this case, I don't have the impression that I took on a paternal role towards him. As for the influence that I was able to exercise over his person or that of other students, at one level or another, this is the type of thing to which I paid no attention in my relationship with my students. (Even today, I tend not to pay attention to this, neither with the students who have worked with me in recent years, nor even with other people.) Of course, in all these cases, the relationship between the student and me was in no way "symmetrical", in the sense that during at least the time of the teacher-student relationship (and probably even beyond, most often), the importance that a student had in my life was not comparable to that which I had to take into his, nor the psychic forces which the relationship brought into play in my person and in his. Except in the five or six cases where these forces manifested themselves through clearly recognized signs of antagonism, I realize that the nature of the relationships with me of my various students and then ex-students, during more than twenty years of activity teacher, remain a total mystery to me! Besides, it's not so much my job to probe these mysteries, rather that of each of them for their own part. But as long as you take an interest in your own person, there may be more burning things to re-watch than the ins and outs of your relationship with your ex-boss... In any case, even though I showed no propensity towards my students to enter into a paternal role, it must not have been rare that I nevertheless more or less acted as an adopted father figure for them, given my "profile". " particular psychic that I spoke about previously, and also given the dynamics inherent in a situation where I could not fail to appear as an elder, to say the least.

In any case, in several cases that I have mentioned, this particular coloring of the relationship between a student and me does not raise the slightest doubt for me. Outside of my professional life there have been numerous other cases where, with or without connivance on my part, I have visibly acted as an adopted father to younger men or women, attracted by my person and linked to me first of all by mutual sympathy,

but not by any means of kinship. As for my own children, the paternal fiber in me towards them has been strong, and since they were very young they have had an important place in my life. In a strange irony, however, it turned out that none of my five children accepted the fact of having me as a father. In the lives of the four of them that I have been able to know closely, especially in recent years, this division in their relationship with me is the reflection of a deep division in themselves, of a refusal in particular to all this in them which relates them to me, their father... But this is not the place to probe the roots of this division, which plunge as much into a torn childhood, as in my childhood and in that of my parents; as also in the childhood of the mother, and in that of her parents. Nor is there any place here to measure its effects, in their own lives, or in that of their children...

31. The power to discourage.

To finish this summary tour through the relationships I had in the mathematical environment between 1948 and 1970, it remains for me to talk about my relationships with younger mathematicians, more or less beginners and therefore without the status of "colleague" strictly speaking, without me playing the role of "boss" towards them. These are therefore young researchers whom I met for a year or two in my seminar at IHES, or during such courses or seminars at Harvard or elsewhere, or also sometimes, during a correspondence, for example when I had received work from a young author for which he expected comments, and certainly also encouragement.

Relations with junior researchers are part of a role less apparent than that of "boss" of such students, but just as important, as I have since realized. At that time, I did not realize, as I have for six or seven years, that this role, for a prominent mathematician, represents considerable power. It is first of all the power to encourage, to stimulate, which exists as well in the case of visibly brilliant work (but perhaps undermined by clumsy presentation or an insufficiency of "craft"), as in that of simply solid work; it exists even in the case of work which represents only a very modest contribution, or even negligible or even zero depending on the criteria of an elder in full possession of powerful means, proven experience of the subject, and extensive information. The power to encourage is present, as long as the work submitted to us has been written seriously - something generally discernible from the first pages.

And the power to discourage exists just as much, and can be exercised at discretion whatever the work. This is the power that Cauchy used vis-à-vis Galois, and Gauss vis-à-vis Jacobi – it is not new that it has existed and that eminent and feared men have used it! If history has brought us these two cases, it is because the men who had paid the price had sufficient faith and assurance to continue their path, despite the authority without benevolence of those who did so. then rain and shine in the mathematical world. Jacobi found a newspaper to publish his ideas, and Galois the leaves of his last letter, serving as a “diary”.

Nowadays, for an unknown or little-known mathematician, it is certainly more difficult than in the last century to make himself known. And the power of the prominent mathematician is not only at the psychological level, but at the practical level as well. He has the power to accept or refuse work, that is to say: to give or refuse his support for a publication. Rightly or wrongly, it seems to me that “in my time”, in the fifties and sixties, the refusal was not final — if the work presented results “worthy of interest”, it had a chance of find the support of another eminence. Today, this is certainly no longer the case, when it has become difficult to find even a single influential mathematician who agrees to go through (in the dispositions he pleases to have) a work in its part, when the author has already acquired notoriety, or is not recommended to him by a known colleague.

Over the last few years, I have seen influential and brilliant mathematicians use their power to discourage and refuse, both in relation to solid work which clearly had to be done, and in relation to towards such large-scale works clearly denoting the power and originality of their authors. Several times, the one who used his discretion in this way happened to be one of my former students. This is undoubtedly the most bitter experience I have had in my life as a mathematician.

But I digress from my point, which was to examine in what way, at the time when I lent myself with conviction to the role of “prominent mathematician”, I used the power to encourage and discourage that I had. I should add that at the more modest level where my scientific activity continued after 1970, as a teacher among others in a provincial university, this power did not cease to exist, both vis-à-vis -towards my students or pupils, than (rarely it is true) towards occasional correspondents. But for my present purposes, it is the first period of my life as a mathematician which

only matters.

As for the relationship with my students, from the first one I had until today, I believe I can say without restriction of any kind that I have done everything in my power to encourage them in the work they had chosen (23 iv). It must be rare, even today, for things to be otherwise in the relationship between “boss” and student, and particularly in the case of a boss who has the means to be able to train brilliant students. , and with their help clear vast areas ready for plowing. The barely believable thing, and yet true, is that there even exists this extreme case of the prestigious boss, taking pleasure in extinguishing in brilliantly gifted students the mathematical passion which had animated him in a more young age.

But again I digress! It is my relationship with young researchers who were not my students that we now need to examine. In such relationships, the egoic forces in the person of the prominent man would be less likely to push him in the direction of encouragement, whereas the successes of the young stranger who addresses him will bring little or nothing. to his own glory. On the contrary, I think that the mere play of egoic forces, in the absence of true benevolence, would almost invariably tend to push in the opposite direction, to use the power to discourage, to refuse. This, it seems to me, is neither more nor less than this general law, which we can observe in all sectors of society: that the egoistic desire to prove one's own importance, and the secret pleasure which accompanies its satisfaction, are generally stronger and more appreciated, when the power at our disposal finds occasion to cause the disappointment of others, or even their humiliation, rather than the opposite. This law is expressed in a particularly brutal way in certain exceptional contexts, such as that of war, or the world of concentration camps, that of prisons or psychiatric asylums, or even simply that of hospitals for all comers in a country like ours. But even in the most everyday contexts, each of us has had the opportunity to be confronted with attitudes and behaviors that attest to this law. The correctives to these attitudes are first of all cultural correctives, coming from a consensus, in a given environment, on what is considered “normal” or “acceptable” behavior; on the other hand, they are forces of a non-egotic nature, such as sympathy towards a specific person, or sometimes, an attitude of spontaneous benevolence independent even of the person to whom it is addressed. Such benevolence is undoubtedly a rare thing, whatever the environment in which one seeks it. As for the cultural corrective in mathematics circles-

tick, it seems to me that it has eroded considerably over the past two decades. This is certainly the case, in any case, in the circles I have known.

I definitely persist in moving away from my remarks, which was not a speech on the century, but a meditation on myself and on my relationship to more or less beginner researchers who were not my students. I do not believe that the "law" to which I alluded found occasion to express itself in these relationships. For reasons that there is no need to examine here, it would seem that the egoic forces, just as strong in me as in anyone else, have not taken this path in my life to manifest themselves to the at the expense of others (apart from a few cases dating back to my childhood). I even think I can say, having had the opportunity to examine the matter, that the basic tone of my dispositions towards others is a tone of benevolence, a desire therefore to help when I can help, to relieve when I can relieve, to encourage when I am able to encourage. Even in a relationship as deeply divided as with this "tireless friend" of whom I had to speak, the conceit in me has never led me astray to the point that I would have thought (even if by intention unconscious) to harm him. (I would have had the possibility of doing so, and "with the best conscience in the world" of course.) And I believe that in most cases these dispositions of general benevolence (even if they were even just a little skin deep) also marked my relationships in the mathematical world, including with beginning mathematicians who, without being among the students, could need my support or encouragement.

I believe that this was the case without exception at least during the 1950s and into the early 1960s. It seems to me that in those times at least, this benevolence was not limited to visibly brilliant young people like Heisuke Hi-ronaka or Mike Artin (while no fame yet attested to their means). But it is possible that it was erased to a greater or lesser extent during the sixties, under the influence of egotistic forces. I would be particularly grateful for any testimony that reaches me on this subject.

My memory only gives me a specific case, which I am going to talk about, and beyond this case, this famous "fog" which is not condensed into any other case or specific fact, but rather which gives me a certain inner attitude . I felt a certain irritation when it happened that another mathematician "walked on my flowerbeds" without pretending to ask me, as if the young white-beak was at home! It must have been mainly a case of young people, not really in the know, who decided to find, sometimes in very specific cases,

uliers my faith, things that I have known for years and even better. It must not have happened very often, I think, but maybe two, three times, maybe four, I can't say enough. As I just said, I only remember one specific case, perhaps because the situation recurred with the same young mathematician several times, in one form or another. I can say that in all respects this young researcher, whose attached university was abroad, was perfectly correct, in sending me, who was supposed to be the person most in the Suddenly, the work he had just done. Each time, I reacted very freshly, for the reason I said. I wouldn't even be able to say with certainty if I told him frankly that what he was doing had been known to me for a long time, and that for this reason it bothered me that he published it without at least giving me a little bow in the introduction. Of course, if he had been my student, this authorial conceit would not have played such a role, on the one hand because of a relationship of sympathy which was already established with the student, but also because he It was obvious in any case that the student's work also contained the boss's ideas, unless stated otherwise! I believe that the situation must have occurred twice, perhaps even three times, with this same researcher, and that each time my attitude was equally fresh, equally discouraging. I never agreed, if I remember correctly, to recommend a work by this researcher for publication in a particular journal, nor to be part of a thesis jury (I seem to remember that the question was raised) . It's almost as if I decided to choose him as my Turk's head. The best part is that his work each time was perfectly valid — I believe it was carefully written, and I have no reason to suppose that he did not come up with the ideas himself. he was developing there, which at that time were not yet very common in the streets, and were (more or less) "well known" only to a handful of people in the know, like Serre, Cartier, me and one or more two others. What is incomprehensible to me is that this young colleague (he of course ended up having a thesis and a well-deserved position) did not get tired of addressing me who "beat him cold" at every turn. , and he apparently never held it against me. I still remember the surprise he expressed to me once at my reluctance, obviously he didn't understand what was happening. He would have had a hard time if he waited for my explanations! He had a beautiful head, a bit in the classical Greek style, very youthful - rather soft, peaceful features, evoking an inner calm... Now that I am trying for the first time to understand the impression given off by his person and his physiognomy, I suddenly realize that he really looked a lot like this "indefatigable friend" of whom I had occasion to speak; they could have been

brothers, this friend of my age in a smiling tone, and this researcher, twenty years younger, rather in tones that are a little serious, but in no way sad. It is not impossible that this resemblance played a role, that I projected onto one a disdain which had not found the opportunity to express itself with the other, disarmed as he was by the signs of a such faithful friendship! And in fact I had to have developed a really thick shell, so as not to be disarmed by the obvious good faith and the desire to do well in this certainly endearing young man, who never tired of returning to the charge, without that I deign to reward him even with a smile!

32. Mathematician ethics.

The case that I reported yesterday, now that I have finally taken the trouble to write it down in black and white, appears to me to be of considerable significance, greater in certain respects than the other three cases (no doubt also typical). reported previously, where forces of conceit deeply disrupted within me a natural attitude of benevolence and respect. This time, using a position of very real power (while I pretended, like everyone else, to ignore this power), I used it to discourage a researcher of good will, and refuse work that deserved be published. This is called an abuse of power. It is no less blatant, so as not to fall foul of an article of the penal code. It is fortunate that the situation at that time was less difficult than today, so that this researcher was able, without too much difficulty I believe, to have his work published with the support of some colleagues more benevolent than me. , and that his career as a mathematician was not seriously disrupted, much less broken, by my abusive behavior. I am happy about it afterwards, without wanting to make it an "extenuating circumstance". It is possible that in a more difficult situation, I would have been more careful - but that is a simple supposition, which has little use here. I still believe I can say that there was no secret malice in me, a desire to harm caused by the irritation I spoke of. I reacted to this irritation in a "visceral" way, without the slightest inclination to criticize myself, and even less without the slightest inclination to look at what was happening in me, or even just the impact that my reaction could have in the life of the other. I did not appreciate the power I had, and the thought of a responsibility that went with this power (even if only the power to encourage or discourage) never occurred to me during this relationship. It was a typical case of irresponsible conduct, as we

meeting on every street corner, in the scientific world as elsewhere.

It is possible that this only case of its kind that I remember was an extreme case, among several others similar to it. What triggers an attitude without benevolence is the irritation of a vanity, impatient to see "the first comer" arrogates to himself the right to walk in reserved hunting grounds and to take some small game which belongs only to the masters. of these places... This irritation has ready-made rationalizations, which have a more noble appearance, one suspects. It's not my modest self who is at stake but no, but the love of art and mathematics, this young man who doesn't even have the excuse of being brilliant, the clumsy type rather he goes ruin everything, woe betide us, if he did things better than I know how to do them, but the beautiful arrangements that I had planned all passed to the ace, you have to be a little without embarrassment frankly...! As a constant thread, there is the meritocratizing leitmotif: only the very best (such as me) have the right to live with me, or those who put themselves under the protection of one of those! (As for the less common case where it is indeed another great leader who walks in my borders, that's a different pair of sleeves - each day is enough for its punishment!) In the present case, there is had (I no longer have much doubt on this subject) another force going in the same direction, entirely unconscious, which had already played a strong role in my relationship with the tireless friend of my beginnings: an automatism of rejection against -towards a certain type of person, not corresponding to the canons of "manliness" that I had taken from my mother. But this circumstance, which has its meaning and its interest for an understanding of myself, is relatively irrelevant for my current purpose: that of finding in myself, in attitudes and behaviors which were mine at the time when I was still part of a certain environment, the typical signs of a profound degradation that I see there today.

If this case that I have just examined appears to me to be of greater significance than the others where I have lacked benevolence and respect, it is because it is the one where a certain elementary ethics is violated in the profession of mathematician (24). In the environment where I was welcomed in my beginnings, the Bourbaki environment and those close to Bourbaki, this ethic that I want to talk about generally remained implicit, but it was nevertheless present, alive, the object (it seems to me) of a intangible consensus. The only one who expressed it to me in clear and clear terms, as far as I remember, was Dieudonné, probably one of the first times I was his host in Nancy. It is possible that he returned there on other occasions. Obviously he felt it was an important thing, and I must have felt

then the importance he attached to it, to have remembered it still today, thirty-five years later. By the sole fact of the moral authority of the group of my elders, and of Dieudonné who then visibly expressed a consensus of the group, I had to tacitly make this ethic my own, without however having ever given it a moment of reflection, nor understood which made it important. To tell the truth, the idea would not even have occurred to me that it might be useful for me to give it some thought, convinced that I had been for a long time that my parents and myself each represented a perfect incarnation (or almost) of an ethical attitude, responsible and everything, and foolproof (25).

Dieudonné didn't give me a long speech anyway - that wasn't his style any more than that of any of his friends in Bourbaki. He must have mentioned it to me rather in passing, and as something that was supposed to go without saying. He simply insisted on a very simple rule, seemingly harmless, which is this: any person who finds a result worthy of interest must have the right and the possibility of publishing it, on the sole condition that this result is not already the subject of a publication. So even if this result was known to one or more people, as long as they did not take the trouble to put it in black and white and publish it, so as to make it available to (hm!) the "mathematical community", any other person (implied: including the famous "first come"!) who finds the result by their own means (implied: whatever their means, their points of view and their insights , and whether or not they seem "narrow" to people supposedly more in the know than him...) must have the possibility of publishing it, according to his own means and lighting. I seem to remember that Dieudonné had added that if this rule was not respected, it opened the door to the worst abuses - it is possible that it was on this occasion and through his mouth that I learned precisely of the historic case of Gauss refusing Jacobi's work, under the pretext that Jacobi's ideas had been known to him for a long time.

This simple rule was the essential corrective to the "meritocratic" attitude that existed in Dieudonné (and in other members of Bourbaki) as well as in myself. Compliance with this rule guaranteed integrity. I am happy to be able to say, from everything that has reached me to date, that this essential probity has remained intact in each of the members of the initial Bourbaki group (26). I note that it will not have been this way for other mathematicians who were part of the Bourbaki group or environment. It has not remained intact in my own person.

The ethics that Dieudonné spoke to me in down-to-earth terms is dead.

as ethics of a certain environment. Or rather, this environment itself died at the same time as the integrity which made it its soul. This integrity was preserved in certain isolated people, and it has reappeared or will reappear in certain others where it had deteriorated. Its appearance or disappearance in some of us is part of the crucial episodes in the spiritual adventure of each of us. But the scene on which this adventure takes place is profoundly transformed. An environment that welcomed me, that I made my own, of which I was secretly proud, is no more. What made its value died in myself, or at least was invaded and supplanted by forces of another nature, long before the tacit ethics which regulated it found itself openly denied in customs as in professions of faith. If I have since been surprised and offended, it was through deliberate ignorance. What came back to me from this environment that was mine had a message to bring me about myself, which I have been happy to elude until today.

33. The note – or the new ethics.

Certainly, a rule of ethics only takes on its meaning through an interior attitude, which is its soul. It cannot create the attitude of respect and fairness that it strives to express, at most it can contribute to the permanence of such an attitude, in an environment where this rule enjoys a consensus general. In the absence of the interior attitude, even if the rule is professed through the lips, it loses all meaning, all value. No exegesis, however scrupulous, however meticulous, would change anything.

One of my friends and companions from yesteryear kindly explained to me recently that in these times, unfortunately, with the disproportionate influx that we know of mathematical production, “we” are absolutely obliged, whether we want to or not, to carefully sort through the papers that are written and submitted for publication, to publish only just a small part of them. He said it with a sincerely apologetic air, as if he himself were a bit of a victim of this inevitable fate - a bit like the look he also had to say that he himself was part of it, yes it was. It's unfortunate but that's how it is!, “six or seven people in France” who decide which articles will be published, and which not. Having become less talkative with age, I limited myself to listening in silence. There was a lot to say on this topic, but I knew it would be wasted effort. One or two months later I learned that this colleague had refused a few years ago to recommend the publication of a certain note to the CR, whose author as well as the theme (which I had proposed to him there must be seven or eight

years) are close to my heart. The author had spent two years of his life developing this theme, which is not fashionable it is true (even though it still seems as current to me). I think he did an excellent job (presented as a 3rd cycle thesis). I was not the “boss” of this young researcher, brilliantly gifted as it turns out (I don't know if he will continue to apply his gifts in mathematics, given the reception...), and he did his work without any contact with me.

But it is also true that the origin of the theme developed could not be in doubt; The poor thing was in a bad way, and probably without suspecting anything! This colleague has also gone through the motions, that's at least that and I would have expected no less from him, “sincerely sorry but you understand...”. Two years of work from a highly motivated beginning researcher, against a three-page CR note — how much public money would it have cost? There is an absurdity that jumps out at us, this enormous disproportion between one and the other. Surely this absurdity disappears, if we take the trouble to examine the deep motivations. Only this colleague and former friend is able to fathom his own motivations, as I alone am able to fathom mine. But without having to go very far, I know very well that it is not the disproportionate influx of mathematical production you know, nor public funds (or the patience of an imaginary “unknown reader” of the CR) that it would have been a matter of sparing...

This same draft note to the CR had already had the honor of being submitted to another among the “six or seven people in France...”, who sent it back to the author's “boss”, because these math-ematics “didn't amuse him” (textually!). (The boss, disgusted but cautious, himself in a rather precarious position, preferred both times to crash rather than displease...) Having had the opportunity to talk about the matter with this colleague and ex-student, I learned that he had taken the trouble to read the submitted note carefully and to think about it (it must have brought back many memories...), and that he had found that some of the statements could have been presented in a more helpful way for the user. However, he did not deign to waste his precious time submitting his comments to the person concerned: fifteen minutes of the illustrious man, against two years of work by a young unknown researcher! Maths “entertained” him enough to seize this opportunity to reconnect with the situation studied in the note (which could not fail to arouse in him, just as in myself, a rich web of geometric associations various), to assimilate the description given, then, without prejudice to one's background and means, detect any blunders or gaps. He did not waste his time: his knowledge of a certain mathematical situation was clarified and enriched, thanks to two years of conscientious work by a researcher making his first steps; work that the Master would certainly have

was able to do it (in broad terms and without demonstrations) in a few days. That acquired, we remember who we are - the case is judged, two years of Mr. Nobody's work are good for the trash...

There are some who feel nothing when that wind blows — but even today it takes my breath away. It was surely one of the effects sought in this case (given the exquisite form put into refusal), but certainly not the only one. In this same interview, this old friend confided to me, with an air of modest pride, that he only agreed to present a note to the CR when “the results stated surprised him, or when he did not know how to demonstrate” (27).

This is undoubtedly a reason why he publishes very little. If he applied his own criteria to himself, he would not publish at all. (It is true that in the situation he finds himself in, he has no need for it.) He is aware of everything, and it must be as difficult to astonish him as to find something demonstrable that he does not know. demonstrate. (One or the other has only happened to me two or three times in the space of twenty years, and even then not in ten or fifteen years!) He is visibly proud of his “quality” criteria, which pose him as a champion of the demands pushed to their extreme degree in the exercise of the profession of mathematician. I saw there an unflinching complacency towards himself, and more than once an unrestrained contempt for others, behind the appearance of a smiling and good-natured modesty. I could also see that he found great satisfaction there.

The case of this colleague is the most extreme that I have encountered among the representatives of the “new ethics”. It is no less typical. Here again, both in the incident that I have reported and in the profession of faith which rationalizes it, there is an ubiquitous absurdity, in terms of simple common sense - of such enormous dimensions that this former friend with such an exceptional brain, and also surely many of his colleagues with less prestigious status (who will be content not to contact him to present a note to the CR) no longer see her. To see, in fact, you have to look, to say the least. When one takes the trouble to look at the motivations (and one's own in the first place), then the absurdities appear in full light, and they at the same time cease to be absurd, revealing their humble and obvious meaning.

If in recent years it has often been so painful for me to see myself confronted with certain attitudes and especially certain behaviors, it is surely because I obscurely discerned it as a caricature taken to the extreme, to the point of grotesque or odious, of attitudes and behaviors which had been mine and which returned to me in such

my former students or friends. More than once the old reflex was triggered in me to denounce, to fight "evil" clearly pointed out - but if I happened to give in to it, here and there, it was with divided conviction. Deep down, I know well that to fight still means continuing to slip on the surface of things, that is to evade. My role is not to denounce, or even "improve" the world in which I find myself, or to "improve" myself.

My vocation is to learn, to know this world through myself, and to know myself through this world. If my life can bring any benefit to myself or to others, it is to the extent that I know how to be faithful to this vocation, where I know how to be in agreement with myself. It is time to remind myself of this, to cut short these old mechanisms in me, which here would like to push me to plead a cause (of a certain dead ethics, let's say), or to convince (of the so-called "absurd" character of such ethics which replaced it, perhaps), rather than probing to discover and know, or describing as a means of probing.

In writing the preceding two or three pages, with no more specific purpose than to say a few words about the current attitudes of today which have replaced those of yesterday, I felt continually on my guard against of myself, in the disposition of someone who would be prepared at any moment to cross out with a broad stroke everything he has just written and throw it in the trash! However, I will keep what I have written, which is not false but nevertheless creates a false situation, because I involve others more than I involve myself in it. I felt deep down that I wasn't learning anything by writing, that's surely what created this unease in me. It is definitely time to return to a more substantial reflection, which instructs me instead of pretending to instruct or convince others (28).

34. The silt and the spring.

It seems to me that for the most part, I have gone over what my relationships with other mathematicians of all ages and ranks were, from the time when I was part of their world, of the world of mathematicians. ; and at the same time and above all, from the part that I have taken, through my own attitudes and behavior, in a certain spirit that I see there today, and which surely is not from yesterday. During this reflection, or this journey to put it better, I encountered situations on four occasions, which appeared to me to be typical of certain attitudes and ambiguities in my person, where spontaneous dispositions of benevolence and respect towards towards others have been disrupted, if not completely swept away, by ego-tic forces, and above all (in three of these cases at least) by conceit. This conceit prevailed

especially from the so-called superiority that a certain cerebral power would have conferred on me, and the disproportionate investment I made in my mathematical activity. It found confirmation and support in a general consensus which valued, practically without any reservation, this brain power and this excessive investment.

This is the last of the situations examined, that of the “rude young man who stepped on my flowerbeds”, which seems to me the most important of the four for my current purposes. The three first are typical of my person, or of certain aspects of my person, at a certain time (in a certain context too, it is true) - but, as I had the opportunity to say it again and again, I do not consider them in any way typical for the environment of which I was a part. I also don't believe that they are typical of the current mathematical environment in France, let's say - it is probable that the kind of chronic wandering which characterized the relationship that I had with the “tireless friend”, for example, an unusual thing these days like it must have been then. My attitude and behavior in the case of the “ill-taught young person”, by contrast, is typical of what happens daily today even in the mathematical world, wherever we look. It is the attitude of benevolence, of respect of the mathematician influential towards the young unknown who becomes an extremely rare exception, when the said unknown does not have the opportunity to be his student (and again...), or the student of a colleague of a comparable status and recommended by him. This is undoubtedly what was already coming back to me the day after my “awakening” of 1970, which loosened silent tongues — but first-hand accounts that I heard then remained distant for me, because they did not directly concern my no one, nor that of the friends who were dearest to me in my environment. I was touched more that superficially from the moment (around 1976) when the echoes that came back to me, or the facts that I witnessed, had as protagonists some of these friends, even ex-students who had become important, and even more so when those who were the target of malicious were people I knew well, students more than once (“post-1970” students, it goes without saying!), whose fate therefore touched me. In some cases, it no longer made any doubt that the lack of benevolence, or even an attitude of ostentatious contempt, was reinforced at the very least, if not aroused, by the sole fact that such a young researcher was my student, or that he was taking the risk (without necessarily being my student) of doing what my friends of yesteryear and other colleagues also like to call them “Grothendieckeries”...

The “young misbegotten person” wrote to me again at the beginning of the 70s, to ask me very courteously (even though he was under no obligation to ask me anything at all!) if I don't see-

but no problem with him publishing a proof that he had found for a theorem of which he had been told that I was the author, and which had never been published. I remember that I responded to him in the same bad-tempered mood as in the past, without saying yes or no I believe and letting it be understood, without knowing his demonstration (which he was of course ready to communicate to me but which I didn't care, busy as I was with my activist tasks!), that it would surely bring nothing to mine (yet it would have benefited at the very least from being written in black and white and available to the mathematical public, as well as the statement itself!). This clearly shows to what extent this famous "awakening" still remained superficial, without any impact on certain behaviors rooted in conceit and in "meritocratic" attitudes, which I was surely denouncing at the same time in articles well felt about *Survive et Vivre*, in interventions in public debates, etc...

This answers in a very concrete way a question that I had previously left unanswered. I might as well admit here this humble truth, that such attitudes of conceit are in no way overcome "once and for all" in my person, and I doubt that they ever will be, except at my death. If there has been transformation, it is not through the disappearance of vanity, but through the appearance (or reappearance) of a curiosity about my own person and true nature. of certain attitudes, behaviors etc... in me. It is through this curiosity that I became somewhat sensitive to the manifestations of vanity in myself. This profoundly modifies a certain inner dynamic, and thereby modifies the effects of "vanity"; that is to say, of this force which often pushes me to evade or counterfeit the healthy and fine perception that I have of reality, in order to aggrandize my person and put myself above others while pretending the opposite.

Perhaps such a reader will feel baffled, as I myself once did, by the apparent contradiction between the insidious and tenacious presence of vanity in my life as a mathematician (which he will perhaps also at times glimpsed in his), and what I call my love, or my passion, for mathematics (which perhaps also awakens an echo in his own experience of mathematics, or of some other person or thing). If he is indeed disconcerted, he has within him everything he needs to reconnect (as I did not long ago) with the reality of things themselves, which he can know first hand, rather than to spin like a squirrel trapped in an endless cage of words and concepts.

Will he who sees muddy water say that water and mud are one and the same thing? To know water that is not mud you just have to go up to the spring and look and drink. To know the mud that is not water, all you have to do is climb onto the bank dried by the sun and the wind, and detach and crush a ball of grainy clay in your hand. Ambition and vanity can more or less regulate the part that one gives in one's life to a particular passion, just as mathematical passion can make it all-consuming, if the returns satisfy them. But the most devouring ambition is powerless in itself to discover or know the least of things, quite the contrary! At the time of work, when little by little an understanding begins, takes shape, deepens; when in a confusion little by little we see an order appear, or when what seemed familiar suddenly takes on unusual, then disturbing aspects, until a contradiction finally emerges and upsets a vision of things which seemed immutable - in such work there is no trace of ambition or vanity. What then leads the dance is something which comes from much further than the "me" and its desire to constantly expand (even if it is "knowledge" and "knowledge") – from much further surely than our person or even our species.

This is the source, which is in each of us.

35. My passions.

Three great passions have dominated my adult life, alongside other forces of a different nature. I ended up recognizing in these passions three expressions of the same deep drive, three paths that the drive for knowledge took in me, among an infinity of paths available to it in our infinite world.

The first to manifest itself in my life was my passion for mathematics. At the age of seventeen, after leaving high school, handing over the reins to a simple inclination, it unfolded into a passion, which directed the course of my life for the twenty-five years that followed. follow up. I "knew" mathematics long before I knew the first woman (apart from the one I knew from birth), and today at my mature age, I see that it is still not consumed . She no longer directs my life, any more than I claim to direct her. Sometimes she dozes off, sometimes to the point that I think she's gone, only to reappear without announcing herself, as fiery as ever. She no longer devours my life as in the past, when I gave her my life to devour. She continues to leave a deep mark on my life, like the mark on a lover of the woman he loves.

The second passion in my life was the quest for women. This passion often presented itself to me in the guise of the quest for a companion. I only knew how to distinguish one from the other towards the time when it ended, when I knew that what I was pursuing was nowhere to be found, or also: that I carried it within me- even. My passion for women could only really unfold after the death of my mother (five years after my first love affair, from which a son was born). It was then, at the age of twenty-nine, that I started a family, from which three other children came. The attachment to my children was originally an indissoluble part of the attachment to the mother, a part of this power emanating from the woman which attracted me to her. It is one of the fruits of this passion for love.

I did not experience the presence within me of these two passions as a conflict, neither at the beginning nor later. I must have vaguely felt the deep identity of the two, which became clear to me much later, after the appearance of the third in my life. However, the effects on my life of both passions could only be very different. The love of mathematics attracted me into a certain world, that of mathematical objects, which surely has its own "reality", but which is not the one where human life takes place.

The intimate knowledge of mathematical things taught me nothing about myself, that is to say, and even less about others - the impulse to discover mathematics could only distance me from myself and from others. There can sometimes be communion of two or more in this same impulse, but this is a communion on a superficial level, which in fact distances each person both from himself and from others. This is why the passion for mathematics has not been a force for maturation in my life, and I doubt that such a passion could promote maturation in anyone (29). If I gave this passion such a disproportionate place in my life, for a long time, it is surely also, precisely, because it allowed me to escape the knowledge of the conflict and the knowledge of myself.

The sex drive, on the other hand, whether we want it or not, launches us straight into the encounter with others, and straight into the crux of the conflict in ourselves as well as in the other! The quest for "the companion" in my life was the quest for happiness without conflict — it was not the drive for knowledge, the drive for sex, as I liked to believe, but an endless escape before the knowledge of the conflict in the other and in myself. (This was one of the two things I had to learn, so that this illusory quest would come to an end, and the worry that accompanies it like its inseparable shadow...) Fortunately, no matter how much we flee the conflict, the sex will take us back there quickly!

One day I gave up rejecting the teaching that the conflict stubbornly brought me, through the women I loved or had loved, and through the children born from these loves. When I finally began to listen and learn, and for years to come, it turned out that everything I learned, it was from the women I had loved or loved that I learned it. (30). Until 1976, at the age of forty-eight, it was the quest for womanhood that was the only great force of maturation in my life. If this maturation only took place in the years which followed, therefore for seven years, it is because I protected myself from it (as I had learned to do from my parents and from those around me). have known) by all means at my disposal. The most effective of these means was my investment in mathematical passion.

The day the third great passion appeared in my life — a certain night in October 1976 — the great fear of learning vanished. It is also the fear of the very stupid reality, of the humble truths concerning myself above all, or of the people who are dear to me. Strangely enough, I had never felt this fear in myself before that night, at the age of forty-eight. I discovered it the very night this new passion appeared, this new manifestation of the passion for knowledge. This has taken, so to speak, the place of finally recognized fear. For years I had seen this fear in others clearly, but through a strange blindness, I did not see it in myself. The fear of seeing prevented me from seeing this same fear of seeing! I was strongly attached, like everyone else — to a certain image of myself, which essentially had not changed since my childhood. The night I'm talking about is also the night where, for the first time, this old image collapsed. Other images bearing his likeness followed suit, remaining for a few days or months, even a year or two, thanks to stubborn forces of inertia, only to collapse in their turn under a scrutinizing gaze. The laziness of looking often delayed such a new awakening — but the fear of looking never reappeared. Where there is curiosity, fear has no place. When there is in me a curiosity for myself, there is no more fear of what I will find than when I want to know the answer to a mathematical situation: there is then a joyful expectation, impatient at times and yet obstinate, ready to welcome whatever comes its way, planned or unforeseen - a passionate attention on the lookout for the unequivocal signs which make one recognize the true in the initial confusion of the false, the half -true and maybe.

In curiosity about oneself, there is love, undisturbed by any fear except what

we look at is not consistent with what we would like to see. And to tell the truth, my love for myself had blossomed in silence in the months which had already preceded that night, which was also the night where this love took active form, enterprising so to speak, unceremoniously shaking up costumes and sets. ! As I said, other costumes and sets soon reappeared as if by magic, to be shaken up in their turn, without invective or gnashing of teeth...

The manifestations of this new passion in my life over the last seven years have ended up appearing to me like the moving ups and downs of waves following one another, like the breaths of a vast and peaceful breath. This is not the place to try to trace its sinuous and changing line, or that, in counterpoint, of the manifestations of mathematical passion. I have given up wanting to regulate the course of one or the other - it is this double movement rather of one and the other which today regulates the course of my life - or to put it better, which is the course.

In the months which had already preceded the appearance of the new passion - months of gestation and fullness - the woman's quest began to change its face. She then began to separate herself from the worry with which she had been imbued, like another "breath" which would have freed itself from an oppression which had weighed on it, and which would find the amplitude and rhythm which are its own. . Or like a smoldering fire, half-choking for lack of escape, and which under a breath of fresh air would suddenly unfold into crackling flames, agile and lively!

The fire burned to its limit. A hunger that seemed unquenchable was satisfied. For two or three years, it seems that this quest has been consumed without any residue of ashes, leaving free space for the song and counter-song of two passions. One, the passion of my youth, had served me for thirty years to separate me from a childhood I had denied. The other is the passion of my mature age, which made me rediscover both the child and my childhood.

36. Desire and meditation.

The night I spoke of, where a new passion took the place of an old fear which vanished forever, was also the night when I discovered meditation. It was the night of my first "meditation", which appeared under the pressure of a compelling, urgent need, whereas I had been submerged in the preceding days by waves of anxiety. Like all anxiety perhaps, this was a "take-off anxiety", which emphatically signaled to me the departure

collage between a humble and obvious reality concerning my person, and an image of myself that is forty years old and has never been doubted by me. Surely there must have been a great thirst for knowledge, alongside considerable forces of flight, and the desire to escape anxiety, to be peaceful as before. There was then intense work, which continued for a few hours until its conclusion, without me yet knowing the meaning of what was happening and even less where I was going. During this work, the red herrings were recognized one after the other; or to put it better, it is this work which made these evasions appear one by one, each under the guise of an intimate conviction that I finally took the trouble to write down in black and white as if to better understand it, whereas until then it had remained in a propitious vagueness. I noted it quite happily, without being in the least suspicious of it, it must surely have something to seduce me - in the mood then of someone who doubts nothing, and for whom the mere fact of having written in black and white an unformulated conviction was the irrefutable sign of its authenticity, the proof that it was founded. If there had not been in me this indiscreet, not to say indecent, desire, the desire to know I mean, I would have stopped each time on this "happy ending", and it is indeed in these dispositions of the happy ending that the stage ended. Then, woe is me! It took me a fancy, God knows how and why, to look a little more closely at what I had just written to my complete satisfaction: it was written there in black and white, all I had to do was reread it! And re-reading carefully, naively, I felt that things were a little wrong, that it wasn't so clear, well! Then, taking the trouble to look a little closer, it became clear that it wasn't that at all, that it was fake, in other words, that my bladders had just been mistaken for lanterns!

This partial discovery each time came as a famous surprise, "gosh! she's not bitten by that one!", a joyful surprise which relaunched reflection with an influx of new energy. Moving forward, we will end up knowing the end result, surely it will come no later than now, we just have to continue the momentum! A little assessment, taking stock... and here we are already raising another intimate conviction, with all the appearances of the "end of history", we are asked that to believe it must be that this time, when are we going to even note for the sake of conscience and then it is a pleasure to even note such judicious and well-felt things, one would really have to have a bad mind not to agree, such obvious good faith, one cannot do The better, it's perfect like that!

This was the new end of the stage, the new happy ending, on which I would have stopped quite happily, if it hadn't been for the bad, prankish brat who once again started to

acting up, deciding, decidedly incorrigible, to once again stick his nose into this last “final word” and happy ending. There was no stopping it, it was off to yet another new stage!

This is how, for four hours, the stages followed one another one by one, like an onion from which I removed the layers one after the other (this is the image that came to me at the end of that night), to arrive at the end of the ends in the heart - at the very simple and obvious truth, a truth which was stark in truth and which yet I had succeeded during days and weeks (and my life lasting, to be honest) to be hidden under this accumulation of “onion layers” hiding one behind the other.

The appearance at last of the humble truth was an immense relief, an unexpected and complete deliverance. I knew in that moment that I had touched the crux of anxiety. The anxiety of the last five days was well and truly resolved, dissolved, transformed into the knowledge that had just formed within me. The anxiety had not only disappeared from sight, as it had throughout the meditation, and several times also during the previous five days; and the knowledge into which it had been transformed was in no way in the nature of an idea, of a concession that I would have made, let's say to be even and quiet (as had happened to me here and there during the same night); it was not an external thing that I would then have adopted or acquired to add to my person. It was knowledge in the full sense of the word, first-hand, humble and evident, which was now part of me, just as my flesh and blood are part of me. It was, moreover, formulated in clear and unequivocal terms - not in a long speech, but in a simple little sentence of three or four words. This formulation had been the final stage of the work which had just continued, which remained ephemeral, reversible as long as this last step was not taken. Throughout this work, the careful, even meticulous, formulation of the thoughts that were forming, of the ideas that were presenting themselves, had been an essential part of this work, each new departure of which was a reflection on the stage that I had just completed. to go through, which was known to me by the written testimony that I had just made (without the possibility of hiding it in the mists of a failing memory!).

In the minutes that followed the moment of discovery and deliverance, I also knew the full significance of what had just happened. I had just discovered something of even greater value than the humble truth of recent days. This thing was the power in me, as long as I was interested, to know the last word of what was happening in me, of all things.

situation of division, of conflict — and thereby, the capacity to completely resolve, by my own means, any conflict within myself of which I was aware. The resolution is not achieved through some grace, as I had tended to believe in previous years, but through intense, obstinate and meticulous work, making use of my ordinary faculties. If “grace” there is, it is not in the sudden and definitive disappearance of a conflict in us, or in the appearance of an understanding of the conflict which would come to us ready-made (like the chickens in the land of plenty!) — but it is in the presence or appearance of this desire to know (31). It was this desire that guided me and led me in a few hours to the heart of the conflict - just as the desire for love makes us infallibly find the way

which leads to the depths of the beloved woman.

Whether it is self-discovery or mathematics, in the absence of desire, all so-called “work” is just a figment, leading nowhere. In the best case, it makes those who indulge in it endlessly “beat around the bush” — the contents of the pot are reserved for those who are hungry to eat! Like everyone else, it happens to me that desire and hunger are absent. When it comes to the desire for self-knowledge, then my knowledge of myself and the situations in which I am involved remains inert, and I act not knowingly, but at the discretion of simple inveterate mechanisms, with all the consequences that this implies - a bit like a car that is driven by a computer, not by a person. But whether it is meditation or mathematics, I would not dream of pretending to “work” when there is no desire, when there is no hunger. This is why I have never meditated for even a few hours, or done math for even a few hours (32), without having learned something, and most often (for do not always say) something unforeseen and unpredictable. This has nothing to do with faculties that I have and that others do not have, but only comes from the fact that I do not pretend to work without really wanting to. (It is the strength of this “desire” which alone also creates this requirement which I spoke about elsewhere, which means that in work we are not satisfied with an approximation, but are not satisfied only after having gone to the end of an understanding, however humble it may be.) Where it is a question of discovery, work without desire is nonsense and pretense, just as much as making love without desire. To tell the truth, I have not experienced the temptation to waste my energy pretending to do something that I have no desire to do, when there are so many exciting things to do, even if only than sleep (and dream...) when it's time to sleep.

It was on this same night, I believe, that I understood that the desire to know and the power to know and discover are one and the same thing. As long as we trust it and follow it, it is desire that leads us to the heart of the things we want to know. And it is also he who makes us find, without even having to look for it, the most effective method for knowing these things, and which best suits us. For mathematics, it seems that writing has always been an indispensable means, regardless of the person who “does math”: doing mathematics is, above all, writing (33). The same is undoubtedly true in any work of discovery where the intellect plays the greatest part. But surely this is not necessarily the case with “meditation”, by which I mean the work of self-discovery. In my case, however, and until now, writing has been an effective and essential means of meditation. As in mathematical work, it is the material support which sets the rhythm of reflection, and serves as a benchmark and rallying point for an attention which otherwise tends for me to scatter to the four winds. Also, writing gives us a tangible trace of the work that has just been done, to which we can refer at any time. In a long-term meditation, it is often useful to be able to also refer to the written records which bear witness to a particular moment of meditation in the preceding days, or even years before.

Thought, and its meticulous formulation, therefore plays an important role in meditation as I have practiced it until now. However, it is not limited to work of thought alone. This alone is powerless to understand life. It is especially effective in detecting contradictions, often enormous to the point of grotesqueness, in our vision of ourselves and our relationships with others; but often, it is not enough to understand the meaning of these contradictions. For those who are animated by the desire to know, thought is often a useful and effective instrument, even indispensable, as long as one remains aware of its limits, very evident in meditation (and more hidden in mathematical work). It is important that the thought knows how to fade and disappear on tiptoe at sensitive moments when something else appears - perhaps in the form of a sudden and deep emotion, while the hand perhaps continues to run over the paper to give it at the same time an awkward and stammering expression.

37. Wonder.

This retrospective on the discovery of meditation came about entirely

unforeseen, almost unwillingly — it was not at all what I intended to examine at the start. I wanted to talk about wonder. This night, so rich in so many things, was also rich in wonder at these things. Already during the work, there was a sort of incredulous wonder at each new red herring discovered, like a crude costume sewn with thick white thread that I had indulged in, it was hardly credible! to be taken for real in the most serious way! Many times since then, in the years that followed, I found the same wonder as on that first night of meditation, at the enormity of the facts that I discovered, and the crudeness of the subterfuges which had made me ignore them until then. there. It was through its burlesque sides that I began to discover the unsuspected world that I carry within me, a world which over the days, months and years has revealed itself to be of prodigious richness. Already on this first night, however, I had other subjects to marvel at than episodes of vaudeville.

It was the night when for the first time I reconnected with a forgotten power that slept within me, the nature of which still escaped me, except precisely that it is a power, and which is at my disposal. available at any time.

And the preceding months had already been rich in a silent wonder of something that I had carried within me, surely always, with which I had only just regained contact. I felt this thing not as a power, but rather as a secret sweetness, as a beauty that was both very peaceful and disturbing. Later, in the exultation of the discovery of my power so long ignored, I forgot these months of so-silent gestation, to which only a few scattered poems testified - love poems, which perhaps would have resonated the most often in the middle of my meditation notes...

It was only years later that I remembered these times of wonder at the beauty of the world and that which I felt resting within me. I knew then that this softness and this beauty that I had felt within myself, and this power that I discovered shortly after which profoundly changed my life, were two inseparable aspects of one and the same thing.

And I also see, now, that the gentle, collected, silent aspect of this multiple thing that is creativity in us, expresses itself spontaneously through wonder. And it is also in the wonder of an indescribable beauty in oneself revealed by the loved one, that the man knows the beloved woman and she knows him. When wonder in the thing explored or in the loved one is absent, our embrace with the world is mutilated from the best that is in it.

she — she is mutilated from what makes her a blessing for herself and for the world. The embrace that is not a wonder is an embrace without force, a simple reproduction of a gesture of possession. It is powerless to generate anything other than further reproductions, larger or fatter or thicker perhaps, whatever, never a renewal (34).

It is when we are children and ready to marvel at the beauty of the things of the world and in ourselves, that we are also ready to renew ourselves, and ready as flexible and docile instruments in the hands of the Worker, to that by His hands and through us beings and things are perhaps renewed.

I remember well that in this group of unpretentious friends who for me represented the mathematical environment, at the end of the forties and in the following years, an environment that was sometimes noisy and self-confident, where the somewhat peremptory tone was not so rare (but without any complacency creeping in) — in this environment there was room at all times for wonder. The one in whom wonder was most visible was Dieudonné. Whether it was he giving a presentation, or whether he was simply listening, when the crucial moment arrived when a sudden escape opened up, we saw Dieudonné in heaven, radiant. It was wonder in its pure, communicative, irresistible state — where all trace of “me” had disappeared. As I speak of it now, I realize that this wonder itself was a power, that it exerted an immediate action all around his person, like a radiance of which he was the source. If I have seen a mathematician make use of a powerful and elementary “power of encouragement”, it is him! I never thought about it again before that moment, but I remember now that it was also in these dispositions that he had already received my very first results in Nancy, resolving questions that he had asked with Schwartz (on the spaces (F) and (LF)). These were very modest results, nothing great or extraordinary of course, one could say that there was nothing to marvel at.

I have since seen things of a completely different scale rejected by the unanswered disdain of colleagues who think they are great mathematicians. Dieudonné was in no way burdened with such pretensions, justified or not. There was nothing of the sort that stopped him from being delighted even by the little things.

There is a generosity in this capacity for delight, which is a blessing for those who are willing to let it flourish within themselves, as well as for those around them. This benefit is exercised without the intention of pleasing anyone. It is simple like the scent of a flower, like the warmth of the sun.

Of all the mathematicians I have known, it is in Dieudonné that this “gift” appeared to me in the most dazzling way, the most communicative, the most active also perhaps, I cannot say (35). But none of the mathematician friends I enjoyed spending time with was this gift absent. He found the opportunity to express himself, perhaps in a more restrained way, at any time. It manifested itself every time I came to one of them to share something that I had just found and which had enchanted me.

If I have experienced frustrations and sorrows in my life as a mathematician, it is above all not finding, in some of those I loved, this generosity that I had known in them, this sensitivity to beauty of things, “small” or “large”; as if what had made the quivering life of their being had died out without a trace, suffocated by the complacency of someone for whom the world is no longer beautiful enough for him to deign to rejoice in it.

There was also, of course, this other pain, of seeing some of my friends from yesteryear treat with condescension or contempt some of my friends today. But this punishment is inflicted by the same closure, basically. He who is open to the beauty of a thing, however humble it may be, when he has felt this beauty, cannot help but also feel respect for the one who designed or made it. In the beauty of a thing made by the hand of man, we feel the reflection of a beauty in the one who made it, of the love he put into making it. When we feel this beauty, this love, there can be no condescension or disdain in us, any more than there can be condescension or disdain for a woman, in a moment when we feel her beauty, and the power in her. of which this beauty is the sign.

38. Drive to return and renew.

The delight that radiated at times in the person of Dieudonné surely touched something deep and strong in me, so that the memory of it comes back to me now with such intensity, such freshness, as if I had just been there. still witness at the moment. (Although it has been almost fifteen years since I had the opportunity to meet Dieudonné, except once or twice in passing.) Of course, I paid no particular attention to it on a conscious level. — it was just a slightly touching, at times almost comical, feature of the expansive personality of my senior colleague and friend. What was important to me, on the other hand, was to have found in him the perfect collaborator, a dream I might say, to put down black and white with meticulous care, loving care, what was to serve as the foundations for the vast perspectives that I saw opening up ahead

Me. It is only in this moment when I evoke both that the link suddenly appears to me: what made Dieudonné the dream servant of a great task, whether within Bour-baki or in the collaboration that was ours for another great foundation work, was the generosity, the absence of any trace of vanity, in his work and in the choice of his major investments. I constantly saw him disappear behind the tasks he took on, lavishing them with inexhaustible energy, without seeking any return. There is no doubt that without looking for anything, he found in his work and in the very generosity that he put into it a fullness and fulfillment, which all those who knew him must have felt.

The delight of discovery that I so often felt radiating from him, is immediately associated in me with a similar delight, which I happened to witness in a very young child. There are two memories that come to mind — both remind me of my little daughter. In the first image, she must be a few months old, she must have just started crawling. She had to drag herself from the patch of grass where she had been seated towards a gravel path. She discovered the small gravels, in a mute ecstasy - and active, grabbing them with both hands to put them in her mouth! In the other picture she must have been a year or two old, someone had just thrown pellets into a goldfish bowl. The fish were eager to swim towards them, their mouths wide open, to ingest the tiny suspended yellow crumbs which slowly descended into the water of the jar. The little one never realized before that fish eat like us. It was like a sudden dazzling feeling inside her, expressing itself in a cry of pure delight: "Look, mom, they're eating!" There was indeed something to be amazed about - she had just discovered in a sudden flash a great mystery: that of our kinship with all other living beings...

There is in the delight of a little child a communicative force which escapes words, a force which radiates from him and which acts on us, while we do our best, most often, to escape it. In moments of inner silence, we feel this strength present in the child at all times. In certain moments its action is only stronger than in others. It is in the newborn, in the first days and months of life, that this sort of "force field" around the child is most powerful. Most often, it remains sensitive throughout childhood, fraying over the years until adolescence, where often already there seems to be no trace left. Yet we can find it shining

around people of all ages, in special moments for some, or for rare others like a sort of breath or halo that surrounds them at all hours. I had the great fortune to know such a person in my childhood, a man, now deceased...

I also think of this other force, or power, that we sometimes feel radiating from a woman, especially in moments when she is fulfilled in her body, in communion with it. The word that often comes to me is "beauty", which evokes one aspect of it. It is a beauty which has nothing to do with canons of beauty or so-called "perfection", it is not the privilege of youth or maturity. Rather, it is the sign of a deep agreement within the person. This agreement often remains fragmentary, and yet it manifests itself through this radiance, a sign of power. It is a force which attracts us towards the center from which it emanates - or rather, it calls within us a deep impulse to return to the body of the Woman-Mother from which we emerged, at the dawn of our life. Its action is sometimes irresistibly powerful, overwhelming when it comes from the woman you love. But for those who do not deliberately close themselves to it, it is sensitive in every woman who lets this beauty, this deep harmony, blossom within her.

The force that radiates from the child is closely related to the force that emanates from the woman who loves herself in her body. One is constantly born from the other, as the child is constantly born from the Mother. But the nature of the force of childhood is not that of attraction, nor that of repulsion. The humble and discreet action that this force exerts on those who do not shy away from it is an action of renewal.

39. Beautiful by night, beautiful by day (or: the Augean stables).

The memory of wonder in one of my children is at the very end of the years fifty and very early sixties. If I did not have a similar memory for the other children who were born subsequently, it is perhaps because my own capacity for wonder had dulled, that I had become too distant to commune in the rapture of one of my children, or to just be a witness to it.

I have never thought of following the vicissitudes of this capacity in my life, from my childhood until today. Surely there would be a common thread there, a "detector" of great sensitivity. If I have never thought of following this thread, it is surely because this capacity is of such a humble nature, almost so insignificant in appearance, that the idea would hardly appeal to me.

came to pay particular attention to it, absorbed as I was in discovering and probing what I called “the great forces” in my life (which still continue to manifest themselves today). However, this seemingly humble capacity provides a sign above all of the presence or absence of the rarest and most valuable “force” in us...

I have never been entirely cut off from this force, throughout my entire adult life. However arid my life may have become, I found in love the wonder of a child, the delight of discovery. Through many deserts, the passion of love remained the living and vigorous link with something that I had left, an umbilical cord which silently continued to nourish me with warm and generous blood. And for a long time also the wonder in the beloved woman was inseparable from the wonder in the new beings that she gave birth to — these brand new, infinitely delicate and intensely living beings who attested to and inherited her power.

But my purpose here is above all to follow somewhat the vicissitudes of this “force of innocence” through my life as a mathematician, at the time when I was part of the “world of mathematicians”, from 1948 to 1970. Surely, wonder has never permeated my mathematical passion to a comparable extent as in the passion of love. Strangely enough, if I try to remember a particular moment of delight or wonder in my mathematical work, I can't find any! My approach to mathematics, since the age of seventeen when I began to invest deeply in it, has been to set myself big tasks. These were always, from the start, tasks of “putting things in order”, of major cleaning.

I saw an apparent chaos, a confusion of heterogeneous things or sometimes imponderable mists, which visibly must have a common essence and conceal an order, a harmony still hidden which had to be brought out through patient, meticulous work, often long-term. It was work often with a mop and a brush, for the big job which already absorbed considerable energy, before coming to the finishing touches with a duster, which excited me less but which also had their charm and, in all case, an obvious utility. There was in the day-to-day work an intense satisfaction of seeing little by little emerge this order that we guessed, which always revealed itself to be more delicate, with a richer texture than what had been glimpsed and guessed. . The work was constantly full of unforeseen episodes, most often arising from the examination of what could seem like a tiny detail that had hitherto been neglected. Often the fine-tuning of such a “detail” shed unexpected light on the work done years before. Sometimes also, it led to intuitions

news, the deepening of which became the subject of another "great task".

Thus, in my mathematical work (apart from the "painful year" around 1954 which I had occasion to speak about), there was a continual suspense, the attention was constantly kept in suspense. Fidelity to my "tasks" forbade me from too far away escapes, and I was champing at the bit in an impatience to have arrived at the end of all and finally launch myself into the unknown, the true - while the The dimension of these tasks had already become such that to complete them successfully, even with the help of good will who had finally arrived to the rescue, the rest of my days would not have been enough!

My main guide in my work has been the constant search for a perfect coherence, a complete harmony which I divined behind the turbulent surface of things, and which I endeavored to patiently bring out, without ever tiring of it. . It was a keen sense of "beauty", surely, which was my flair and my only compass. My greatest joy was, less to contemplate her when she appeared in full light, than to see her emerge little by little from the mantle of shadow and mists in which she always liked to hide. Certainly, I didn't stop until I managed to bring it into the clearest light of day. I then experienced, sometimes, the fullness of contemplation, when all the audible sounds contribute to the same vast harmony. But more often still, what was brought to light immediately became motivation and means for a new plunge into the mists, in pursuit of a new incarnation of She who remained forever mysterious, unknown - constantly calling me, to know Her again...

Dieudonné's pleasure and delight was above all, it seems to me, to see the beauty of things manifested in full light, and my joy was above all to pursue it in the dark recesses of the mists and the night. This is perhaps the profound difference between Dieudonné's approach to mathematics and mine. The sense of the beauty of things, for a long time at least, must not have been less strong in me than in Dieudonné, although it may have weakened during the sixties, under the action of a conceit. But it would seem that the perception of beauty, which manifested itself in Dieudonné through wonder, took different forms for me: less contemplative, more enterprising, less manifest also at the level of the emotion felt and expressed. If this is so, my aim would therefore be to follow the vicissitudes of this openness in me to the beauty of mathematical things, rather than the mysterious "gift of wonder".

40. Sports mathematics.

It is quite clear that openness to the beauty of mathematical things never entirely disappeared in me, even in the sixties until 1970, when conceit progressively took a growing place in my relationship to mathematics and other mathematicians. Without a minimum of openness to the beauty of things, I would have been incapable of “functioning” as a mathematician, even on the most modest diet — and I doubt that anyone could do useful work in mathematics, if they did not stay living in him, ever so slightly, this sense of beauty. It is not so much, it seems to me, so-called “cerebral power” that makes the difference between one mathematician and another, or between one work and another by the same mathematician; but rather the quality of finesse, of greater or lesser delicacy of this openness or sensitivity, from one researcher to another or from one moment to another in the same researcher. The deepest, most fruitful work is also that which attests to the most refined sensitivity to apprehend the hidden beauty of things (36).

If this is so, we must believe that this sensitivity must have remained alive in me until the end, at least at times, since it was at the end of the sixties(*) that I began to to glimpse and to uncover somewhat the most hidden, most mysterious mathematical thing that I have ever been able to discover — this thing that I called “pattern”. It is also the one which has exerted the greatest fascination on me in my life as a mathematician (if I except certain reflections of the very last years, moreover intimately linked to the reality of patterns). There is no doubt that if my life had not suddenly taken an entirely unforeseen course, taking me far outside the serene world of mathematical things, I would have ended up following the call of this powerful fascination, leaving the “tasks” there ” who had until then kept me prisoner!

Perhaps I can say that in the solitude of my working room, the sense of beauty remained equal to itself until the moment of my first “awakening” in 1970, without really being affected by the conceit that so often marked the relationships with my peers? A certain “flair” must even have been refined over the years, through daily and intimate contact with mathematical things. The intimate knowledge that we can have of things, which sometimes allows us to understand beyond what we know in the moment and penetrate further into knowledge - this knowledge or this maturity, and this “flair” which is the sign

(*) (August 8) Verification made, it appears that the beginnings of my reflection on the motives are placed at the beginning, no at the end of the sixties.

more visible, is closely related to openness to the beauty and truth of things. It promotes, it stimulates such openness, and it is the sum and fruit of all the moments of openness, of all the "moments of truth" which have preceded.

What remains for me to examine is to what extent a spontaneous sensitivity to beauty was disrupted more or less profoundly, at the moments when it had the opportunity to manifest itself in my relationship with this or that colleague.

What memory gives me on this subject does not condense into a tangible and precise fact, which I could report here in a more or less circumstantial manner. The memory here again is limited to a sort of fog, which nevertheless gives me an overall impression, which I must try to understand. It is the impression left in me by a certain interior attitude, which must have ended up becoming like second nature, and which manifested itself each time I received mathematical information on something which was more or less "in my ropes". To tell the truth, from a certain relatively insignificant aspect, this attitude must have always been mine, it is part of a certain temperament, and I had the opportunity to touch on it in passing. It is about this reflex, of first agreeing to become aware only of a statement, never of its demonstration, to try first of all to situate it in what is known to me, and to see if in terms of this known the statement becomes transparent, obvious.

Often this leads me to reformulate the statement in a more or less profound way, in the sense of greater generality or greater precision, often also both at the same time.

It is only when I cannot "fit" the statement in terms of my experience and my images, that I am ready (almost unwillingly sometimes!) to listen (or read...) the ins and outs which sometimes give "the" reason for the thing, or at least a demonstration, understood or not.

This is a particularity of my approach to mathematics, which distinguished me, it seems to me, from all the other members of Bourbaki at the time I was part of the group, and which made it practically impossible for me to fit in like them in collective work.

This particularity has surely also constituted a handicap in my activity as a teacher, a handicap which must have been felt by all my students until today when (with age helping) it has ended up softening somewhat.

This trait in me is surely already in the sense of a lack of openness. It implies only a partial opening, ready to welcome only what "comes in time", or at least very reluctant in welcoming everything else. In choosing my investments

mathematics, and the time that I agree to devote to this or that unforeseen information, this deliberate intention of “partial closure” is today stronger than ever.

It is even a necessity, if I want to be able to follow the call of what fascinates me the most, without still giving “my life to devour” to lady mathematics!

The “fog” however restores to me more than this particularity, which I ended up realizing several years ago (better late than never!). At a certain moment, this reflex became like a point of honor: it would be damned if I didn't manage to “have” this statement (assuming that it was not already very familiar to me) in less long enough to say it! If it was an illustrious unknown who was the author of the statement, there would also be this nuance: all that would be missing is that I (who am supposed to be in the loop, after all!) have not already all that up my sleeves! And very often in fact I had it, and beyond – my attitude then would have tended to go in the direction of: “Okay, you can go and get dressed – you will come back when you have done a little better!”.

This was precisely my attitude in the case of the “young white-beak who walked in my flowerbeds”. I couldn't even swear that in what he was doing there weren't interesting details that weren't covered by what I had done in my “secret notes” — that's an incidental thing. *) Besides. Finally, this episode also sheds light on the question that I am examining here, that of a profound disruption of this openness to the beauty of mathematical things. It would have seemed that from the moment I had “done” a certain thing, its beauty had disappeared for me, and that all that remained was a vanity that demanded credit and benefit. (Without me deigning to take the time to publish it — it is true that there would have been too many.) It was a typical attitude of possession, analogous to that of a man who, having known a woman, does not feels her beauty more and runs a hundred more without suffering for another to know her. This was an attitude that I reproached in love life, believing myself far above such vanity, while keeping myself careful not to note this obvious fact, that this was indeed my attitude towards mathematics!

I have the impression that these crude competitive arrangements, “sporting” arrangements so to speak, on which I have just put my finger in my person, were to begin to become common in “my” mathematical environment, around the moment when they were current in me. I would be hard pressed to place in time the moment of

(*) (August 8) It has since occurred to me that this thing is not so “incidental” as that, that it constitutes the line of passage from “sporting attitude” to the beginning of dishonesty, a line that I may have crossed...

their appearance, or the one where they became like an intimate part of the air that we breathed in this environment, or that which my students breathed in contact with my person. The only thing I think I can say is that it must be in the sixties, perhaps from the beginning of the sixties, or the end of the fifties. (If this is so, all my students were entitled to it - it was for them to take it or leave it!) To be able to situate it, I would need other specific cases, which at the moment are totally beyond my control. memory.

This humble reality was of course in complete contrast to the noble image I had of my relationship to mathematics, and to young researchers in general. The crude subterfuge which I used to deceive myself was of meritocratic inspiration: for this image, all I retained was the relationship with my students (who contributed to my prestige, of whom they were the noblest jewels!), and to the particularly brilliant young mathematicians, whose merits I had recognized and whom I treated on an equal footing just like my students, without waiting for their heads to be crowned with laurels (which of course it didn't take long — we either have the “flair” or we don't!). As for the young people who were not fortunate enough to be among my students, or among those of one of my friends, nor to be young geniuses, I was not at all concerned about my relationship with them. They didn't count.

I believe that this reality was most often softened, tempered, when I found myself put in personal contact with the young researcher, either because I met him at my seminar, or because he had addressed me by letter. It is possible that the case of the “young white-beak” is from this point of view a somewhat different, exceptional case. It seems to me that for the researchers I have just spoken about, I had to consider them a little as having put themselves “under my protection”, and this should awaken in me a more benevolent attitude. In this case too, my desire to put myself forward could find an outlet, by making my comments to the person concerned and making suggestions to him to resume his work in a perhaps broader perspective, or by going deeper. things. In such a case, there is a chance that the young researcher, who for a limited time took on the role of a student, would also benefit from it, and would have good memories of his relationship with me. (Any feedback in one direction or the other that reaches me on this subject would be welcome.)

I was thinking here mainly of the case of younger researchers, while the “sporty” attitude was in no way limited to my relationship with them, it goes without saying. But it is in the relationship with young researchers, surely, that the psychological as well as practical impact of a prominent mathematician tends to be the strongest, the most loaded with consequences for their

future professional life.

41. The merry-go-round is over!

I stopped last night with a feeling of relief, of great satisfaction, the contentment of someone who has not wasted his time! I suddenly felt light, and joyful - a slightly mischievous joy at times, bursting into mischievous laughter - the laughter of a joking brat. However, I hadn't actually done much, I had just watched an already "known" episode, that of the famous "white-beak who...", from a slightly different angle. An angle showing my relationship to mathematics itself, in certain circumstances, not only my relationship to mathematicians. It didn't take much for a myth that had been dear to me to go up in smoke. To tell the truth, this is not the first

time that I have looked at my relationship with mathematics.

Two and a half years ago I was already led to devote a few weeks or months to it. I then realized (among other things) the importance of egoic forces, forces of self-aggrandizement, in my past investment in math. But last night I had just put my finger on an aspect that had escaped me at the time. Now that I come back to this, I realize that this aspect, the aspect of the jealous attitude in my relationship to math, joins up with the "stupid" discovery which came at the end of the first night when I "meditated" (meditating then without knowing it, as Monsieur Jourdain wrote prose...). It is quite possible that this had its part in the joyful exultation which followed. Even if it was not consciously perceived, it was a bit like the reconfirmation, in a new light, of something that I had discovered previously - and the pleasure then is the same as in mathematics, when without the having searched we come across, through an entirely different means, upon something that we know, that we found perhaps years before.

Each time this is accompanied by a feeling of intimate satisfaction, while the harmony of things is revealed once again, and at the same time the knowledge we have of them is more or less renewed.

Moreover, I think that this time, I have indeed "done the trick"! For days I had felt that there was still something left to come to light, without knowing how to say very clearly what. I didn't try to force it, I felt that I just had to let it happen, letting the thread I was following unfold freely, through landscapes both familiar and unexpected. Unexpected, because until now I had never taken the trouble to

look. It was at a walking pace that I approached the remaining "hot spot".

And I believe that this is the last one, in the journey that I have just made and which is coming to an end.

And I had the impression, as soon as I arrived at this point, of someone who arrives at a belvedere, from where he sees the landscape he has just covered unfolding, of which at each moment he could still only perceive a portion. And there is now this perception of extension and space, which is a liberation.

If I try to put into words what the landscape before me gives me, it comes to this: everything that has come to me, and often unwelcome and unwelcome, in my life as a mathematician in recent years, is harvest and message of what I sowed, at the time when I was part of the world of mathematicians.

Of course, I have said this thing to myself over and over again many times over the years, and even in these notes that I have just written. I told myself this, somewhat by analogy with other harvests which came to me insistently, which I rejected for a long time and which I ended up welcoming and making mine. From the first one that I received in this way, even before I knew meditation, I understood that every harvest must have its meaning, and that balking only avoided a meaning and postponed the deadline for an outcome. This knowledge has been precious to me, because it has often kept me from self-pity, and from the righteous indignation which is often a disguised form of it. This knowledge is in me like a semi-maturity, which in no way puts an end to the inveterate reflex of refusing harvests when they seem bitter. When I say to myself "there is no point in complaining", the harvest is not welcomed. I don't feel sorry for myself, nor am I perhaps indignant, and yet I "reluctant"!

As long as the dish is not eaten, it is not welcomed — and not to eat is to be reluctant.

Welcoming and eating is work: a certain energy "works", work is done in broad daylight or in the shadows, something is transformed... Whereas balking is the waste of energy which is dispersed — to "reluct"! And we cannot do without the work of eating, digesting, assimilating. The mere fact of going through events, of "doing" or "acquiring" an experience, has nothing in common with work. It is simply a possible material for work that we are free to do, or not to do. In the thirty-six years since I encountered the world of mathematicians, I have made use of this freedom that I have, by avoiding work, while the material, the substance to eat and digest increased in number. year after year. This feeling of joyful liberation that I have been experiencing since yesterday is surely a sign that the work that was before me, which I was constantly putting off in favor of others

work or tasks, has finally been done. It was indeed time!

It is still too early to be sure that this is indeed the case, that there does not remain some obscure and stubborn corner which has escaped my attention, to which I will have to return. But it is also true that this feeling of liberation is unmistakable - each time I have felt it in my life, I have subsequently been able to see that it was indeed the sign of liberation; of something lasting, acquired, the fruit of an understanding, of a knowledge which has become a part of myself. I am free, if I please, to ignore this knowledge, to bury it wherever I want and how I want. But it is not in the power of me or anyone to destroy it, any more than one can destroy the ripeness of a fruit, making it return to a state of greenness which is no longer its own.

It is a great relief to see it confirmed, once again, that I am not "better" than the others. Of course, this too is something I repeat to myself quite often — but repeating and seeing are definitely not the same! Lacking the innocence and mobility of the child, who sees as he breathes, often to see the obvious requires work - and there it is, it's done, I ended up seeing this one: I am not "better" than colleagues or ex-students who, just a few days ago, "took my breath away"! Let anyone judge the weight I have now been relieved of! It may be rewarding in a way to think you're better than others, but it's also very tiring. It's an extraordinary waste of energy - like every time it comes to maintaining a fiction. We rarely realize it, but it already takes energy, just to maintain the fiction against all odds, while the evidence at every step shouts in my carefully plugged ears that it is junk, look stupid! It may be work sometimes to see, but when it's done it's done. It saves money once and for all to walk around like that, blocking my eyes and ears all the time, you have to do that too! and to grieve me as if with an intolerable outrage every time something falls on me that I had put there by mistake.

Fed up with this ride! When we saw the ride, we already got out of it. We paid, okay, I have the right to do it, and even the duty, no matter what, everyone will tell me: right, duty — at the head of the client. It's also very tiring, all these rights which are duties and all these duties which are rights, which stick with me when I think I'm better than others. It's normal after all, when we are better, we collect discreetly (that's the "rights") and we "pay", we do all our duty to

the honor of the human spirit and mathematics — it's very beautiful, it's true, honor, spirit, mathematics which says it better, bravo! bis! It's very beautiful, yes, but it's also very tiring, it ends up giving you a stiff neck. I had my stiff neck and now that's enough — I'm leaving room for others to stand stiff.

It is also normal (since I was talking about students) that the student surpasses the teacher. I was offended, I had energy to waste! Finished all that!

What a relief !

42. The child.

It is even certain that there must be corners where the broom has not passed. It doesn't matter, they will come to my attention and there will always be time to take care of them. But as for my famous “mathematician past”, the big clean-up is done, no doubt.

Now that I have just seen once again that I am not better than others, I should not fall back into the eternal trap of thinking of myself as better than myself! To think I'm better now, out of the carousel and everything, than the one I was fifteen years ago, or two weeks ago. I have learned something during these fifteen years, that's for sure, and during the two weeks too and even since yesterday. When I learn something I mature, I am no longer quite the same. I am not “better” when I have learned something than when that thing to learn was still in front of me.

A more ripe fruit is not “better” than a less ripe, or green, fruit. One season is not “better” than the one before it. The taste of the ripest fruit can be more pleasant, or less pleasant, it depends on taste. I feel better about myself from one year to the next, I have to believe that the changes that are happening in me are “to my taste” — but they are not to the taste of all my friends or loved ones. Every time I start doing math again, I receive compliments from all sides, along the lines of: “What an idea he had to do something else! Everything is back to normal, it's about time!” It's worrying to see someone change...

I learn, I mature, I change — to the point that sometimes I have difficulty recognizing myself in the person I was and whom I rediscover, through a memory or through the unexpected testimony of others. I change, and there is also something that remains “the same”. It had always been there, probably since I was born, and perhaps even before that. It seems to me that I have been able to recognize it well for several years. I call him “the child”. By this thing, I am not better in this

moment than at any other moment in my life; he was there, even if it would often have been difficult to guess his presence. By this thing also, I am no better than anyone, and no one is better than me. In certain moments or in certain people, the child is more present. And that's something that does a lot of good. It does not mean that someone is "better" than someone else, or than themselves at any other time.

Often, when I do math, or when I make love, or when I meditate, it is the child who is playing. He is not always the only one "playing". But when he's not there, there's no math, no love, no meditation. There's no point in pretending - and it's rare that I've played this comedy.

It's not just the child, that's for sure. There is the "me", the "boss" or the "big boss", whatever you want to call him. Surely the boss is essential to the running of the company. If there is a boss it must be for something. He ensures stewardship, and like all bosses, he has an unfortunate tendency to become intrusive. He takes himself terribly seriously; and ultimately wants to be better than the boss opposite. Invasive or not, he is only the boss, he is not the worker. He organizes, he orders, and he cashes in for sure! — he collects the profits as his due, and suffers the losses as an outrage. But it doesn't create anything. Only the worker has the power to create, and the worker is none other than the child.

It's rare to have a company where boss and worker get along. Most often, there is no trace of the worker, locked up God knows where. It was the boss who pretended to take his place in the workshop, with the results that we can guess. And often also, when the worker is there, the boss makes war on him, violent war or skirmishes - not much comes out of this workshop! Sometimes there is also a suspicious tolerance in the boss towards the worker, he lets him do it grumbling, and without taking his eyes off him. It's like a constantly renewed truce in a war that has never stopped. And the worker can work a little thanks to the truce.

It is not at all certain that by virtue of the meditation that I have just done, the attitude of possessiveness in me towards mathematics has disappeared as if by magic! At the very least I would have to look much more closely at the manifestations of possessiveness, one of which I have only just touched upon by calling it by its name. This is not the place in this "introduction", which has become an "introductory chapter", which in turn is already starting to get long! One thing, however, had "tilted" last night, to which I want to come back a little now, something that I had noted with a certain surprise ago

two or three years.

I was thrown into a mathematical question, I couldn't say what, and at one point (by I don't know what circumstance) it turned out that the question I was looking at had perhaps already been looked at, that it could well be treated in black and white in such a book, which it was up to me to consult at the library. The evocation of this simple possibility had a stunning effect, which amazed me: from one moment to the next, the desire had disappeared. All of a sudden, the question on which I had perhaps spent weeks, and was prepared to spend even more, had lost all interest for me! It wasn't spite, it was a sudden and complete lack of interest. If I had the book in my hands, I wouldn't have bothered to open it.

In fact, the possibility was not confirmed, and suddenly the desire returned and I continued on my way as if nothing had happened. I still remained taken aback. Of course, if I really needed what I was doing to do something else, there wouldn't have been such a dramatic drop in interest. It often happened to me to redo things that were known, knowing or suspecting that they were known without worrying in the least.

I was then on a path where it was more economical, and above all much more interesting, to do things my way, from the perspective they presented themselves to me, than to dig into books or articles. I then did it "in the same breath" towards something else, towards which the desire took me. And of course, I was "in the know" enough to know that what was at the end was not in any book or article.

This reminds me that mathematical work, even if it is done in solitude for years, is not a purely personal, individual work, like meditation — at least not in my case. "The unknown" that I pursue in mathematics, for it to attract me with such force, must not only be unknown to me, but unknown to everyone. What is written in mathematical books is not unknown, even if I myself would never have heard of it. Reading a book or article never appealed to me, I avoided it whenever I could. What he can tell me is never unknown, and the interest I give him does not have the quality of desire. It is a "interest" of circumstance, interest in information that can be useful to me, as an instrument of a desire of which it is in no way the object.

On reflection, it does not seem to me that the event that I have reported is the sign of jealous, possessive dispositions, the sign of a vanity which found itself disappointed. There was in me

no spite, no disappointment, simply the sudden disappearance of a desire which, just a moment before, had been intense. It was at a time when I absolutely did not think of publishing anything, nor that one day I would take the fancy to publish anything again.

This desire was not an expression of vanity, of the desire to accumulate knowledge, titles and credits - it was indeed a real desire, the desire of the child passionate about play.

And suddenly — nothing! Understand who can, I don't understand... Sorry

43. The spoilsport boss — or the pressure cooker.

I feel like I have finally finished this retrospective of my life as a mathematician. Of course, I have not exhausted my subject — it would take volumes, assuming that such a subject could be “exhausted”. That wasn't my point. My purpose was to find out whether or not I had been a participant and co-actor in the appearance of a certain “air” that I smell today in puffs, and if so, of what nature. way. I'm clear about it now, and it feels good. It could be exciting to go further, to delve deeper into what has only been glimpsed or touched upon. There are so many exciting things to look at, to do, to discover!

As for my past as a mathematician, it seems to me that what I needed to look at, to come to terms with this past, has been seen.

Surely, by deepening this meditation, I would not fail to learn many interesting things about my present. One thing that this work has made me feel already almost at every step is to what extent I have remained attached to this past, the importance it has had until today in my self-image -myself, and also in my relationship with others; especially in my relationship with those whom I have, in a certain sense, left. Certainly my relationship with this past was transformed during this work, in the sense of detachment, or greater lightness. The future will tell me more. But it is likely that an attachment will remain, as long as my mathematical passion is not burned and sated — as long as I “do math”. And I have no problem trying to guess or predict whether it will die before me...

For more than ten years I thought this passion had died out. It would be more true to say that I had decreed that it was extinct. It was the day when I stopped doing math for a while, and when I rediscovered the world! For three or four years I was absorbed by an activity so intense that my former passion must not have found the slightest

gap through which to slip to manifest. These were years of intense learning, at a certain level which remained quite superficial. In the years that followed, mathematical passion manifested itself in sudden, totally unforeseen outbursts. These attacks lasted a few weeks or months, and I persisted in ignoring their rather clear meaning. I had decided once and for all that the craving for doing math, decidedly good for nothing, was now a thing of the past, period! The “good for nothing” however did not hear it that way — and I, for my part, remained deaf.

Something which may seem paradoxical, it was after the discovery of meditation (in 1976), with the entry into my life of a new passion, that the reappearances of the old one became particularly strong, almost violent - like if each time a lid popped off under the effect of too much pressure. It was only five years later, under the pressure of events it is fair to say, that I took the trouble to examine what was happening. It was the longest meditation I have ever done on an apparently well-defined question: it took me six months of stubborn and intense work to go around a sort of iceberg, the tip of which visible had ended up becoming annoying enough to force me, almost reluctantly, to go and see. It was clear that there was a conflict situation, which to all appearances was the conflict of two forces or desires: the desire to meditate, and the desire to do math.

During this long meditation, I learned step by step that the desire to do math, which I treated with disdain, was, just like the desire to meditate, which I valued to the fullest, a desire to child. The child has nothing to do with the disdain or modest pride of the great leader and boss! The child's desires follow one another, over the hours and days, like the movements of a dance emerging from one another. This is their nature. They are no more opposed than the stanzas of a song, or the successive movements of a cantata or a fugue. It is the bad conductor boss who declares that this movement is “good” and that other “bad” and who creates conflict where there is harmony.

After this meditation, the boss has calmed down, he seems less likely to stick his nose where he has nothing to do. The work this time took a long time, although I thought it would be done in a few days. Once the work is done, the “result” appears obvious, and is formulated in a few words (37). But if someone with insight had said these words to me before or during the work, it would probably have helped me in no way. If the work took so long, it is because the resistance was strong and deep. The boss was really pissed off, and

he never complained, because it happened in an atmosphere where there was no way he could get angry. What is certain is that it was six months well spent, and which I could not have spared; no more than a woman can avoid nine months of pregnancy to finally give birth to something as “obvious” as a baby.

44. We turn the tide again!

It would have been a year and a half since I meditated, apart from a few hours in December, to see clearly an urgent question. And it's been a year since I invested most of my energy in doing math. This “wave” came like the others, math-waves or meditation-waves: they come without announcing their arrival. Or if they announce themselves, I never hear them! The boss maintains a slight preference for meditation, one must believe: each time the vague-meditation is already followed by a vague-math, whereas I saw it lasting forever; and the math wave which (it seemed to me) was a matter of a few days or at most weeks, lingers and extends over months and perhaps even, who knows, over years. But the boss ended up understanding that it is not him who sets these rhythms and that he has nothing to gain by wanting to regulate them.

But perhaps there was finally a shift in the boss's “small preference”, since it has been an agreed and decided thing for almost a year, that I left for at least a few years to “do math again”, officially so to speak: I even applied for a position at the CNRS! More importantly, and entirely unexpected just a year ago, I am starting to publish again. Even after the 1981 meditation that I spoke about earlier, when the desire to do math ceased to be treated as a poor relation, the idea would not have occurred to me that I could go back to publishing math. Something else, possibly, a book where I would talk about meditation, or dreams and the Dreamer — and again, I was far too busy with what I was doing to want to write a book about it! And why do ?!

So there was a sort of fairly important decision there, which affected the course of my life for years to come, and which was taken somewhat by the gang, I can't even really say when and how. One day, when there began to be a good number of typewritten notes (well, up until then I had limited myself to writing my mathematical cogitations by hand... (38)), straight away and homotopic models, etc..., it turned out that it was a decided thing: we're publishing that! And as long as we're at it, we might as well go all out and start a little series of mathematical reflections, the name of which was already found, it was enough to put some

capital letters: "Mathematical Reflections"! This is more or less what this famous "fog" is giving me back at the moment, which so often serves as a memory. Probably a very shortened memory, in this case. The remarkable thing, in any case, is that this thing was done without even stopping to look at where I was going, what was pushing me, or carrying me... That's what I would like to do more, building on this unexpected meditation, to be able to feel it as truly completed.

The question that immediately comes to mind: is this "remarkable thing" that I have just noticed a sign of the (so-called?) "discretion" of the boss, who for nothing in the world wants to interfere (even if it was through an indiscreet look...) in a spontaneous movement so beautiful that has no need for it etc...; Or is it a sign on the contrary that he has taken a clear side, and that the so-called "small preference" is pushing him hard in the math direction?

All you had to do was put the question in black and white to see the answer appear! It's not the kid, who started a longer-term game than others, perhaps, who decreed that he was going to continue for during the time it took the desired number of pages to make a reasonable number of volumes of a beautiful series with capital titles! It's the boss who planned and organized everything, the kid just has to do it. Maybe the kid won't ask for anything better, we can't know in advance - but that's a secondary question. The kid's desires also depend, to a certain extent at least, on the circumstances, which mainly depend on the boss.

The boss has opted, that's quite clear. He has also just shown a certain flexibility, since it has been more than a month since meditation has continued under his benevolent eye. It is also true that his benevolence is in no way disinterested, since the tangible product of meditation, the notes that I am currently writing, will be the most beautiful cornerstone of the tower that he already sees himself building, with the stones gracefully cut by the apparently well-disposed child worker. Clearly, it's a little early to compliment him on his "flexibility"! A few hours of meditation three months ago, all in all, in a year and a half, that would even be quite meager!

However, I do not have the impression that there was, during all this time, a desire for meditation that was repressed or frustrated. In the few hours in December, I took stock and saw what I had to see; It was enough to transform a situation that had not been clear. I resumed the thread of the interrupted mathematical work, without having to cut short anything else.

It does not seem to me that a conflict has reappeared out of nowhere, I mean: one which was resolved more than two years ago and which reappeared, this time in reverse form. That the boss has preferences is in his nature and it is his right - it would be stupid for him to pretend to forbid it (although things happen that are more stupid than that...). This is not a sign of conflict, although it is often the cause. At this point, it really doesn't seem like there's any blame for lack of flexibility!

This clearly seen, I still have to try to identify the boss's "motivations", for this reversal of the tide which took place as discreetly as possible, and which yet, on closer inspection, is quite spectacular.

45. The Guru-not-Guru – or the three-legged horse.

This immediately brings me back to this meditation which continued from July to December 1981, after a period of four months which I had just spent in a sort of mathematical frenzy. This somewhat crazy period (very fruitful from a math point of view (39)) had ended overnight, following a dream. It was a dream that described, in a parable of irresistible wild force, what was happening in my life — a parable of this frenzy. The message was dazzlingly clear, yet it took me two days of intense work to accept its obvious meaning (40). That done, I knew what I had to do. I did not return to this dream during my work during the six months that followed, but I did nothing other than penetrate further into its meaning and fully assimilate its message. Two days after the dream, this message was understood at a level that remained superficial and crude. What I needed to deepen, above all, was "my" relationship; that of the boss I mean, to both of the two desires present, which appeared to me to be antagonistic.

So much has happened in my life since this meditation that it seems to me as if in the very distant past. If I try to formulate what I learned from what she taught me about the motivations of the "boss", it comes this: during the twelve years that had then passed since the "first awakening" (from 1970), the boss had bet on what, visibly, was "the wrong horse": between mathematics and meditation (which he liked to oppose one to the other) he had opted for meditation .

This is a way of speaking, since the thing and the name "meditation" had only entered my life in October 1976, five years before. But in the dear image of me who in 1970

had seen itself repainted anew, the meditation came at the right time, six years later, to enhance with its brilliance a certain attitude or pose, identified for a long time but never examined until this meditation of 1981. I designated it under the name “master syndrome”, and some have also called it (rightly) my “Guru pose”. If I adopted the first designation rather than the second, it is undoubtedly because it encouraged confusion about the nature of the thing, in which I was pleased to maintain myself. There was in me, already from my early childhood, a spontaneous pleasure in teaching, which was in no way opposed to the spontaneous pleasure in learning, and which was in no way a pose. It was this strength above all that was at play in me in my relationship with my students; this relationship was superficial, but it was strong and good, by which I mean: without pose. It was after what I called my “awakening” of 1970, when a universe that had been familiar to me receded to the point of almost disappearing, and with it also the students and opportunities that I had “d “teach”, to share things that I knew and which for me had meaning and value — that’s when “the boss” took his revenge as best he could: instead of teaching math, something just good for earning a living, but apart from that unworthy of my new greatness, I saw myself teaching through my life and example a certain “wisdom”. I was of course very careful not to say anything of the sort either to myself or to others, and when I received echoes in this direction, I surely had to recuse myself, saddened by so much incomprehension on the part of such friends or relatives. . No matter how much I explained to them, they persisted in not understanding, deplorable students if ever there was one!

I had read a book or two by Krishnamurti which had greatly impressed me, and my mind had assimilated in no time a certain message and certain values (41). It was enough to believe that everything had happened (while pretending the opposite of course). I didn't need to read more, I was capable of improvising the purest Krishnamurti both spoken and written, in a speech of flawless coherence. But although the speech was beautiful and flawless, at no time did it seem to be of any use to me or to anyone else. It went on for years without me pretending to get excited. With the discovery of meditation, the jargon fell away from me overnight, without leaving a trace. I then knew the difference between a speech and knowledge.

The great leader immediately corrected the situation: Krishnamurti out of the window, meditation out of control! Discreetly, it goes without saying, he now had to play with a completely different skill. Times had changed, with this kid who was now running between his legs, and who was a little sharp-eyed sometimes. Guess the kid was busy elsewhere. There is always that

it was only five years later, when a certain pot had exploded and the kid had rushed to see what was happening, that the great chief's scheme had been uncovered.

It was not so long ago, barely more than two years ago, that the Guru-without-seeming-one was finally exposed - one more disguise gone! The poor boss, he was going to find himself completely naked, almost. Or to put it another way: the horse "Médita-tion", which had taken the place of the nameless horse (which should definitely not be called "krish-namurtien"!), is making really paltry returns, especially if we compare them to the charming returns of the "mathematical" horse in distant times when the boss still relied on him. If he held on to the wrong bet for so long, it was out of sheer inertia—he had already changed your bet once, it's already not that common and that required all the impact of an impactful event (42). Bosses don't really like to change their bets — and there it was even a sort of step back, to the previous bet.

It was from 1973, when I retired to the countryside, that the returns of the new horse began to be really meager in comparison with those of yesteryear. The unexpected appearance of meditation three years later revived them a little. There have been even the dizzying episode from March to July 1979, on which I will not dwell not here, where once again I took on the figure of an apostle, this time an apostle of immemorial wisdom and new at the same time, sung in a poetic work of my own composition and which I ultimately refrained from entrusting it to a publisher (43). But two years later, with the Guru definitively out of service, it was a bit as if the Meditation horse had broken a leg (as far as feedback to the boss was concerned) — there was no longer even any means, tact or no tact, to play the Gurus!

After that, it didn't last much — the three-legged horse at the trap, with the apostle-poet, The Guru-not-Guru and Krishnamurti-who-dares-not-speak-his-name. And long live Mathematics

We await with interest what happens next...

46. The forbidden fruit.

I had to take a two-day break from writing notes. After careful rereading, it seems to me although the preceding scenario is, roughly speaking, a description of reality, a description that should now be explored a little more. Above all, I would need to identify more close to the respective merits of the two "horses" meditation and mathematics; and also try

to understand what events or circumstances ended up triggering the “shift” in the boss's bet, against the forces of inertia which would push him to keep a bet indefinitely, even if it was a losing bet.

Perhaps we should also probe the kid's preferences. This is something we now understand, he wants to change games from time to time, and the boss apparently has a minimum of flexibility to not force him at all costs to always play this and never that. Over the past few years he has learned to take the kid into account, to deal with him, without waiting for pots to explode. It is not complete harmony, but it is no longer war, rather a sort of cordial understanding, which occasional tensions would tend to soften, not harden.

When he is not countered too harshly, the kid is quite flexible in his preferences. (It's not like the boss, who ended up learning a minimum of flexibility only reluctantly and in his old age...) But that the kid is flexible doesn't mean that he doesn't have preferences, him too, that he is not more strongly attracted by one thing than by another.

It's often not at all easy to see clearly, to distinguish between the kid's desires and the boss's preferences, or even what the boss has decided once and for all. When I said to myself recently: meditation is better, more important, more serious and everything than mathematics, for such and such reasons (one of the most relevant, one suspects), it was the boss who gave himself good reasons afterwards to convince himself that the bet he made was indeed “the right one”. The kid doesn't say that one thing is “better”, “more important” than another. He is not focused on speech. When he wants to do something he goes for it if no one stops him, without asking himself if this thing is “important” or “better”. His desires are more or less strong from one thing to another and from one moment to another. To detect his preferences, there is no point in listening to the explanatory speeches of the boss, when he claims to speak in the name of the kid when he can only speak for himself. It is only by observing the kid in his games that we can perhaps detect his predilections. And even then it's not so obvious: when he plays this with enthusiasm, that doesn't always mean that he wouldn't play something else with delight, if the boss didn't give him a helping hand.

Obviously, what attracts him above all else is the unknown - it is pursuing into the nebulous recesses of the night and bringing to light what is unknown both to him and to him.

all. And I have the impression that when I added "and of all", this is indeed the desire of the child, and not the vanity of the boss, who wants to impress the gallery and himself. It is also an understood thing that what the kid brings back each time from the darkness of attics and inexhaustible cellars are "obvious", childish things. The more obvious they appear, the happier he is. If they are not, it is because he did not do his job to the end, because he stopped halfway between darkness and day.

In math, the "obvious" things are also the ones that sooner or later someone must come across. These are not "inventions" that we can do or not do. These are things that have already been there, always, that everyone encounters without paying attention, even if it means taking a long detour around it, or passing over it, stumbling every time. After a year or a thousand, without fail, someone ends up paying attention to the thing, digging around it, digging it up, looking at it from all sides, cleaning it, and finally giving it a name. This type of work, my favorite work, someone else each time could do it, and what is more, another could not fail to do it one day or another (44).

It is not at all the same for the discovery of myself, in the by no means collective game "meditation". What I discover, no other person in the world, today or at any other time, can discover for me. It is up to me alone to discover it, that is also to say: to assume it. This unknown is not destined to be known, almost by force of circumstances, whether or not I take the trouble to take an interest in it. If he waits in silence for the moment when he will be known, and if sometimes, when the time is ripe, I hear him calling, it is only me alone, the child in me, who is called to know him. He's not a stranger on borrowed time. Of course, I am free to follow his call, or to shy away from it, to say "tomorrow" or "one day". But the call is addressed to me and no one else, and no one but me can hear it, no one else can follow it.

Every time I followed this call, something changed in "the company", more or less. The effect was immediate, and felt immediately as a benefit - sometimes, like a sudden liberation, an immense relief, from a weight that I was carrying without often even realizing it, and whose reality was manifest by this relief, by this liberation. On a smaller scale, such experiences are common in all discovery work, and I have had the opportunity to talk about them. The thing, however, that distinguishes the work of self-discovery (whether it is done out in the open or remains underground) from any other work of discovery is precisely that it really changes something in the "enterprise". " She-

even. It is not a quantitative change, an increase in output, or a difference in the size or even in the quality of the products leaving the workshop. This is a change in the relationship between the boss and the child worker. Perhaps there is even a change in the boss himself, if that can have a meaning other than for his relationship to the worker, to the kid. For example, he will perhaps look less at production - but it is also an aspect of his relationship with the worker, through the appearance of a concern or a respect perhaps which previously were foreign to him. In all the cases in which I meditated, the change was in the direction of clarification and calming in the relationship between boss and worker.

Except in certain cases where the meditation remained superficial, "circumstance" meditations under the sole pressure of an immediate and limited need, the clarification has lasted until today, and the appeasement too.

This gives the work of self-discovery a different meaning from any other work of discovery. covered, while many essential aspects are common. There is a dimension to self-knowledge, and to the work of self-discovery, that distinguishes it from all other knowledge and all other work. Perhaps this is the "forbidden fruit" of the Tree of Knowledge. Perhaps the fascination that meditation exerted on me, or rather that of the mysteries whose existence it revealed to me, is the fascination of the forbidden fruit. I crossed a threshold, where fear disappeared. The only obstacle to knowledge is inertia, an inertia that is sometimes considerable, but finite, by no means insurmountable. I felt this inertia almost at every step, insidious, omnipresent. It exasperated me at times, but never discouraged me.

(No more than in mathematical work, where it is also the main obstacle, but of incomparably less weight.) This inertia becomes one of the essential ingredients of the game; one of the protagonists to put it better, in this delicate and in no way symmetrical game which has two - or three to put it better: on one side the child who rushes, and the boss (acting inertia) who slows down everything that he can (while pretending not to be there), and on the other the glimpsed form of the beautiful stranger, rich in mystery, both close and distant, who both slips away and calls...

47. Solitary adventure.

This fascination for me with "meditation" has been of considerable power – as powerful as formerly the attraction of "woman", whose place it seems to have taken. If I just wrote "was", that does not mean that this fascination is now extinct. Since a year

as I invested myself in mathematics, it only faded into the background. Experience tells me that this situation can be reversed overnight, just as this situation itself is the effect of an entirely unforeseen reversal. In fact, during each of the four long periods of meditation I went through (one of which spanned almost a year and a half), it was something that went without saying to me that I was going to continue on my path until my last breath, to probe as far as I could go the mysteries of life and those of human existence. When the notes accumulated in impressive piles to the point of threatening to overwhelm my work room, I even ended up having a custom piece of furniture made to fit them, planning ahead (by a quick calculation of arithmetic progression) to also accommodate those who would soon be added over the years; I had planned a margin of around fifteen years if I remember correctly (which was already starting to happen!). There the boss had done things well, for stewardship it was good stewardship! That, and a large-scale tidying up of all personal papers directly or indirectly linked to the work of meditation, was also his last task undertaken and carried out (almost) successfully, just before the shift in preference and bets. One wonders if he did not have an ulterior motive in mind, and if he did not already see volumes of "Mathematical Reflections" filling the empty shelves supposedly intended for the "Notes" to come.

Certainly, the passion for meditation, for self-discovery, is vast enough to fill my life until the end of my days. It is also true that the mathematical passion has not been consumed, but perhaps this hunger will end up being satiated in the years to come. Something in me wants it, and feels mathematics as an obstacle to following a solitary adventure that only I can pursue. And it seems to me that this "something" in me is not the boss, nor one of the desires of the boss (who, by nature, is divided). It seems to me that mathematical passion still bears the mark of the boss, and in any case, following it makes my life move in a closed circle; in the circle of ease, and in a movement which is that of inertia, certainly not of renewal.

I wondered about the meaning of this stubborn persistence of mathematical passion in my life. When I follow her, she doesn't really fill my life. It gives joys, and it gives satisfactions, but it is not of a nature in itself to give true fulfillment, fullness. Like any purely intellectual activity, intense and long-term mathematical activity has a rather stultifying effect. I see it in

others, and especially in myself each time I indulge in it again. This activity is so fragmentary, it only uses such a tiny part of our faculties of intuition and sensitivity, that they become blunted by not being used. For a long time I didn't realize it, and obviously most of my colleagues don't realize it any more than I did over time. It is only since I have been meditating, it seems to me, that I have become attentive to this thing. As long as you pay attention to it, it's obvious - math in large doses thickens. Even after the meditation of two and a half years ago, where the mathematical passion was recognized as a passion indeed, as an important thing in my life — when now I give myself to this passion, there remains a reserve, a reluctance is not a total gift. I know that a so-called “total gift” would in fact be a kind of abdication, it would be following inertia, it would be an escape, not a gift.

There is no such reserve in me for meditation. When I give myself to it, I give myself totally to it, there is no trace of division in this gift. I know that by giving myself, I am in complete agreement with myself and with the world — I am faithful to my nature, “I am the Tao”. This gift is beneficial to myself and to everyone. He opens me to myself as well as to others, lovingly untying what remains knotted in me.

Meditation opens me up to others, it has the power to unravel my relationship with them, even though the other would remain tied. But it is very rare that the opportunity arises to communicate with others at all about the work of meditation, about this or that thing that this work has introduced me to. This is in no way because these things are “too personal”. To take an imperfect picture, I can only communicate about math that interests me at a given moment with a mathematician who has the necessary background, and who at the same time is willing to be interested in it as well. It happens that for years I am fascinated by certain mathematical things, without meeting (or even trying to meet) another mathematician with whom to communicate about them. But I know very well that if I looked for some, I would find some, and that even if I didn't find any, it would be a simple question of luck or circumstances; that the things that interest me cannot fail to interest someone and even a few, whether in ten years or in a hundred years it really doesn't matter. This is what gives meaning to my work, even if it is done in solitude. If there were no other mathematicians in the world and there should be no more, I don't think doing math would have any meaning for me — and I suspect it wouldn't be any different. for any other mathematician, or any other “researcher” in whatever way

it would be. This is in line with the observation made previously, that for me the “mathematical unknown” is what no one yet knows — it is something that does not depend on me alone, but on a collective reality. Mathematics is a collective adventure, continuing for millennia.

In the case of meditation, to communicate about it, the question of “baggage” does not arise; not to the point where I am at least, and I doubt that it will ever arise. The only question is that of an interest in others, which responds to the interest that is in me. It is therefore a question of a curiosity about what is really happening in oneself and in others, beyond the facades of rigor, which do not hide much from the moment that one is really interested in seeing what they cover. But I learned that the moments when such interest appears in a person, the “moments of truth,” are rare and fleeting. It is not uncommon, of course, to meet people who are “interested in psychology”, as they say, who have read Freud and Jung and many others, and who ask nothing better than to have “interesting discussions”. They have this baggage that they carry with them, more or less heavy or light, what we call a “culture”. It is part of the image they have of themselves, and reinforces this image, which they are careful not to ever examine, just like someone else who is interested in math, flying saucers or fishing. line. It is not this kind of “baggage”, nor this kind of “interest”, that I wanted to talk about earlier – whereas the same words here designate things of a different nature.

To put it another way: meditation is a solitary adventure. Its nature is to be solitary to hush up. Not only is the work of meditation solitary work — I think this is true of all work of discovery, even when it is part of collective work. But the knowledge that is born from the work of meditation is a “solitary” knowledge, a knowledge that cannot be shared and even less “communicated”; or if it can be shared, it is only in rare moments. It is work, knowledge that goes against the grain of the most inveterate consensus, it worries everyone. This knowledge is certainly expressed simply, in simple and clear words. When I express it to myself, I learn by expressing it, because the expression itself is part of a work, driven by an intense interest. But these same simple and clear words are powerless to communicate meaning to others, when they come up against the closed doors of indifference or fear. Even the language of dreams, of a completely different force and with infinite resources, constantly renewed by a tireless and benevolent Dreamer, cannot pass through these doors...

There is no meditation that is not solitary. If there is the shadow of a concern for approval by anyone, for confirmation, for encouragement, there is no work of meditation or self-discovery. The same thing is true, it will be said, of any real work of discovery, at the very moment of the work. Certainly. But apart from the work itself, the approval of others, whether it is a loved one, or a colleague, or an entire environment of which one is part, this approval is important for the meaning of this work in the life of the person who is working. 'gives it there.

This approval, this encouragement are among the most powerful incentives, which make the "boss" (to use this image) give the green light without reservation so that the kid can give it his all. It is they above all who determine the boss's investment. It was no different in my own investment in mathematics, encouraged by the kindness, warmth and confidence of people like Cartan, Schwartz, Dieudonné, Godement, and others after them. For meditation work, however, there is no such incentive. It's a passion of the kid-worker that the boss is ultimately kind to tolerate more or less, because it doesn't "bring in" anything. It bears fruit, certainly, but it is not what a boss aspires to. When he is not fooling himself about this, it is clear that it is not in meditation that he is going to invest. The boss is gregarious in nature!

Only the child by nature is solitary.

48. Gift and reception.

Speaking yesterday about the solitary essence of meditation, I was touched by the thought that the notes that I have been writing for almost six weeks, which have ended up becoming a kind of meditation, are nevertheless intended for publication. This has also, inevitably, influenced the form of meditation in many ways, notably through the concern for conciseness, and also that of discretion. One of the essential aspects of meditation, namely constant attention to what is happening within me at the very moment of work, only manifested itself very occasionally, and superficially. Surely all this must have influenced the course of the work and its quality. However, I feel that it has the quality of meditation, above all by the nature of its fruits, by the appearance of a knowledge of myself (in this case, that of a certain past above all) that I had so far evaded. Another aspect is spontaneity, which meant that for none of the soon to be fifty "sections" or "paragraphs" in which the reflection was spontaneously grouped, I would not have been able to say when I started it what the substance would be; each time this was revealed only along the way, and each time the work led to

to the day of new facts, or shed a new light on facts hitherto neglected.

The most immediate meaning of this work was that of a dialogue with myself, of a meditation therefore. However, the fact that this meditation is intended to be published, and moreover, to serve as an “opening” to the “Mathematical Reflections” which must follow, is in no way an incidental circumstance, which would have been a dead letter during the course. work. For me, it is an essential part of the meaning of this work. If I suggested yesterday that the boss surely finds what he wants (he who is a master at “finding his account” in everything, or almost!), this in no way means that its meaning is reduced to that. — to a late, almost posthumous “return”, of the famous three-legged horse! More than once I have also felt that the deep meaning of an act sometimes exceeds the motivations (apparent or hidden) which inspire it. And in this “return to mathematics” I divine yet another meaning than being the sum-result of certain psychic forces which were present in my person at such a time and for such reasons.

This “meditation” that I am continuing to offer to those I have known and loved in the mathematical world — if I feel that it is an important part of this glimpsed meaning, it is not in the expectation that the gift will be received. Whether it is received or not does not depend on me, but only on the one to whom it is addressed. Whether he is welcomed is by no means indifferent to me, of course. But that is not my responsibility. My only responsibility is to be true in the gift I give, that is also to say, to be myself.

What meditation introduces me to are humble and obvious things, things that don't show off. These are also those that I will not find in any book or treatise, however learned, profound, brilliant it may be - those that no one else can find for me. I questioned a “fog”, I took the trouble to listen to him, I learned a humble truth about a “sporting attitude” and its obvious meaning, in my relationship to mathematics as in my relationship to others . I would have read “in the text” the Holy Scriptures, the Koran, the Upanishads, and Plato, Nietzsche, Freud and Jung on top of it, I would be a prodigy of vast and profound erudition - that all this would not have only makes me move away from this truth, a childish, obvious truth. And if I had repeated the words of Christ a hundred times “blessed are those who are like little children, for theirs is the Kingdom of Heaven”, and had commented on them finely, it would still only have served to keep me away of the child in me, and of the humble truths which bother me and which only the child sees. These are the best things I have to offer.

And I know well that when such things are said and offered, in simple and clear words, they are not necessarily received. To welcome is not simply to receive information, with embarrassment or even with interest: "Gosh, who would have suspected...!", or: "It's not so surprising after all...". To welcome, often, is to recognize oneself in the one who offers. It is getting to know oneself through the person of another.

49. Constant of a division.

This short reflection on the meaning of the present work, and on the gift and on the welcome, comes as a digression in the thread of reflection; or rather as an illustration of certain aspects which distinguish "meditation" from any other work of discovery, and in particular from mathematical work. I realized yesterday that these aspects have a double effect, namely two effects in opposite directions: a unique fascination with "the kid", and a total disinterest in the "boss". It seems that this double effect is in the nature of things, that it absolutely cannot be attenuated by any compromise or adjustment. Whatever we do, when the kid follows his true predilection, the boss doesn't benefit from it, but not at all !

There is no doubt that this is the sense of the shift that has taken place, which could well wipe out meditation in my life in the years to come (with the exception of "occasional meditations", as there are three month). I don't think these have to be entirely barren years for that, any more than last year was barren. But it is also true that what I learned there (apart from math) is minimal, if I compare it to what I learned in any of the four years that preceded it. The strange thing is that each of the four long periods of meditation I experienced were times of great fullness, with nothing to suggest that something within me remained frustrated. However, if pots exploded, it was because somewhere there was pressure, and this pressure could not have happened that same day; it must have been present, somewhere out of my sight, for weeks or months, while I was intensely and totally absorbed in meditation.

But here I let myself be carried away by the momentum of the pen (or rather, the typewriter). The reality is that (except in the last period of meditation, which was cut short by a combination of events and circumstances), the intensity of the meditation gradually decreased from a moment on, as a wave precisely which was going to be followed

by another preparing to take its place... The feeling of plenitude, to tell the truth, followed this same movement, with this difference that it was only present in times of wave-meditation, and not of waves -"mathematical".

The situation that I am trying to understand is no longer, it seems to me, a situation of conflict, but it becomes apparent that it still contains the germ, the potentiality of conflict. It is now for me perhaps the most visible sign, through its impact on the course of my life, of a division within me. This division is none other than the boss-child division.

I can't put an end to it. All I can do, now that it is well detected, in this manifestation, is to be attentive to it, to follow the signs and the evolution during the months and years which are before me. Perhaps this passion for maths, a little unfortunate it must be said, will burn itself out (as another passion in me has already burnt out...), to make way for only passion for the discovery of myself and my destiny.

This passion is vast enough, as I have said, to fill my life — and surely my entire life will not be enough to exhaust it.

50. The weight of a past.

It's been a few days since I finished putting the finishing touches on "Harvest and Se-mailles" — after believing, for over a month, that I was about to finish in the next few days. Even this time, after putting in "the final touches," I wasn't entirely sure if I was actually finished — there was one question that I had left unanswered. It was to "understand what events or circumstances ended up triggering the "shift" in the "boss" bet", in favor of mathematics instead of meditation, against considerable forces of inertia . Without deliberate pronouncement my thoughts returned with a certain insistence to this question, in these last days when I had already begun to branch out into others of an entirely different order, including mathematical questions (of conformal geometry). We might as well take advantage of this meditative "end of the momentum", to dig a little and leave a clear space.

Several associations present themselves, when I try to answer "off the cuff" why "I'm going back to math" (in the sense of a significant investment planned to be long-term, of the order of at least a few years). Perhaps the strongest of all relates to the feeling of chronic frustration that I ended up feeling in my activity

teacher for six or seven years. There is this increasingly strong feeling of being “underemployed”, and even, very often, of investing myself and giving the best of myself for gloomy students who have nothing to do of what I have to give.

I see everywhere magnificent things to do that are just waiting to be done. Often, all it takes is a paltry amount of background to approach them; it is these things themselves that tell us what language to develop to understand them, and what tools to acquire to explore them. I cannot help but see them, simply because of a regular contact with mathematics (at a level however modest it may be) resulting from a teaching activity, even in periods of my life when my interest in mathematics math is very marginal. Behind each thing glimpsed, however little we dig, there are still other beautiful things, which cover and reveal others in turn... Whether in math or elsewhere, wherever we look with a real interest, we see a wealth revealed, a depth opened up that we guess is inexhaustible.

The frustration I'm talking about is that of not being able to communicate to my students this feeling of richness, of depth - if only a spark of desire to at least go around this which is just within their reach, to have fun during the few months or years that they are in any case decided to invest in a so-called “research” activity, for the purpose of preparing this or that diploma . Except for two or three of the students I have had for ten years, it seems that the very idea of “having fun” scares them, that they prefer to remain idly for months and years. to trample, or to painfully do mole work of which they know neither the ins nor outs, as long as there is the diploma at the end. There would be a lot to say about this sort of paralysis of creativity, which has nothing to do with the existence or non-existence of “gifts” or “faculties” — and this goes back to the very beginnings of my reflection , where I touched in passing on the root cause of such blockages. But that is not my point here, which is rather to note the state of chronic frustration that these situations, constantly repeated throughout these last seven years of teaching activity, have ended up creating in me.

The obvious way to “resolve” such frustration, at least to the extent that it is that of the “mathematician” in me and not that of the teacher, is to do at least some of these things myself. things that I despaired of seeing one or other of my students grasp at the end of the endings. This is also what I have done a little here and there, whether through occasional reflection of a few hours, or even a few days, on the sidelines and on the occasion of my teaching activity, or during periods of big mathematical craving (which

sometimes occurred like real explosions...), which could last weeks or months. Such occasional and piecemeal work could most often only give rise to a very first rough outline of a question, and to a most fragmentary vision - it was rather a clearer vision of the work in perspective, then that this work itself still remains to be done and, to be better seen, seems all the more burning. Two months ago I gave an overall outline of the main themes of which I have somewhat begun to take stock. This is the "Sketch of a Program", to which I have already had the opportunity to allude, and which will ultimately be attached to the present reflection, to together constitute volume 1 of the "Mathematical Reflections".

It is quite clear that this prospecting work alone ("private" so to speak) was not enough to resolve my frustration. This feeling of "being underemployed" surely reflected the desire (of egoistic origin, I believe, that is to say "the boss's" desire) to take action. It is less a question here of action on others (on my students, let's say, putting them in motion, "communicating something to them", or helping them to obtain a certain diploma which could allow them to apply for such positions, etc...) than the action of a "mathematician": contributing to the discovery of such unsuspected facts, to the emergence of such and such a theory, etc. This is immediately associated with the observation made previously, therefore that mathematics is a "collective adventure". If I wonder about my dispositions when I did maths over the last ten years, in a period of my life when the idea would not have occurred to me that I could one day start publishing again, and when it was also more or less clear that none of my present or future students would have anything to do with my prospecting work - it immediately appeared to me that these were in no way the dispositions of someone who would do something to his only personal pleasure, or driven by an inner need which concerns only himself, without relation to others. When I do math, I believe that somewhere in me it is well understood that this math is made to be communicated to others, to be part of a larger thing in which I contribute, a thing which is in no way of individual nature. This "thing", I could call "mathematics", or better "our knowledge of mathematical things". The term "our" here undoubtedly refers, first of all, concretely, to the group especially of mathematicians that I know and with whom I have interests in common; but there is also no doubt that it goes beyond this restricted group just as much as it goes beyond me. This "our" refers to our species, as it, through some of its members throughout the ages, has been interested and interested in the realities of the world.

mathematical objects. I have never, before this very moment when I am writing these lines, thought about the existence of this “thing” in my life, and even less about wondering about its nature and its role in my life as a mathematician. and teacher.

The desire to exercise an action to which I have alluded seems to me to take the following form for me, in my life as a mathematician: to bring out from the shadows what is unknown to everyone, not only to me (as I saw it previously), and this, moreover, with the aim of being made available to all, therefore of enriching a common “heritage”. In other words, it is the desire to contribute to the enlargement, to the enrichment of this “thing”, or “heritage”, which goes beyond me.

In this desire, certainly, the desire to enlarge my person through my works is not absent. Through this aspect, I find the craving for “growth”, for enlargement, which is one of the characteristics of the self, of the “boss”; this is its invasive and, ultimately, destructive aspect (44). However, I also realize that the desire to increase the number of things which (for a short or long time) will more or less bear my name, is far from exhausting, from covering this desire or this larger force, which pushes me to want to contribute to expanding a common heritage. It seems to me that such a desire could find satisfaction (if not “in my company”, where the boss remains quite intrusive, at least with a more mature mathematician) while the role of one's own person would remain anonymous .

This would perhaps be a “sublimated” form of the tendency to enlarge the ego, through identification with something that goes beyond it. Unless this kind of force is not of an egoistic nature in itself, but of a more delicate and deeper nature, that it expresses a deep need, independent of any conditioning, which attests to the profound link between the life of a person and that of the entire species, a bond that is part of the meaning of our individual existence. I don't know, and it is not my purpose here to probe such questions of such vast scope.

Rather, my purpose is to examine (from a more modest perspective) a concrete situation concerning myself: a situation of frustration therefore, with a partial and provisional outlet through sporadic mathematical activity. The logic of the situation, therefore, would lead me sooner or later to communicate what I found. As until last year, I was in no way willing to make the large-scale and long-term investment for my mathematical passion that would have been necessary to “exploit” for the purposes of publication, through “work on parts” circumstantial, the mines that I brought to light, it

There remained the alternative of communicating to certain mathematician friends who were sufficiently “in the know” at least the things that were most important to me.

I think that if I had found over the last ten years a mathematician friend who plays the role of interlocutor and source of information for me (as was the case with Serre in a very large extent, for many years in the 50s and 60s), at the same time as a relay to transmit “information” that I could pass on to him (a role that Serre did not have to play in the past, because I was in charge myself!), my desire to “exercise an action in mathematics” would have found sufficient satisfaction to resolve my frustration, while being content with an episodic and moderate investment of energy in mathematics, leaving the greater share in my new passion. The first time I approached a mathematician friend with such expectation (at least implicit in me) was in 1975, and the last time in 1982, a year and a half ago. Amusing coincidence, both times it was to try to “place” (so that it would be echoed and, who knows, developed at the end!) the same “program” of homological and homotopic algebra, the first seeds of which date back to the 1950s, and which was perfectly “ripe” (according to my intimate conviction) before the end of the 1960s; program of which a preliminary development and in broad terms is precisely the theme of this Pursuit of the Fields of which I am supposed to write the Introduction at the moment! Still, for reasons undoubtedly quite different from one case to another, my attempts to find a relationship of “privileged interlocutor”, as there had been (before 1970) with Serre, and then with Deligne, came up short. One common circumstance, however, was the relatively limited availability I was willing to give to math. This surely contributed, on the two occasions I spoke about (in 1975 and 1982), to making communication lame. In fact, I was mainly looking to “place” something, without worrying too much about making the necessary effort to “(re)acquaint myself” in order to be a satisfactory interlocutor for my correspondent, much more “in the know”. ” than me (to say the least!) for common homotopy techniques.

I could consider the “Letter to ... ” which serves as the first chapter of the Pursuit of the Fields (letter from February last year, barely over a year ago) as my last attempt to find an echo, from one of my friends from yesteryear, to some of my ideas and concerns now. The continuation of the reflection begun (or rather, resumed) in this letter would become (without me suspecting it for weeks) the first

mathematical text since 1970 promised for publication. It was only almost a year later that I received an indirect reaction to this substantial letter (compare note (38)).

This was more eloquent than any other letter received to date from a mathematician colleague, to make me feel certain dispositions towards my modest person, which have become common among my mathematician friends since I left the environment I was part of with them. There is in this letter, coming from someone to whom I had addressed myself as a friend, in a mood of warm sympathy, a deliberate statement of derision, which reminded me in a particularly violent way of something of which I have come to realize this more and more clearly over the last few years. Previously, I had had the opportunity especially to notice a distancing from myself, in the "big world" of mathematics, and above all others, among those who had been my friends more or less close ones (45). Here it is no longer a question of distancing at the level of people, but rather of a consensus, in the nature of a fashion and as it presents itself as something self-evident, between people "in the know" so be it: that the kind of mathematics in packets of a thousand pages, and the notions with which I have been plaguing people's ears for a decade or two (46)(47), are not very serious at all. take ; that there is a lot of bombast there for not much of value, and that apart from some "general nonsense" around the notion of schema and equated cohomology (which sometimes have their uses, alas, we are willing to admit it), it is more charitable to at least forget the rest; that those who nevertheless pretend to still sound this kind of Grothendieckian trumpet, despite good taste and obvious canons of seriousness, are to be put in the same bag as their Master, admitted or not, and that they do not They only have themselves to blame if they are treated as they deserve...

Surely, the numerous echoes in this sense (which I have just transcribed "in plain language") which have reached me since 1976 (50), and especially over the last two or three years, have ended up awakening in me a fiber of combativeness which has been somewhat dormant over the last ten years. They aroused, like a reflex, the desire to throw myself into the fray, to shut up to these fools who don't understand anything - a completely idiotic reflex in short, that of the bull for whom all it takes is to show a piece of red cloth and wave it in front of his nose, so that he immediately gets fresh and moving, forgetting the path he was calmly following and which was his own! I still believe that this reflex is quite skin deep, and that it alone would not have been enough to make me shake. Moreover and fortunately, do

math has definitely more charm than rushing into a piece of fabric and getting larded from all sides. But doing math, by pursuing against all odds a style of work, an approach to things that are mine, is also a bit like “throwing yourself into the fray”; it is to assert myself in the face of the signs of disdain, of rejection - which come to me, without a doubt, in response to the disdain that my former friends felt or thought they felt in me, if not in theirs. respect, at least with regard to an environment with which they continue to identify without reservation. It is therefore also, somewhat, following the piece of red fabric, instead of following my path.

This idea had presented itself to me on several occasions during these last few weeks, and it is perhaps towards an examination of this aspect in particular that today's reflection was directed. Along the way, another aspect appeared, in which the forces of the ego surely also play a large part, but which is not akin to a simple reflex of combativeness. Rather, to a desire that is within me, and of which at this moment I do not yet clearly discern the nature, to give meaning to the mathematical work that I have done over the last ten or twelve years, or to see it take on its meaning; which meaning (I am firmly convinced) cannot be reduced to that of a private pleasure or a personal adventure. But even if the nature of this desire remains misunderstood, even though I have not taken the leisure to examine it more closely, this reflection is enough to show me that it is indeed there, in this desire, that truly finds the force that weighs on me and forces my hand, so to speak, in favor of a mathematical investment — the force of “tipping”. She would act just as well, red fabric or not. If it is a sign of an attachment to a past, it is the past of the last ten years, the past “after 1970” therefore, and not the past of things already written in black and white, of things done, those before 1970.

Deep down, there is no worry in me about these things, about the fate that the future, “posterity” will have in store for them (while it is doubtful whether there even is a posterity...). What interests me in this past is not at all what I did there (and the fortune that is or will be its fortune), but rather what was not done, in the vast program that I then had before my eyes, and only a very small part of which was realized, by my efforts and those of friends and students who sometimes were kind enough to join me. Without having planned or sought it, this program itself was renewed, at the same time as my vision and my approach to mathematical things. Over the years, the emphasis has shifted both for the themes, and for my very purpose: instead of it being the accomplishment of large tasks of meticulous foundations, my very first purpose now is to probe the mysteries

which fascinated me the most, such as that of “patterns”, or that of the “geometric” description of the Galois group of $\overline{\mathbb{Q}}$ on $\mathbb{Q}$. Along the way, of course, I cannot help but at least sketch out some foundations here and there, as I began to do (among others) in “The Long March through the theory of Galois”, or as I am currently doing in the Pursuit of the Fields. However, the subject has changed, and the style which expresses it.

To put it another way: over the last ten years I have glimpsed mysterious things of great beauty in the world of mathematical things. These things are not personal to me, they are made to be communicated - the very meaning of having glimpsed them, as I feel, is to communicate them, to be taken up, understood, assimilated... But to communicate them, not even if only for oneself, it is also to deepen them, to develop them a little – it is work. I know well, of course, that there is no question of me completing this work, even if I had a hundred years left to devote to it. But that doesn't have to be my concern today, how many years or months I'm going to devote to this work in the time I have left to live and discover the world, while another job keeps me busy. 'waits that only I can do. It is not in my power, and it is not my role, to regulate the seasons of my life.

NOTES for “Harvest and Sowing”

(¹) (Added in March 1984) It is undoubtedly abusive to say that my “style” and my “method” of work have not changed, while my style of expression in mathematics has been profoundly transformed. Most of the time devoted over the past year to “La Pursuit des Champs” has been spent on my typewriter typing out reflections which are intended to be published practically as is (with the addition of relatively short notes). added later to facilitate reading through references, error corrections, etc.). No scissors or glue to laboriously prepare a “final” manuscript (which above all must not reveal anything about the process that led to it) — that still involves changes in “style” and “method”! Unless we dissociate the mathematical work itself from the work of writing, of presenting the results, which is artificial, because it does not correspond to the reality of things, the mathematical work being indissolubly linked to writing.

(²) (Added in March 1984) In rereading these last two paragraphs, I had a certain feeling of unease, due to the fact that in writing them, I am involving others and not myself. Obviously, the thought that my own person might be concerned did not occur to me while writing. I certainly learned nothing when I thus limited myself to putting in black and white (no doubt with a certain satisfaction) things that for years I have perceived in others, and seen confirmed in many ways. In the continuation of the reflection, I am led to remember that attitudes of contempt towards others have not been lacking in my life. It would be strange if the link that I grasped between contempt for others and contempt for oneself were absent in the case of myself; sound reason (and also the experience of similar situations of blindness with regard to myself, which I eventually realized) tell me that this surely must not be so! However, this is, for the moment, only a simple deduction, the only possible use of which would be to encourage me to see with my own eyes what is happening, and to see and examine (if there is indeed, or existed) this still hypothetical self-contempt, so deeply buried that it has completely escaped my notice until now. It's true that there was no shortage of things to look at! This suddenly appears to me to be one of the most crucial, precisely because it is so hidden...(*)

(*) (August 1984) See however on this subject the reflection in the last two paragraphs of the note “The massacre”, n° 87.

(³) I am thinking here in particular of the late conjectures of Mordell, Tate, and Chafarevitch, all three of which were proven last year in a forty-page manuscript by Faltings, at a time when the well-established consensus of people "in the coup" ruled that these conjectures were "out of reach"! It turns out that "the" fundamental conjecture which serves as the keystone to the program of "Anabelian algebraic geometry" which is dear to me, is precisely close to Mordell's conjecture. (It would even seem that the latter would be a consequence of the former, which clearly showed that this program was not a story for serious people...)

(⁴) Even today, we come across "demonstrations" of uncertain status. This was the case for years with Grauert's demonstration of the finiteness theorem which bears his name, which no one (and there was no shortage of good will!) was able to read. This perplexity was resolved by other more transparent demonstrations, some of which went further, which followed the initial demonstration. A similar, more extreme situation is the "solution" of the so-called "four colors" problem, the computational part of which was solved using computers (and a few million dollars). This is therefore a "demonstration" which is no longer founded in the intimate conviction coming from the understanding of a mathematical situation, but in the credit given to a machine devoid of the faculty of understand, and of which the mathematician user is unaware of the structure and functioning. Even assuming that the calculation is confirmed by other computers, following other calculation programs, I do not consider that the problem of the four colors is closed. It will only have changed its face, in the sense that it is no longer a question of looking for a counter-example, but only a demonstration (readable, of course!).

(⁵) This fact is all the more remarkable since until around 1957, I was considered with a certain reservation by more than one member of the Bourbaki group, who ended up co-opting me, I believe, with a certain reluctance. A good-natured joke placed me among the "dangerous specialists" (in Functional Analysis). I sometimes sensed in Cartan a more serious, unexpressed reserve — for a few years, I must have given him the impression of someone inclined toward gratuitous and superficial generalizations. I saw him quite surprised to find in the first (and only) rather long essay that I did for Bourbaki (on differential formalism on varieties) a somewhat substantial reflection - he had not summer

very hot when I offered to take care of it. (This reflection was useful to me again years later, in developing the formalism of residues from the point of view of coherent duality.) I was moreover most often abandoned during the Bourbaki conferences; especially during the joint readings of the essays, being quite incapable of following the readings and discussions at the pace at which they continued. It's possible that I'm not really cut out for collective work. Still, this difficulty that I had in inserting myself into the common work, or the reservations that I was able to arouse for other reasons still in Cartan and others, did not at any time attracted sarcasm or rebuff, or only a shadow of condescension, except at most once or twice at Weil (definitely a special case!). At no time did Cartan depart from an equal kindness towards me, imbued with cordiality and also with this touch of humor very much his own which for me remains inseparable from his person.

⁶) My friends from Survive et Vivre.

(Among these friends, I should probably also count Pierre Samuel, whom I had previously known especially in Bourbaki, just like Chevalley, and who (like him) played an important role within the group Survivre et Vivre. He does not tell me It doesn't seem that Samuel was so focused on this illusion of the superiority of the scientist. Above all, he contributed a lot, I feel, through the common sense and smiling good humor that he brought to the joint work, the discussions, the relationships with others, and also to gracefully carry the role of "the awful reformist" in a group inclined towards analyzes and radical options. He remained in Survive et Vivre for some time after I withdrew from it, serving as editor of the newsletter of the same name, and he left with good grace (to join Friends of the Earth) when he felt that his presence in that group had ceased to be useful.

Samuel was part of the same restricted environment as me, which did not prevent him from being one of the friends of those turbulent years from whom I believe I learned something (even as bad a student as I was...). These ways of being, just like those of Chevalley even though they are hardly alike, were a better antidote for my "meritocratic" inclinations, than the most forceful analysis!

It now appears to me that for all the friends of this period from whom I learned something, it was more through their ways of being and their sensitivity different from mine, and from whom "something" ended up being communicated. , only through explanations, discussions, etc... I

reminds me above all, in this regard, in addition to Chevalley and Samuel, of Denis Guedj (who had a great influence over the *Survivre et Vivre* group), of Daniel Sibony (who stayed away from this group, while continuing his evolution from the corner of a half-disdainful, half-sarcastic eye), Gordon Edwards (who was a co-actor in the birth of the “movement” in June 1970 in Montreal, and who for years worked wonders in energy to maintain an “American edition” of the newsletter *Survivre et Vivre*, in English), Jean Delord (a physicist about my age, a fine and warm man, who had taken a liking to me as well as the *Surviving microcosm*), Fred Snell (another physicist established in the United States, from Buffalo, whose guest I was in his country house during a stay of a few months in 1972).

Among all these friends, five are mathematicians, two are physicists, and all are scientists — which seems to show that the environment closest to me in these years remained an environment of scientists, and especially of mathematicians.

(⁷) The preceding paragraph is the first of the entire introduction to be heavily crossed out in my initial manuscript, and provided with numerous overprints. The description of the incident, the choice of words came at first against the grain, against the grain - a force visibly pushed to pass over the incident quickly, as if by conscience, to “get on with things”. serious”. These are the familiar signs of resistance, here against the elucidation of this episode, and of its significance as revealing of an inner attitude. The situation is very similar to that described at the beginning of this introduction (par. 2), that of the “crucial” moment of the discovery of a contradiction and its meaning, in mathematical work: it is then the inertia of the mind, its reluctance to separate itself from an erroneous or insufficient vision (but in which our person is in no way involved), which plays the role of “resistance”. This is of an active nature, inventive if necessary to succeed in drowning a fish even without water, whereas the inertia of which I spoke is a simply passive force. In the present case, even more than in the case of mathematical work, the discovery which has just appeared in all its simplicity, in all its evidence, is followed in the moment by a feeling of relief from a weight, a feeling of liberation. It's not just a feeling — rather, it's an acute and grateful perception of what has just happened, which is a release.

(⁸) As will become clear later, this ambiguity in no way “dissipated in the aftermath of the 1970 awakening”. There is a movement of strategic retreat typical of the “me”, which abandons the period “before awakening” to profit and loss, which immediately becomes

the dividing line for an impeccable "after"!

(°) This is not entirely accurate, there is at least one exception among my closest colleagues, as will become apparent later. There was a typical "laziness" of memory, which often tends to "pass over" facts that do not "fit" with a familiar and long-rooted vision of things.

(10) For example, I no longer count the number of letters, on mathematical, practical or personal questions, sent to colleagues or ex-students whom I considered friends, and who never received a letter. answer. It does not seem that this is just preferential treatment reserved for me, but rather a sign of a change in morals, according to echoes to the same effect. (These concern, it is true, cases where the person who sent a mathematical letter was not known to the recipient, a prominent mathematician...)

(11) Aldo Andreotti, Ionel Bucur.

Of course, it is not impossible that there was forgetfulness on my part - not to mention that my particularly "polar" dispositions at that time would hardly have encouraged people to talk to me about this kind of thing, nor would it lead me to memory of a conversation along these lines which may well have taken place. What is certain is that it must have been very exceptional to say the least that the question of fear was addressed (without even calling it by that name...), and it must be just as exceptional today. today, especially in the "beau monde".

Among my many friends in that world, apart from Chevalley, who must have become aware of this atmosphere of fear at least during the sixties, the only other of whom it seems to me must have perceived it clearly is Aldo Andreotti. I had met him, as well as that of his wife Barbara and their twin children (still very young), in 1955 (at a party at Weil's in Chicago, I think). We remained very close until the "big turning point" of 1970, when I left the environment that had been ours and lost sight of them a little. Aldo had a very keen sensitivity, which was in no way dulled by dealing with mathematics and with "whodunits" like me. There was in him a gift of spontaneous sympathy for those he approached. This set him apart from all the other friends I knew in the mathematical world, or even outside it.

With him, friendship always took precedence over common mathematical interests (which did not

were not lacking), and he is one of the rare mathematicians with whom I have spoken at all about my life, and he about his. His father, like mine, was Jewish, and he had to suffer from it in Mussolini's Italy, like me in Hitler's Germany. I saw him always available to encourage and support young researchers, in a climate where it was becoming difficult to be accepted by the establishment. His spontaneous interest always led him first towards the person, not towards a mathematical "potential" or towards a reputation. He was one of the most endearing people I had the chance to meet.

This evocation of Aldo brings to mind the memory of Ionel Bucur, also taken away unexpectedly and before his time, and like Aldo, missed even more (I believe) as the friend we love to find again, than as the partner mathematical discussions. We felt a goodness in him, alongside an unusual modesty, a propensity to constantly fade away. It is a mystery how a man so disinclined to consider himself important or to impress anyone ended up finding himself dean of the Faculty of Sciences in Bucharest; no doubt because the idea did not occur to him to challenge charges which he was far from coveting, but which his colleagues or the political authority placed on his shoulders, robust ones it must be said.

He was the son of peasants (which must have been a joy in a country where the "class criterion" is important), and had good sense and simplicity. Surely he must have been aware of the fear that surrounds the man of notoriety, but surely also the thing must have seemed self-evident to him, like the natural attribute of a position of power. However, I do not think that he himself ever inspired fear in anyone, certainly not in his wife Florica or their daughter Alexandra, nor in his colleagues or his students - and the echoes that I have had go well in

that Sens.

(12) The word "day after" is to be taken here in the literal sense, not as a metaphor.

(13) It is clear that the preceding description has no other claim than to try to restore as best it can, through concrete words, what this "fog" of memory gives me, which cannot be condensed into no specific case that is even remotely precise, of which I could have given here a somewhat "realistic" or "objective" description. It would distort my point to say in this passage that colleagues who are reluctant to sit in the front rows, or who do not have star or eminence status, are necessarily tied up in anxiety when speaking to one of these latter. This was obviously not the case for most of the friends I knew in this environment, even among those who happened to attend conferences or seminars. This

what is true without any reservation is that the status of "eminence" creates a barrier, a gap vis-à-vis those without similar status, and that it is rare for this gap to disappear, even if only for the space of a discussion. I add that the subjective distinction (which nevertheless seems very real to me) between "first ranks" and "marsh" can in no way be reduced to sociological criteria (social position, positions, titles, etc.) nor even of "status", of reputation, but that it also reflects psychological particularities of temperament or dispositions that are more delicate to define. When I arrived in Paris at the age of twenty, I knew that I was a mathematician, that I had studied math, and despite the change of scenery that I had the opportunity to talk about, I felt basically "one of them", while being the only one to know it, and without even being sure at first that I would continue to do mathematics. Today I would rather sit in the back rows (on the rare occasions when the question arises).

(14) One might think that this contradicts the assertion of the absence of a leader, when this is not the case. For Bourbaki elders, it seems to me that Weil was seen as the soul of the group, but never as a "leader". When he was there and when he liked it, he became a "playmaker" as I said, but he didn't lay down the law. When he was in a bad mood he could block the discussion on a subject that he disliked, even if it meant taking up the subject quietly at another conference when Weil was not there, or even the next day when he was not obstructing. Decisions were taken unanimously by the members present, considering that it was in no way excluded (or even rare) for one person to be right against the unanimity of all the others. This principle may seem aberrant for group work. The extraordinary thing is that it worked!

(15) I did not have the impression that this "allergy" to the Bourbaki style gave rise to communication difficulties between these mathematicians and me or other members or sympathizers of Bourbaki, as would have been the case. case if the spirit of the group had been the spirit of the chapel, of the elite within the elite. Beyond styles and fashions, there was among all members of the group a keen sense for mathematical substance, where it comes from. It was only during the 1960s that I remember some of my friends calling mathematicians whose work they were not interested in "pain in the ass". When it came to things about which I otherwise knew practically nothing, I tended to take such assessments at face value, impressed by such casual confidence - until the day I discovered that such a "pain in the ass" was an original and profound mind, which had not had the good fortune to please

my brilliant friend. It seems to me that among certain Bourbaki members, an attitude of modesty (or at least reserve) in the work of others, when one ignores this work or understands it imperfectly, was initially eroded, whereas there still remained this "mathematical instinct" which makes one feel a rich substance or a solid work, without having to refer to a reputation or a reputation. From the echoes that reach me here and there, it seems to me that both, modesty and instinct, have today become rare things in what was my mathematical environment.

(16) To tell the truth, several Bourbaki members surely had their own microcosm "of their own", more or less extensive, apart from or beyond the Bourbakian microcosm. But it is perhaps no coincidence that in my own case, such a microcosm only formed around me after I ceased to be part of Bourbaki, and all my energy was invested in tasks that were personal to me.

(17) It was especially outside the scientific community that I encountered warm echoes of the action in which I had engaged, and active help. Apart from the friendly support of Alain Lascoux and Roger Godement, I must also note here especially that of Jean Dieudonné, who traveled to Montpellier for the Correctional hearing, to add his warm testimony to other testimonies in favor of a lost cause.

(18) I believe that this lack of discernment did not come from negligence on my part on these two occasions, but rather from a lack of maturity, from ignorance. It was only about ten years later that I began to pay attention to the blocking mechanisms, as much in my own person as in those close to me or in students, and to measure the immense role they play. play in everyone's life, not just at school or university. Of course, I regret not having had the discernment of greater maturity on these two occasions, but not for having clearly expressed my impressions, founded or not. When I noticed in such a case work being done without seriousness, the fact of naming these things for what they are seems to me a necessary and beneficial thing. If in yet another case, the conclusion I drew was hasty and unfounded, I was not the only one whose responsibility was engaged. The student thus shaken had the choice again, either to take heart (this is perhaps what happened the first time), or to allow himself to be discouraged, and perhaps then to change course. profession (which is not necessarily a bad thing no

plus !).

(19) Jesus and the twelve

apostles Since 1970 until today, another student, Yves Ladegaillerie, has prepared and completed a thesis with me. The students of the first period are P. Berthelot, M. Demazure, J. Giraud, Ms. M. Hakim, Ms. Hoang Xuan Sinh, L. Illusie, P. Jouanolou, M. Raynaud, Ms. M. Raynaud, N. Saavedra, JL Verdier. (Six among them completed their thesis work after 1970, therefore at a time when my mathematical availability was very limited.) Among these students, Michel Raynaud takes a special place, having found the questions for himself and essential notions which are the subject of his thesis work, which he also developed entirely independently; my role as “thesis director” strictly speaking was therefore limited to reading the completed thesis, forming the jury and being part of it.

When it was I who proposed a subject, I took great care to limit myself to those to whom I had a sufficiently strong relationship to feel able, if necessary, to support the student's work. A notable exception was the work of Ms. Michèle Raynaud on local and global Lefschetz theorems for the fundamental group, formulated in terms of 1-fields on suitable slack sites. This question seemed to me (and indeed turned out to be) difficult, and I had no idea of a demonstration for the conjectures that I proposed (which, moreover, could hardly be in doubt). This work continued in the early 1970s, and Ms. Raynaud (as was previously the case for her husband) developed a delicate and original method without any assistance from me or elsewhere. This excellent work also opens the question of an extension of Ms. Raynaud's results to the case of n -fields, which seems to me to represent the natural outcome, in the context of diagrams, of theorems of the “theorem of Lefschetz weak”. The formulation of the relevant conjecture here (which can hardly be doubted either) nevertheless uses in an essential way the notion of n -field, the pursuit of which is supposed to be the main object of the present work (*), as its name “A la Pursuit des Champs” indicates it.

We will no doubt come back to it in due course.

Another rather unique case is that of Ms. Sinh, whom I first met in Hanoi

(*) This is in fact volume 3 of Mathematical Reflections, and not this volume 1 Harvests and Sowing — see Introduction, p. (v).

in December 1967, during a month-long seminar course that I gave at the evacuated Hanoi University. The following year I proposed his thesis subject to him. She worked in the particularly difficult conditions of wartime, her contact with me limited to episodic correspondence. She was able to come to France in 1974/75 (on the occasion of the international congress of mathematicians in Vancouver), and then complete her thesis in Paris (before a jury chaired by Cartan, and also including Schwartz, Deny, Zisman and me).

Finally, I must also mention Pierre Deligne and Carlos Contou-Carrère, both of whom were somewhat of a student, the first around the years 1965–68, the second around the years 1974–76. Both obviously had (and still have) unusual means, which they used in very different ways and with very different fortunes too. Before coming to Bures, Deligne had been a student of Tits (in Belgium) - I doubt that he was a student of anyone in mathematics, in the common sense of the term. Contou-Carrère had been a student of Santalo (in Argentina), and for a time of Thom (more or less).

Both already had the stature of a mathematician at the time contact was established, except that Contou-Carrère lacked method and craft.

My mathematical role with Deligne was limited to informing him, in the small week, of the little I knew about algebraic geometry, which he learned like one listens to a story - as if he had always known it. ; and along the way also, to raise questions, to which he most often found answers, on the spot or in the following days. These are the first works of Deligne that I knew. Those after 1970 (for him as well as for my “official students”) are only known to me through very scattered and distant echoes(*).

My role with Contou-Carrère, following what he himself said at the beginning of his thesis, was limited to introducing him to the language of diagrams. In any case, I have only followed from a very distance the work he prepared as a state doctoral thesis in recent years, on a very current subject which escapes my competence. It was following some misadventures in the wide world that Contou-Carrère was finally led recently, in extremis and (it now appears to me) against his will, to call on my services to act as of thesis director and constitute a jury. (This exposed him to the risk of appearing as a student of Grothendieck “after 1970”, in a conjecture where this could present serious disadvantages...). I have carried out this task as best I could, and it is probable

(*) In particular, I had the opportunity to look at some separate prints by Berthelot and Deligne, which they were kind enough to send me.

that this is the last time that I will have exercised this function (at the level of a state doctoral thesis). I am all the more happy, in this rather special circumstance, of the friendly assistance of Jean Giraud, who also took a month or two of his time to do a careful reading of the voluminous manuscript, of which he made a report detailed and warm.

(20) This makes me think of the subject that Monique Hakim took, which was not more engaging in fact, I wonder how she managed to keep her spirits up! If she struggled at times, it was not in any case to the point of making her sad or sullen, and the work between us was done in a cordial and relaxed atmosphere.

(21) It would perhaps be more accurate to say that for my temperament, it is the necessary maturity that I still lack to fully assume the role of teacher. My acquired temperament has long been marked by an excessive predominance of "masculine" (or "yang") traits, and one of the aspects of maturity is precisely a "yin-yang" balance with a dominant "feminine" (or "yin") .

(Added later.) Even more than maturity, I see that it is a certain generosity which has been lacking in my life as a teacher until today - a generosity which is expressed in a more delicate than by availability of time and energy, and which is more essential. This lack did not manifest itself visibly (by an accumulation of failure situations, let's say) in my first period of teaching, undoubtedly mainly because it was compensated by a strong motivation in the students who chose to come work with me. In the second period on the other hand, from 1970 to today, it seems to me that this lack is at least one of the reasons, and in any case the one which implicates me most directly, for the overall failure that I observed in my teaching at the research level (from the level of a DEA therefore). See on this subject "Outline of a program", par. 8, and para. 9 "Review of a teaching activity", which shows the feeling of frustration with which this activity has left me for seven or eight years(*)).

(22) Not for much longer perhaps, since I made the decision to request admission to the National Center for Scientific Research, and thus put an end to a teaching activity in a university environment, which for several years has become increasingly more problematic.

(*) Also compare the note (23iv), added later.

(²²) Even after 1970, when my interest in math became sporadic and marginal in my life, I don't think there was an occasion when I recused myself from a student calling on me to work with him. I can even say that apart from two or three cases, the interest of my post-1970 students in the work they were doing was far below my own interest in their subject, even in periods when I was not I didn't worry much about math until the days I went to college. Also the kind of availability that I had for my students before 1970, and the extreme demands in the work which was a main sign of it, would have made no sense with regard to the majority of my later students, who did math without conviction, as if through a continual effort that they should have made on themselves...

(23) The child and the teacher

The term "transmit" here does not really correspond to the reality of things, which reminds me of a more modest attitude. This rigor is not something that can be transmitted, but at most awakened or encouraged, whereas it has been ignored or discouraged from a very young age, by the family environment as well as by the school and the 'university. As far back as I can remember, this rigor has been present in my quests, those of an intellectual nature at least, and I do not think that it was transmitted to me by my parents, and even less by masters. , at school or among my elder mathematicians. It seems to me to be part of the attributes of innocence, and thus, of the things that are assigned to everyone at birth. This innocence very early on "sees some green and unripe ones", which means that it is obliged to dive more or less deep, and that often there is hardly any trace of it in the rest of life. In my case, for reasons that I have not yet thought to fathom, a certain innocence has survived the relatively innocuous level of intellectual curiosity, while everywhere else it has plunged deep, neither seen nor known! like everyone else.

Perhaps the secret, or rather the mystery, of "teaching" in the full sense of the term, is to rediscover contact with this apparently disappeared innocence. But there is no question of finding this contact in the student, if it is not already first present or found in the person of the teacher himself. And what is then "transmitted" by the teacher to the student is in no way this rigor or this innocence (innate in both), but a respect, a tacit revaluation for this thing commonly rejected.

(²³) However, for seven or eight years there has been another chronic "source of frustration"

in my life as a mathematician, but which has been expressed over the years in a much more discreet. It ended up becoming apparent through an effect of repetition, of obstinate accumulation of the same type of “frustrating” situation in my teaching activity, and by finally breaking out into a sort of “fed up!”, causing me to put an end to practically any so-called teaching activity. “research direction”. I touch on this question once or twice in the course of my reflection, to finally examine it at least a little at the very end. I describe at least this frustration, and examines the role it played in my “return to math” (see par. 50, “Weight of a past”).

(²³) Fear of playing

This student had worked with me on a DEA “internship work” for an entire year, and remained “contracted” in his working relationship with me until the end. It was a frankly friendly relationship, crossed by a mutual sympathy which could not leave any doubt. Yet there was this “fright”, this fear, the real cause of which was surely not not a fear of myself, even though it appeared to be so. I do not would perhaps not even have noticed the thing, if this student had not spoken to me about it himself, without doubt to “explain” more or less the reason for an almost complete blockage in its work during the year.

As happened with other students who, like him, stuck well at the beginning to a certain geometric substance, the blockage manifested itself from the moment it was to do “work on pieces”, therefore put statements in black and white form, or only grasp the sense and significance of those that I provided and that I proposed to admit as the foundations of a language, as “rules of the game”. “School” reflexes grow almost always the student confronted with a situation where he is supposed to “do research”, to adopt as a “given” that is both vague and imperative, implicit “rules of the game” which are transmitted by the Master, and which it is especially not a question of trying to explain, and even less to understand. The concrete form that these implicit rules take are the “recipes” of semantics or calculation, on the model of, say, mole books (or any other current teaching book). The student also expects from the teacher a task of the form “demonstrate that...”, which was the only form of mathematical “reflection” that he encountered in his experience passed. (I do not believe, moreover, that the dispositions of most professional mathematicians, and of other scientists as well, are essentially different - except for that

that the “master” is replaced by the “consensus” which sets the rules of the game of the moment and considers it as an immutable given. This consensus also determines which “problems” need to be resolved, between which everyone feels free to choose according to their taste, even allowing themselves to modify them during their work, or even to invent others...).

I noticed that the entirely different attitude which is mine towards a mathematical substance which it is a question of probing, and therefore also towards the student, almost immediately triggers of course distress, one of the signs of which is anxiety. Like all anxiety, it will tend to take on a face, to project itself onto an external “reason”, plausible or not. One of the most common faces of anxiety is precisely fear.

Such difficulties hardly arose in the first period of my teaching activity, except perhaps in the two cases where a “teacher-student” relationship did not continue beyond a few weeks, and perhaps (I can't say) in the case of the “sad student”, who perhaps felt “glued” to a subject which did not inspire him in any way, even though he had complete freedom to change it. . In the case of the student (whom I also spoke about) who remained afflicted with a certain level of stage fright for a long time, it is clear that the reason lies elsewhere. He was in no way stuck in his work, but on the contrary perfectly comfortable with the theme he had chosen, on which he did extensive foundational work. Most of my students from this period were former students of the Ecole Normale, and their contacts with Henri Cartan had already shown them the example of an “other” approach to mathematics. At the opposite end (so to speak) of these, in my second period as a teacher, at the University of Montpellier, it is among the first year students that the anxiety of which I spoke was least interfered with reflective work. For many of these students, the astonishment at a different approach caused neither anxiety nor closure, but on the contrary openness and enthusiasm to do, for once, interesting things! From my observations, the effect of a few years of college on a student's creative disposition is radical and devastating. It is a strange thing that in this respect the effect of long years of high school seems relatively trivial. The reason for this is perhaps that the years of college are at an age where the innate creativity in us must ultimately express itself through personal work, otherwise it will be shipwrecked forever, at least at the level creative work of an intellectual nature. It is surely by a healthy instinct that during my student years (also at the University of Montpellier) I practically refrained from setting foot in classes, devoting almost all of my

energy for personal mathematical reflection.

²³) The two brothers

(The antagonism in this student took the form, from the outset, of a "class antagonism": I was the "boss" who had "power of life and death" over his mathematical future, of which I could decide according to my good pleasure... Of course, the event could only confirm this vision, since I did not delay in putting an end to my responsibilities (which had become painful) towards this student. put him in a delicate situation, in these times when it is not so easy to find a "boss", especially when the subject has already been chosen. For the other student, frustrated in his legitimate expectations, the The antagonism took a similar form, I was felt to be the tyrannical "mandarin", who could not tolerate contradiction from those (students or lower-ranking colleagues) whom he considered his subordinates.

Such a "class attitude" never manifested itself, however little, during the relationship with my students in the first period. The obvious reason is that in the situation before 1970, there was no doubt that the student, once he had completed his thesis, would have a position as a lecturer, and would therefore enjoy a social status identical to the mine, that of "university professor". Clear figures: the eleven students who began working with me before 1970 had positions as lecturers upon completion of their work, while none of the twenty or so students who worked more or less under my direction had access to such a position. It is true that only two of them were motivated enough to complete a state doctoral thesis (which was excellent for both of them).

It is therefore not surprising if in this second period, certain ambivalences (whose deep origin remained hidden) took the form of class antagonism, distrust (presented and felt as "visceral") towards towards the "boss". For one of those who had more or less appeared as a student, friendly relations continued for around ten years without any apparently antagonistic episode, and yet marked by this same ambiguity, expressed by an attitude of distrust. , held "in reserve" behind obvious sympathy. To tell the truth, I have never been fooled by this "distrust" of command, which appeared to me above all as a reason that this friend believes it is good to give himself in order not to venture outside the well-defined domain that he has chosen. like his own, in his professional life as in his life in general - something he is free to do however without anyone (except at most himself!) asking him to account...

These three cases are also the only ones, in all my experience as a teacher, where a certain ambivalence in the relationship between a student (or someone who more or less appears to be a student) and me was expressed by a “class attitude”. Such an attitude appears particularly ambiguous when it manifests itself between colleagues within a university “body” where they both enjoy exorbitant privileges compared to the situation of ordinary mortals, privileges which make differences in rank (and salaries) appear relatively insignificant. I have also noticed that these attitudes disappear as if by magic (and for good reason!), as soon as the person concerned sees himself promoted to the situation for which only the day before he was complaining about others.

I detect a similar ambiguity in most, if not all, of the conflict situations that I have witnessed within the mathematical world (and often also outside it). Those who are “placed”, whether or not their rank corresponds to their expectations (justified or not), enjoy quite incredible privileges, which no other profession or career can offer. Those who are not settled aspire to the same security and the same privileges (which does not necessarily prevent them from being interested in math itself, and from sometimes doing great things). In these times when competition is tight to find a place and where the unsettled are often treated like a drag, I have more than once felt the connivance between the one who takes pleasure in humiliating, and the one who is humiliated — and who swallows and crushes himself. The real object of his bitterness and his animosity is not the one who used a power, but is none other than himself, who crushed himself and who invested the other with this power which he uses at pleasure. He who delights in humiliating is also he who takes his revenge and compensates (without ever erasing it...) a long humiliation suffered and long buried and forgotten. And he who acquires to his own humiliation is his brother and emulator, who secretly envy and in bitterness buries both humiliation, and the humble message about himself that it carries to him.

23i v) Failure of teaching (Since

these lines were written, I have had the opportunity to speak with two of my ex-students after 1970, to try to probe with them the reason for the failure of my teaching at the research level, at the University of Montpellier. They told me that the propensity I had to underestimate the difficulty that the assimilation of such techniques familiar to me could represent for them, but not for them, had a discouraging effect on them, because they felt constantly falling short of the expectations I had of them.

which seems to me to be of even greater significance), it happened that they felt frustrated, when I “spilled the wick” to them by giving them a formal statement that I had up my sleeves, instead of letting them the pleasure of discovering it on their own, at a time when they were already very close to it. After that, all they had to do was do the “exercise” (which they were otherwise not interested in) of proving the statement in question. This is where the “lack of generosity” in me occurs that I noted in a previous note (note 21), without expanding further on this subject. It is such disappointments, above all, which represent my personal contribution to the disappearance of interest in research among both of us, after an excellent beginning.

I realize that I was not more generous before 1970 than after. If I did not have the same difficulties then, it is undoubtedly because the type of students who came to me at that time were motivated enough to find a charm even in a “long exercise”, which was an opportunity to learn the trade and a host of things along the way; and also, for a starting statement about which I “spilled the wick”, to bring out by their own means a slew of others which went well beyond the first. When I changed my place of teaching activity, I made the necessary adjustment in the choice of themes of reflection that I proposed to my new students, by the choice of mathematical objects which could be grasped by an immediate intuition, regardless of any technical background. But this essential adjustment was in itself insufficient, because of differences in dispositions (in my new students compared to those of yesteryear), even more important than a single difference in background. This also ties in with the observation made previously (beginning of par. 25) on a certain insufficiency in me for the role of “master”, which emerged much more strongly in my second period as a teacher, than in the first. *miere*.

(^{23v}) A particularly striking sign of this difference appeared on the occasion of the “episode of the foreigners”, which I had occasion to speak about (section 24). While I received expressions of sympathy from many people who were completely strangers to me, I do not remember that any of my students before 1970 thought of expressing themselves in this sense, and even less to offer me any help in the action in which I had engaged. On the other hand, it seems to me that there is none of my students or ex-students from the second period who has not expressed their sympathy and solidarity to me, and several have joined forces

actively in the campaign that I led at the local level. Beyond this restricted circle, the affair of the 1945 ordinance also created a certain emotion among many students of the Faculty who knew me only by name, and a good number of them came to the Palais de Justice on the day of my citation, to show their solidarity. This last circumstance suggests moreover that the difference that I observed between the attitudes of my students “before” and “after” 1970 perhaps expresses less the difference in relations between them and me, than a difference mentalities. Obviously, my “before” students had become important people, and it takes a lot for important people to agree to be moved... But the episode of my departure from IHES in 1970 and my commitment in militant action seems to show that there is more than that. This was a time when none of them were yet very important figures, and yet I don't remember any of them showing the slightest interest in the activity in which I was engaged. I rather think that this must have made them uncomfortable, all without exception. This still goes in the direction of a difference in mentality, but which cannot be put down to the difference in social status alone.

(24) The ethics I want to talk about applies just as much to any other environment formed around a research activity, and where therefore the possibility of making one's results known, and of receiving credit for them, is a question “of life or death” for the social status of any member, or even of “survival” as a member of this environment, with all the consequences that this implies for him and his family.

(25) Ethical consensus – and control of information Apart from the conversation with Dieudonné, I do not remember a conversation in which I was a participant or witness, during my life as a mathematician, where he was question of the ethics of the profession, of the “rules of the game” in relations between members of the profession. (I except here the discussions about the collaboration of scientists with military devices, which took place in the early 1970s around the “Survive and Live” movement. They did not really concern the relationships of mathematicians with each other. Many of my friends in *Survivre et Vivre*, including Chevalley and Guedje, also felt that the emphasis I placed at that time, especially at the beginning, on this question to which I was particularly aware, distanced me from realities more essential daily lives, of the type precisely those that I am examining in this reflection.) There was never any question of these

things between a student and me. The tacit consensus was limited, I believe, to this single rule, not to present as one's own ideas of others of which one may have become aware. This is a consensus, it seems to me, which has existed since antiquity and has not been contested in any scientific environment until today. But in the absence of this other complementary rule, which guarantees any researcher the possibility of making their ideas and results known, the first rule remains a dead letter. In the scientific world today, men in positions of prestige and power hold discretionary control of scientific information.

This control is no longer tempered, in the environment I had known, by a consensus like that of which Dieudonné spoke, which perhaps never existed outside the restricted group of which he was the spokesperson. The scientist in a position of power receives practically all the information he considers useful to receive (and often even more), and he has the power, for a large part of this information, to prevent its publication while keeping the benefit of information received and rejected as “uninteresting”, “more or less well known”, “trivial”, etc. I return to this situation in note (27).

(26) The “founding members” of Bourbaki are Henri Cartan, Claude Chevalley, Jean Delsarte, Jean Dieudonné, André Weil. They are all alive, with the exception of Delsarte, who died before his time in the 1950s, at a time when the ethics of the profession were still generally respected.

When rereading the text, I was tempted to delete this passage, in which I can give the impression of awarding certificates of “probity” (or non-probity) which those concerned have no use for, and that it is not my responsibility to do. The reservation that this passage may arouse is surely justified. I keep it, however, out of concern for the authenticity of the testimony, and because this passage truly reflects my feelings, even if they are misplaced.

(27) The “snobbery of young people”, or the defenders of purity

Ronnie Brown shared with me a reflection by JHC Whitehead (of whom he was a student), speaking of the “snobbery of young people, who believe that a theorem is trivial because its proof is trivial”. Many of my old friends would do well to ponder these words.

This “snobbery” is today by no means limited to young people, and I know more than one prestigious math-ematician who practices it commonly. I am particularly sensitive to it, because what I have done best in mathematics (and elsewhere too...), the notions and structures that I have introduced which appear to me to be the most fruitful, and the essential properties that I have

able to emerge through patient and stubborn work, all fall under this qualifier of “triv-ial”. (None of these things would have had much chance of being accepted for a CR note these days, if the author was not already a celebrity!) My lifelong ambition as a mathematician, or rather my passion and my joy has constantly been to find the obvious things, and this is my only ambition also in the present work (including in the present introductory chapter...). The decisive thing often is to see the question which had not been seen (whatever the answer, and whether it is already found or not) or to identify a statement (even if it is conjectural).) which summarizes and contains a situation which had not been seen or understood; if it is demonstrated, it does not matter whether the demonstration is trivial or not, an entirely incidental thing, or even whether a hasty and provisional demonstration turns out to be false.

The snobbery that Whitehead speaks of is that of the jaded wine lover who only deigns to appreciate a wine after ensuring that it has cost a lot of money. More than once in recent years, taken back by my former passion, I offered the best I had, only to see it rejected by this self-importance. I felt a pain that remains alive, a joy that was disappointed - but I am not on the street for all that, and I was not trying, fortunately for me, to fit in an article of my composition.

The snobbery that Whitehead speaks of is an abuse of power and dishonesty, not only an insensitivity or a closure to the beauty of things, when it is exercised by a man of power against a researcher at his mercy, whose ideas he has complete freedom to assimilate and use, while blocking their publication under the pretext that they are “obvious” or “trivial”, and therefore “uninteresting”. I am not even thinking here of the extreme situation of plagiarism in the common sense of the term, which must still be very rare in mathematical circles.

However, from a practical point of view the situation amounts to the same for the researcher who pays the price, and the inner attitude which makes it possible does not seem very different to me either. It is simply more comfortable, as it is accompanied by the feeling of infinite superiority over others, and the good conscience and the intimate satisfaction of the one who poses as an uncompromising defender of the intangible purity of mathematics.

(28) In writing the previous pages, I was at first divided between the desire to “empty my bag”, and a concern for reserve or discretion. So I remained stuck in the rough, which was surely the main reason for my discomfort, the feeling that “I wasn't learning anything”.

Since the lines noting this uneasiness were written, I have rewritten these pages twice which

had left me with an inner dissatisfaction, by involving myself more clearly and going deeper into things. Along the way I did indeed end up “learning something”, and I also believe that at the same time I managed to put my finger on something important, which goes beyond both the specific case and my own person.

(29) I am talking here about an intense and long-term investment in mathematics, or in another entirely intellectual activity. On the other hand, the deployment of such a passion, which can be a way of reacquainting ourselves with a forgotten force in us and the opportunity to measure ourselves against a reluctant substance and along the way also, to renew and enrich our sense of identity by something that is truly personal to us - such a deployment can very well be an important step in an inner journey, in a maturation.

(30) For several years, it has been my children who have taken over, to teach a sometimes reluctant student the mysteries of human existence...

(31) I am thinking here of the “yang” form of the desire to know — the one who probes, discovers, names what appears... It is having been named that makes the knowledge that appears irreversible, inerasable (so even though it would subsequently be buried, forgotten, that it would cease to be active...). The “yin”, “feminine” form of the desire for knowledge is in an openness, a receptivity, in a silent welcoming of a knowledge appearing in deeper layers of our being, where thought has no access. The appearance of such an openness, and of a sudden knowledge which for a time erases all traces of conflict, comes as a grace again, which touches deep while its visible effect is perhaps ephemeral. I suspect, however, that this wordless knowledge which comes to us in this way, in certain rare moments of our life, is just as inerasable, and its action continues even beyond the memory we may have of it.

(32) A hundred irons in the fire, or: there is no point in drying!

At the time when I was still doing Functional Analysis, so until 1954, I sometimes persisted endlessly on a question that I could not resolve, even though I no longer had any ideas and was content to go around in circles in the circle of old ideas which, visibly, no longer “bite”. It was like this in any case for a whole year, for the “approximation problem” in topological vector spaces in particular,

which would only be resolved twenty years later by methods of a totally different order, which could only escape me at the point where I was. I was moved then, not by desire, but by stubbornness, and by an ignorance of what was happening within me. It was a tough year — the only time in my life when doing math became painful for me! It took this experience for me to understand that there is no point in “drying out” — that from the moment a work has reached a stopping point, and as soon as the stop is perceived, it is necessary to move on to something else — even if it means returning to the question left unresolved at a more opportune moment. This moment almost always does not take long to appear - the question matures, without me pretending to touch it, by the sole virtue of work done with enthusiasm on questions which may seem to have no connection with that one. I am convinced that if I persisted then, I would achieve nothing even in ten years! It was from 1954 that I got into the habit of always having a lot of irons in the fire at the same time in math. I only work on one of them at a time, but by a kind of miracle that is constantly renewed, the work I do on one also benefits all the others, who are biding their time. It was the same, without any deliberate intention on my part, from my first contact with meditation - the number of burning questions to examine increased day by day, as the reflection continued. .

(33) This does not mean that the moments of work where paper (or the blackboard, which is a variant) is absent are not important in mathematical work. This is especially the case in “sensitive moments” when a new intuition has just appeared, when it is a question of “getting to know” it in a more global, more intuitive way than through “work on pieces”. , which this informal stage of reflection prepares. At home, this kind of thinking is mostly done in bed or on walks, and it seems to me that it represents a relatively modest portion of the total time spent at work. The same observations also apply to meditation work as I have practiced it thus far.

(34) The powerless

embrace The word “embrace” is by no means a simple metaphor for me, and the common language here reflects a deep identity. We could say, not without reason, that it is not true while embrace without wonder is powerless - that the earth would be depopulated if not deserted, if it were so in the literal sense. The extreme case is that of rape, from which wonder is certainly absent, while it happens that a being is procreated in the raped woman.

lee. Surely the child who is born from such embraces cannot fail to bear the mark, which will be part of the "package" which he receives as a share and which it is up to him to assume; This does not prevent the fact that a new being is indeed conceived and born, that there has been creation, a sign of power. And it is also true that it happens that a certain mathematician that I have seen filled with self-importance finds and proves beautiful theorems, signs of an embrace that did not lack strength! But it is also true that if the life of a particular mathematician is stifled by his complacency (as was the case to a certain extent in my own life, at a certain period), the fruits of these embraces with mathematics are no blessing, for him or for anyone. And the same thing can be said of the father as well as the mother of the child born from rape. If I speak of an "embrace without force", I mean above all the impotence to generate renewal in those who believe they are creating, when they only create a product, a thing external to themselves, without any pro-resonance. melts into itself; a product which, far from liberating him, from creating harmony within him, binds him more closely to the conceit within him of which he is prisoner, which constantly pushes him to produce and re-produce. This is a form of impotence at a deep level, behind the appearance of a "creativity" which is basically only unbridled productivity.

I also had ample opportunity to realize that complacency, the incapacity for wonder, is in the nature of a true blindness, of a blocking of a natural sensitivity and flair; blocking, if not total and permanent, at least manifest in certain specific situations. It is a state where a prestigious mathematician sometimes reveals himself, in the very things in which he excels, as stupid as the most stubborn schoolboy! On other occasions he will perform prodigies of technical virtuosity. However, I doubt that he is still able to discover the simple and obvious things which have the power to renew a discipline or a science.

They are too far below him for him to even deign to see them! To see what no one deigns to see, one needs an innocence that has been lost, or banished... This is surely not a coincidence, with the prodigious increase in mathematical production over the last twenty years. years, and the disconcerting profusion of new results with which the mathematician who simply wants to "keep up to date" finds himself overwhelmed, although there has hardly been any (as far as I can judge by the echoes which reach me here and there) of true renewal, of vast-scale transformation (and not only by accumulation) of any of the major themes of reflection with which I have been even slightly familiar. Renewal is not a quantitative thing, it is foreign to a quantity of investment, measurable in a number of mathematician-days devoted to a given subject by

such mathematicians of such "level". A million mathematician-days are powerless to give birth to something as childish as zero, which has renewed our perception of number. Only innocence has this power, a visible sign of which is wonder...

(35) This "gift" is no one's privilege, we are all born with it. When it seems absent in me, it is because I myself have chased it away, and it is up to me to welcome it again. In me or in someone else, this "gift" is expressed in a different way than in someone else, in a less communicative way, less irresistible perhaps, but it is no less present, and I cannot say whether he is less active.

(36) Such delicate sensitivity to beauty seems to me to be intimately linked to something of which I have had occasion to speak under the name of "demandingness" (with regard to oneself) or "rigor" (in the full sense of the term), which I described as "attention to something delicate in ourselves", attention to a quality of understanding of the thing probed. This quality of understanding of a mathematical thing cannot be separated from a more or less intimate, more or less perfect perception of the "beauty" particular to this thing.

(37) There is hardly any need to add, I think, that this long-term work has brought to light, day by day, something other than the "result" that I have just delivered in concise form. It is no different for a work of meditation than for a mathematical work motivated by a particular question that we intended to examine. Very often the twists and turns of the route followed (which leads or does not lead to a more or less complete clarification of the initial question) are more interesting than the initial question or the "final result".

(38) These notes were in fact a continuation of the long letter to ..., which became its first chapter. They were typed to be readable for this old friend, and for two or three others (most notably Ronnie Brown) who I thought might be interested. This letter, moreover, never received a response, and it was not read by the recipient, who almost a year later (to my question if he had received it) showed himself sincerely surprised that I could have thought even for a moment that he could read it, given the kind of mathematics that was to be expected of me...

(39) This is the period, among others, of the “Long March through the theory of Galois”, which is discussed in “Sketch of a Program” (par. 3: “Body of numbers associated with a drawing child”).

(40) The

visit The work on this dream is the subject of a long letter in English, to a friend and colleague who had dropped by my house the day before. Some of the materials used by the Dreamer, to make this strikingly realistic dream emerge from apparent nothingness, were visibly borrowed from this short episode of the visit of a dear friend whom I had not seen for almost ten years. years. Also, on the first day of work and contrary to my past experience, I thought I could conclude that the dream that had come to me concerned my friend, more than it concerned me — that it was he who should have had this dream and not me! It was a way of evading the message of the dream, which (I should have known from my past experience from the start) concerned no one other than me. I ended up realizing it during the night that followed this first, superficial, phase of the work, which I resumed the next day in the same letter. Since this memorable letter, I have no longer received any sign of life from this friend, one of the closes

This work was the only meditation which took the form of a letter (and in English to boot), and of which I therefore no longer have a written trace. This episode particularly struck me, among many others which show to what extent any sign of work which goes beyond a certain facade, and which brings to light very simple facts, but which we generally makes a point of ignoring — the extent to which all such work inspires discomfort and fear in others. I will come back to this later (see par. 47, “The solitary adventure”).

(41) Krishnamurti, or liberation becoming hindrance It

would be inaccurate to say that the only thing I took away from this reading was a certain vocabulary, and a propensity to make it my own and to finally substitute it, as is right, for reality. If reading the first book of Krishnamurti that I had in my hands struck me so much (and even then I only had the leisure to read a few chapters), it is because what what he said completely disrupted a number of things which for me were self-evident, and which I immediately realized were commonplaces which had always been part of the air I had breathed. At the same time, this reading drew my attention, for the first time, to facts of great significance, and especially that of flight from reality, as one of the most powerful and universal conditionings of the mind.

This gave me an essential key to understanding situations which until then had been incomprehensible and therefore (without me realizing it before the discovery of meditation five or six years later) generating anxiety. I could immediately see the reality of this leak everywhere around me. This resolved certain anxieties, without however changing anything essential, because I only saw this reality in others, while imagining (as self-evident) that it did not exist in myself. , that I was, in short, the exception that proved the rule (and without asking myself any other questions about this truly remarkable exception). In fact, I was not at all curious about others or myself.

This “key” can only be opened in the hands of those animated by the desire to penetrate. In my hands it had become exorcism and pose.

It was at the beginning of 1974 that for the first time I realized that the destruction in my life, which followed me step by step, could not only come from others, that there was something something in me that attracted it, fueled it, perpetuated it. It was a moment of humility and openness, conducive to renewal. This then remained peripheral and ephemeral, due to lack of in-depth work. This “something in me” still remained vague.

I could clearly see that it was the lack of love, but the very idea of a work which would identify more closely where and how there had been a lack of love in me, how it manifested itself , what were its concrete effects, etc. — such an idea could not come to me from any of the circles or people I had known up to that day, nor from Krishnamurti. (Quite the contrary, K. likes to insist on the vanity of all work, which he automatically assimilates to the “craving to become” of the self.) Thus, with a borrowed “wisdom” for any compass, I do not saw nothing else to do than wait patiently for “love” to descend into me as a grace from the Holy Spirit.

However, the humble truth that I had just learned in the hollow of a wave had sparked the rise of a powerful wave of new energy, comparable to that which was to carry two and a half years later my first launch into the meditation. This energy then did not remain entirely unused. A few months later, when I was immobilized by a providential accident, she carried a (written) reflection in which, for the first time in my life, I examined the worldview that had been the unexpressed basis of my relationship to others, and which came to me from my parents and especially from my mother. I then realized very clearly that this vision had failed, that it was incapable of accounting for the reality of relationships between people, and of promoting the development of my person and my

relationships with others. This reflection remains marked by the "Krishnamurti style", and also by the Krishnamurti taboo on any real work towards understanding. However, it made tangible and irreversible a knowledge born a few months earlier, which had initially remained vague and elusive. No book or other person in the world could have given me this knowledge.

To have the quality of meditation, what this reflection lacked above all was a look at my own person and my vision of myself, and not only on my vision of the world, on a system of axioms therefore in which I did not really appear. In the flesh". And also there was a lack of looking at myself in the moment, at the very moment of reflection (which remained short of real work); a look which would have made me detect both a borrowed style and a certain complacency in the literary aspect of these notes, a lack of spontaneity and authenticity. However insufficient it may be, and of relatively limited scope in its immediate effects on my relationships with others, this reflection nevertheless appears to me to be a step, probably necessary given the starting point, towards the more profound renewal which should have taken place. took place two years later. It was then that I finally discovered meditation - by discovering this first unsuspected fact: that there were things to discover about my own person - things which determined almost completely the course of my life and the nature of my relationships with others...

(42) The salutary uprooting

The "impactful" event in question was the discovery, at the end of 1969, of the fact that the institution of which I felt part was partially financed by funds coming from the ministry armies, something which was incompatible with my basic axioms (and still is today). This event was the first in a whole chain of others (each more revealing than the last!) which resulted in my departure from IHES (Institut des Hautes Études Scientifiques), and one thing leading to another, a radical change middle and investments.

During the heroic years of IHES, Dieudonné and I were its only members, and also the only ones to give it credibility and audience in the scientific world, Dieudonné through the edition of "Publications Mathématiques" (the first of which volume was published in 1959, the year following that of the founding of IHES by Léon Motchane), and me by the "Algebraic Geometry Seminars". In these early years, the existence of

the IHES remained very precarious, with uncertain financing (through the generosity of a few companies acting as patrons) and with only a room lent (with visible bad humor) by the Thiers Foundation in Paris for the days of my seminar(*). I felt a bit like a “scientific” co-founder, with Dieudonné, of my home institution, and I intended to end my days there! I had ended up identifying strongly with IHES, and my departure (as a consequence of the indifference of my colleagues) was experienced as a sort of tearing away from another “home”, before revealing itself as a liberation.

Looking back, I realize that there must already have been a need for renewal within me, I can't say since when. It is surely not a simple coincidence that the year which preceded my departure from IHES, there was a sudden shift in my investment of energy, leaving behind the tasks which the day before had still been burning me in hands, and the questions that fascinated me the most, to launch myself (under the influence of a biologist friend, Mircea Dumitrescu) into biology. I embarked on the arrangements for a long-term investment within IHES (which was in accordance with the multidisciplinary vocation of this institution). Surely this was only an outlet for the need for a much deeper renewal, which could not have been accomplished in the “scientific oven” atmosphere of the IHES, and which was done at the during this “cascade of awakenings” to which I have already alluded. There have been seven, the last of which took place in 1982. The “military funds” episode was providential in triggering the first of these “awakenings”. The Ministry of the Armed Forces, like my former colleagues at IHES, were finally entitled to my full gratitude!

(43) “The poetic work of my composition” contains many things which I know first hand, and which today appear to me to be just as important in my life, and “in life” in general, as at the time it was written, with the intention of publishing it. If I abstained from it, it is mainly because I later realized that the form was affected by a deliberate intention to “make poetic”, so that its overall conception was too constructed, and numerous passages , lack spontaneity, to the point at times of painful stiffness or swelling. This form, bombastic at times,

(*) A recent brochure published by IHES on the occasion of the twenty-five anniversary of its foundation (of which Nico Kniper was kind enough to send me a copy) does not say a word about these difficult beginnings, considered perhaps unworthy of the solemnity of the occasion, celebrated with great pomp last year.

was a reflection of my dispositions, where it is decidedly the “boss” who often calls the shots – heavily, of course...

(44) It goes without saying that I am ignoring here the hypothesis, by no means improbable to say the least, of the unexpected outbreak of an atomic war or another rejoicing of the same kind, likely to put a brutal end to and once and for all to the collective game called “Math-ematics”, and to much else with...

HARVESTING AND SOWING

Reflections and testimony
on a past as a mathematician

about

Alexandre GROTHENDIECK

Second part :

THE BURIAL (I) or the dress
of the Emperor of China

To those who were my friends,
both to the few who remained and to
those who came in large numbers to join in the chorus at my funeral

In memory of a memorable Conference...

and to the entire Congregation...

HARVEST AND SOWING (II)

THE BURIAL (1)

or the dress of the Emperor of China

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A) INHERITANCE AND HEIRS

I. The Posthumous Student

(⁴⁴) This passage “clicked” with the friend to whom I had read this last section “The weight of a past” (*). He wrote to me: “For many of your former students the aspect, as you say, of the intrusive and borderline destructive “boss” has remained strong. Hence the impression you have.” (Knowing, I presume, the “impression” which is expressed in certain passages of this section and notes n°s 46, 47, 50 which complete it.) Above he writes: “First of all I think that you you did well to leave mathematics for a moment [!], because there was a sort of misunderstanding between you and your students (apart from Deligne of course). They remained a little stunned...”.

This is the first time I have heard such criticism about my role as “boss” before 1970, going beyond the usual compliments! Even higher in the same letter: “... I understood that your former students [read: those “before 1970”] do not know very well what a mathematical creation is, and that you maybe I had some responsibility...

It is true that in their time the problems were all posed... ”(**).

My correspondent undoubtedly means that it was I who posed the “problems”, and with them the notions that had to be developed, instead of leaving it to my students to find one or the other; and that it is in this way that I have perhaps concealed in them the knowledge of what constitutes the essential part of the work of mathematical creation. This is also consistent with an impression that emerged from the conversation with two of my ex-students after 1970, which is discussed in a previous note (note (23i v)). It is true that I was looking above all, in the students who came to me, for collaborators to develop intuitions and ideas which were already formed in me, to “push on the wheels”, in short, of a cart which was already there, which they therefore did not have to draw from a sort of nothingness (like my correspondent

(*) (May 10) The friend in question is none other than Zoghman Mebkhout, who kindly authorized me to lift the anonymity that I thought I had to maintain regarding the origin of the letter (of April 2 1984) which I cite herein note.

(**) (May 10) The preceding quote is very heavily truncated, out of concern for respecting the anonymity of my correspondent. See the following note for a complete quotation of the passage from which this quotation is taken, and for comments also on its true meaning, which had escaped me at first for lack of more circumstantial information.

had to do it). However, it is here - to give substance to a flexible and dense tangible emerging from the mists of the intangible - which has always been the most fascinating aspect of mathematical work for me, and the part of the work especially where I felt a "creation" taking place, the "birth" of something more delicate and more essential than a simple "result".

If I sometimes see one of those who were my students treat this very expensive thing with disdain, then there is in him this "snobbery" that JHC Whitehead spoke of (which consists of scorning what one "can demonstrate"). (*), I am probably no stranger to it, one way or another. The failure of my teaching, flagrant for the period after 1970, now also appears to me, in a different and more hidden form, in my teaching of the first period, whereas in the conventional sense this one presents itself as a complete success! This is something that I had already glimpsed at times over the last few years, and that I mentioned in letters to several of my ex-students, without having until now really received any feedback from the part of none of them.

It seems to me that it would not be correct, however, to say that the work that I proposed to my students, and what they did with me, was purely technical work, purely routine, incapable of bringing into play their creative faculties. . I provided them with tangible and secure starting points, between which they had complete freedom to choose, and from which they could set off, as I myself had done before them. I do not believe that I have ever proposed a subject to a student, which I would not have taken pleasure in treating myself; nor that there was such a dry journey in the journey that any of them made with me, that I myself have not passed alone through others equally dry during my life as a mathematician, without m discouraged or kicked in, when it was very clear that the work had to be done and there was no other way.

It also seems to me that the failure that I see today is due to more subtle causes than the type of themes that I proposed, and to what extent these remained nebulous or were, on the contrary, well-defined. My part in this failure seems to me to be due rather to attitudes of conceit in me in my relationship to mathematics, attitudes that I have had the opportunity to examine in this reflection. These had to permeate more or less strongly, if not the work itself in the company of a particular student, at least the atmosphere or the air which surrounded me. Fatuity, even though it is expressed in the most "discreet" way of the

(*) See the note "The snobbery of young people — or the defenders of purity", n° 27.

world, always goes in the direction of a closure, of an insensitivity to the delicate essence of things and their beauty - whether these are “mathematical things”, or living people that we have the power to welcome , to encourage, or also to look down from the height of our grandeur, insensitive to the breath that accompanies us and its destructive effects on others as well as on ourselves.

(144) (May 10) Taking advantage of my friend's permission to freely quote passages from his letters that I deem useful, I give here a more complete quote (*), which places the truncated quote in its true context :

“It is true that I was very isolated between 75 and 80 apart from a few rare questions to Verdier. But I don't blame your former students for that period because no one really understood the importance of this link [read: between discrete coefficients and continuous coefficients]. Everything changed in October 1980 when we discovered the first very important application of this link for semi-simple groups, namely the proof of the Kazhdan—Lusztig multiplicity formula where we used equivalence in an essential way. categories in question. This equivalence took the name of “Riemann—Hilbert correspondence” without further comment after all it is so natural! That's where I understood that your former students don't know very well what a mathematical creation is and that perhaps you had some responsibility. I still feel a feeling of injustice and helplessness. It is true that in their time the problems were all posed. The number of applications of this theorem is impressive both in the framework of equal topology and in the transcendent framework but always under the name of Riemann—Hilbert correspondence! I feel like my name is unworthy of this result for many people and especially for your former students. But as you can clearly see from the introductions to my work, it is your formalism of “duality” which naturally leads to this result. But like you I am not worried about the future of this link between “constructible discrete coefficients” and crystalline coefficients (or -modules

(*) See second note to b. from p. from the previous note, “The failure of a teaching (2) — or creation and conceit”, n° 44

holonomies). It is clear that it applies in many areas, both in the cohomology of spaces and in analysis.”

It is this passage from my friend's letter which inspired (in addition to this note) the subsequent note “The Unknown on Duty and the God's Theorem”. According to the terms of this letter, I had no suspicion (as I explain in its place) that this “feeling of injustice and powerlessness” in my friend was the reaction, not simply to an attitude of blind disdain systematically minimizing his contributions (an attitude which ended up becoming very familiar to me, among some of those who were my students), but a real fraud operation, consisting of purely and simply evading the authorship of a key theorem. This situation was revealed to me only eight days ago - see on this subject the note “Iniquity - or the meaning of a return” and the following notes (nos. 75 to 80), gathered under the heading title “The Colloquium — or bundles of Mebkhout and Perversity”.

(45) Due to my change of environment and lifestyle, the opportunities for meeting, or for other contacts with my old friends, have become rare. This did not prevent signs of “distancing” from manifesting themselves in many ways, more or less strong from one to the other. With others on the other hand, like Dieudonné, Cartan or Schwartz, and in fact with all the “elders” who had given me such a warm welcome when I started, I felt no such thing. Apart from these, however, I have the impression that there are few among my former friends or students in the mathematical world whose relationship with me (whether or not it finds occasion to express itself) has not become divided. , “ambivalent”, after I withdrew from what was a common environment, a common world.

II. The orphans

(46) I would like to take this opportunity to say here a few words about the mathematical notions and ideas, among all those that I have brought to light, which seem to me (by far) to have the greatest scope (461) (*). Above all, these are five key concepts closely

(*) The reader will find in notes n^o 461 to 469 certain more technical comments on the concepts reviewed in this note. On the other hand, independently of the particular notions that I have introduced, the reader will find reflections on what is considered to be “the master part” of my work (within the part of my work “entirely carried out to its term”), in note n^o 88 “The remains”.

related, which I will review quickly, in order of specificity and increasing richness (and depth).

It concerns firstly the idea of a derived category in homological algebra (48), and its use for a “all-purpose” formalism, called “formalism of six operations” (knowing the) (462) for the cohomology operations $\tilde{y}^L, Lf \tilde{y}^L, Rf_{R!}, H^i_m, Rf \tilde{y}^L, Lf$ of the most important types of “spaces” that have been introduced so far in geometry: “algebraic” spaces (such as diagrams, schematic multiplicities, etc...), analytical spaces (both complex analytical, as well as rigid- analytical and similar), topological spaces (while waiting, of course, the context of “moderate spaces” of all kinds, and surely many others, such as that of the Cat category of small categories, serving as homotopic models...). This formalism includes both discrete coefficients and “continuous” coefficients.

The progressive discovery of this formalism of duality and its ubiquity was made through solitary, stubborn and demanding reflection, which continued between the years 1956 and 1963. It was during this reflection that the notion of derived category gradually emerged, and an understanding of the role assigned to it in homological algebra.

What was still missing in my vision of the cohomological formalism of “spaces” was an understanding of the link that we guessed between discrete coefficients and continuous coefficients, beyond the familiar case of local systems and their interpretation in terms of mod -ules with integrable connection, or module crystals. This deep link, first formulated in the context of complex analytical spaces, was discovered and established (nearly twenty years later) by Zoghman Mebkhout, in terms of derived categories formed on the one hand using discrete coefficients “constructible”, on the other hand using the notion of “-module” or “complex of differential operators” (463).

For almost ten years, due to lack of encouragement from those of my former students who were best placed to give it to him, and to support him through their interest and the experience they had acquired from my contact, Zoghman Mebkhout continued his remarkable work in almost total isolation. This did not prevent him from bringing to light and proving two key theorems (*) of a new crystal theory in the process of being born.

(*) (June 7) Mebkhout points out to me that to these two theorems, it is appropriate to add a third, also expressed in terms of derived categories, namely what he called (a little improperly perhaps) the “biduality theorem” for -modules, and which is the most difficult of the three. For an overall sketch of Mebkhout’s ideas and results and their uses, see Le Dung Trang and Zoghman Mebkhout, Introduction to

chugging along in general indifference, both of them (that was definitely a bad sign!) expressing themselves in terms of derived categories: one giving the equivalence of categories signaled sometimes between “discrete constructible” coefficients and crystalline coefficients (satisfying certain conditions of “holonomy” and “regularity”) (48), the other being “the” crystalline global duality theorem, for the constant application of a smooth complex analytical space (not necessarily compact, which implies considerable additional technical difficulties) towards a point. These are profound theorems(**), which shed new light on the cohomology of both analytical and schematic spaces (with zero characteristics for the moment), and carry the promise of a large-scale renewal of the theory. cohomology of these spaces. They finally earned their author, after refusing two applications for entry to the CNRS, a position as a research manager (equivalent to a position of assistant or assistant professor at the University).

No one during these ten years thought of speaking to Mebkhout, struggling with the considerable technical difficulties due to the transcendent context, of the “formalism of the six variances”, well known to my students (*), but which does not appear “on net” nowhere. He finally learned of its existence from me last year (in the form of a form which, apparently, is only known to me...), when he had the kindness and patience to tell me explain what he had done, to me who was no longer so connected to cohomology... Nobody thought of suggesting to him that it might be more “profitable” to connect first on the context of zero characteristic diagrams, where the difficulties inherent in the transcendent context disappear, and where on the other hand the conceptual questions fundamental to the theory appear all the more clearly. No one thought to report to him (or did it on their own-

linear differential systems . Proc. of Symposia in Pure Mathematics, vol. 40 (1983) part. 2, p. 31–63.

(**) (May 30) The demonstration of the second theorem comes up against the usual technical difficulties in a transcendent context, requiring the use of “evettesque” techniques, I guess that it can be ranked among the “difficult” demonstrations. That of the first theorem is “obvious” — and profound, using all the force of the resolution of Hironaka’s singularities. As I point out in the penultimate paragraph of the note “solidarity” (n° 85), once the theorem has been identified, the well-informed “first comer” is capable of proving it. Compare also with the observation of JHC Whitehead cited in the note “The snobbery of young people — or the defenders of purity” (n° 27). When I wrote this last note, as if under the silent dictation of a secret prescience, I did not suspect to what extent reality would surpass my timid and groping suggestions!

(*) They learned it first-hand in the SGA 4 and SGA 5 seminars, and through texts, in “Residues and Duality” by R. Hartshorne.

ment of what was known to me from the time when I introduced crystals(**)) that the “-modules” on smooth (analytical or schematic) spaces are neither more nor less than the “crystals of modules” (when we ignore any question of “coherence” for one or the other), and that the latter was a catch-all notion which worked just as well for “spaces” with any singularities as for smooth spaces (464).

Given the means (and the unusual courage) which Mebkhout demonstrated, it is very clear to me that, placed in an atmosphere of sympathy, he would have had no difficulty, but great pleasure, in establishing the complete formalism of the “six variances” in the context of the crystalline cohomology of characteristic-zero schemes, while all the essential ideas for such a large-scale program (including his in addition to those of the Sato school and mine) were already, it seems to me, united. For someone of his caliber, this was a matter of work over a few years, just as the development of a boilerplate formalism of equal cohomology was a matter of a few years (1962–1965), of the moment that the common thread of the six operations was already known (in addition to the two key base change theorems). It is true that these were years carried by a current of enthusiasm and sympathy of those who were co-actors or witnesses, and not a work going against the haughty self-importance of those who have everything in their hands...

I come to the second pair of notions that I wanted to talk about, that of schema, and the closely related notion of topos. The latter is the more intrinsic version of the notion of site, which I first introduced to formalize the topological intuition of a “localization”. (The term “site” was also introduced later by Jean Giraud, who also did a lot to give the notions of site and topos all the necessary flexibility.)

These are glaring needs of algebraic geometry which led me to introduce diagrams and topos one after the other. This pair of notions potentially contains a vast-scale renewal of both algebraic geometry and arithmetic, as well as topology, through a synthesis of these “worlds”, too long separated, in a geometric intuition common.

The renewal of algebraic geometry and arithmetic from the point of view of diagrams and the language of sites (or “descent”), and by twelve years of work on the foundations (not counting the work of my students and other good will who set out to

(**) (May 30) But I had time to forget it - to remember it by virtue of the second meeting with Mebkhout, last year. (See the note “Meeting from beyond the grave”, n° 78.

part) has been an accomplished thing for twenty years: the notion of schema, and that of equated cohomology of schemas (if not that of equated topos and that of equated multiplicity) have finally entered into customs, and into the common heritage.

On the other hand, this vast synthesis which would also include topology, while for twenty years the essential ideas and the main technical tools required seem to me gathered and ready (*), is still waiting for its time. For fifteen years (since my departure from the mathematical scene), the fertile unifying idea and the powerful tool of discovery that is the notion of topos, has been maintained by a certain fashion (*) in the ban of notions deemed serious. Few topologists today still have the slightest suspicion of this considerable potential expansion of their science, and of the new resources it offers.

In this renewed vision, the topological, differentiable spaces etc... that the topologist handles daily are, with the diagrams (of which he has heard) and the topological, differentiable or schematic multiplicities (of which no one speaks) as much of incarnations of the same type of remarkable geometric objects, the ringed topos (465), which play the role of “spaces” in which intuitions coming from topology, algebraic geometry, and arithmetic come together, in a common geometric vision. The “modular” multiplicities of all kinds that we encounter at every step (as long as we have eyes open to see) provide so many striking examples (466).

Their in-depth study is a first-order guideline for penetrating further into the essential properties of geometric objects (or others, if there are objects which are not

(*) (May 15) These “essential ideas and main technical means” had been brought together in the vast fresco of the SGA 4 and SGA 5 seminars, between 1963 and 1965. The strange vicissitudes which struck the writing and publication of the part SGA 5 of this fresco, published (in unrecognizable, devastated form) eleven years later (in 1977), give a striking image of the fate of this vast vision in the hands of “a certain fashion” — or rather, in the hands of certain of my students who were the first to introduce it (see following note).

These vicissitudes and their meaning are gradually revealed during the reflection of the last four weeks, continuing in the notes “The accomplice”, “The clean slate”, “Being apart”, “The signal”, “The reversal”, “Silence”, “Solidarity”, “Mystification”, “The deceased”, “The massacre”, “The remains”, notes n°s 63, 67, 67 68, 68 and 84–88. (*) (May 13) The continuation of the reflection during the six weeks which followed the

moment when these lines were written (end of March), revealed that this “fashion” was established in the first place by certain of my students - by the very ones who were best placed to make a certain vision, and ideas and technical means their own, and who chose to appropriate working instruments, while disavowing and the vision that they had brought into being, and the one in whom this vision had taken birth.

geometric...) whose modular multiplicities describe the modalities of variation, degeneration and generization. This richness, however, remains ignored, since the notion which allows it to be described finely does not fall into the commonly accepted categories.

Another unforeseen aspect brought by this challenged synthesis(**), is that the familiar homotopic invariants of some of the most common spaces (467) (or more precisely, their profinite compactifications) are found equipped with arithmetic structures unsuspected, notably operations of certain groups of profinis Galois...

However, for almost fifteen years, it has been part of the good manners in the "great world", to look down on anyone who dares to pronounce the word "topos", unless it is in jest or he is not have the excuse of being a logician. (These are people known for being not like the others and who must be forgiven for certain whims...) The yoga of derived categories, to express the homology and cohomology of topological spaces, has also not penetrated among the topologists, for whom the Künneth formula (for a ring of coefficients which is not a field) always continues to be a system of two spectral sequences (or, strictly speaking, a string of short exact sequences), and not a unique canonical isomorphism in a suitable category; and who still continue to ignore the base change theorems (for a proper morphism or by a smooth morphism for example), which (in the neighboring framework of equal cohomology) constituted the crucial turning point for the "start" in force of this cohomology (468). I should not be surprised, when the very people who had contributed to developing this yoga have long since forgotten it.

(**) (May 13) This synthesis was "rejected" in the very first place, in its spirit as in the key notion which makes it possible, by none other than the very person who was the main user and beneficiary, through all her work, technical means that she had allowed me to develop (with the language of diagrams and the construction of a theory of stable cohomology). It's Pierre Deligne. By his exceptional ascendancy (due to his exceptional means), and by the very particular position that he occupied with regard to my work of which he was like an implicit legatee, the discreet and systematic barrier that he opposed to the main ideas that I had introduced (with the exception of the notion of schema and stable cohomology) was very effective, surely playing a leading role in the establishment of the "fashion" which buried these ideas, already reduced for almost fifteen years to a vegetative life. His work was deeply marked by this ambiguity, which I glimpsed for the first time in the reflection which continues that of the present note. (See "Refusal of an inheritance - or the price of a contradiction", note n° 47.) This first perception, vivid but still confused, of this permanent obstacle in the work of Deligne after my departure, was clarified and confirmed in a striking way during all the reflection on this Funeral, where my friend plays the role of main officiant.

for a long time, and beat cold the unfortunate person who pretends to want to use it! (*)

The fifth notion that is close to my heart, perhaps more than any other, is that of “motive”. It differs from the four previous ones in this, that “the” good notion of motif (even if only above a basic body, without even speaking of any basic diagram) has not made until now the subject of a satisfactory definition, even admitting for this purpose all the “reasonable” conjectures that one would need. Or rather, visibly, the “reasonable conjecture” to make, in a first step, would be that of the existence of a theory, satisfying such data and such properties, that it would not be at all difficult (and quite fascinating !), for someone in the know (*), to explain fully. In fact, I was very close to doing so, shortly before I “left maths”.

In some ways, the situation resembles that of the “infinitely small” in the heroic era of differential and integral calculus, with two differences, however. First of all, today we have experience in building sophisticated mathematical theories, and effective conceptual background, which our predecessors lacked. And then, despite these means at our disposal and for more than twenty years since this visibly essential notion appeared, no one has deigned (or dared despite those who do not deign...) to put their hands to work. and identify the main features of a theory of

(*) (May 13) It appeared during subsequent reflection that the situation began to change with the Luminy Colloquium of June 1981: we saw those who had “forgotten” (or rather, buried...) these notions strut around with, without ceasing to cold-shoulder this same “unfortunate” without whom this brilliant Conference would never have taken place. (See notes n° s 75 and 81 on the

subject of this memorable Colloquy.) (*) (May 13) I ended up understanding that the only person (apart from me) who until today responds to the fairly particular of this “somewhat in the know” is Pierre Deligne, who had the advantage for four years, at the same time as he listened to “the little I knew in algebraic geometry”, of being the day-to-day confidant the day of my motivic reflections. It is true that I have spoken about these things to many other colleagues here and there, but apparently none have been “connected” enough to assimilate an overall vision that had developed in me over several years, or to take my indications as a starting point to develop for himself a vision and a program (as I myself had done from two or three “strong impressions” produced by certain ideas of Serre). Perhaps I am wrong, but it seems to me that people interested in the cohomology of algebraic varieties were not psychologically disposed to “take patterns seriously” as long as Deligne, who was an authority on cohomology and who at the same time Time was the only one supposed to know in depth what these motives were about, and himself passed them over in silence

(June 8) Verification made, it appears that my first motivic reflections date back to the beginnings of sixties — they therefore continued for almost ten years.

tifs, as our predecessors had done for infinitesimal calculation without going through all the hassle. However, it is as clear now for the patterns as it was formerly for the “infinitely small”, that these beasts exist, and that they manifest themselves at each step in algebraic geometry, as long as we understand is interested in the cohomology of algebraic varieties and families of such varieties, and more particularly in the “arithmetic” properties of these. Even more perhaps than for the four other notions of which I spoke, that of motive, which is the most specific and the richest of all, is associated with a multitude of intuitions of all kinds, by no means vague but formulatable. often with perfect precision (sometimes, if necessary, admitting a few motivic premises). The most fascinating of these “motivic” intuitions was for me that of “motivic Galois group” which, in a sense, makes it possible to “put a motivic structure” on the profinite Galois groups of bodies and schemas of finite type (in absolute sense). (The technical work required to give precise meaning to this notion, in terms of the “premises” providing a provisional basis for the notion of motive, was accomplished in Neantro Saavedra's thesis on “Tannakian categories”).)

The current consensus is a little more nuanced for the notion of motive than for its three brothers (or sisters) in misfortune (derived categories, duality formalism known as “six operations”, topos), in the sense that it is not outright treated as “bombinage” (*). Practically, however, it comes down to the same thing: as long as there is no way to “define” a motive and “prove” something, serious people can only refrain from talking about it (with the biggest regret is an understood thing, but we are serious or we are not...). Certainly, we are unlikely to ever succeed in constructing a theory of motives and “proving” anything about them, as long as we declare that it is not serious even to talk about them!

But the few people in the know (and who make the fashion) know very well that in terms of the premises, which remain secret, we can prove a lot of things. This means that today, in fact since the notion appeared in the wake of Weil's conjectures (yet proven by Deligne, which still makes a good point!), the yoga of patterns does indeed exist. . But it has the status of a secret science, with certainly very few initiates(**).

(*) As I pointed out in a previous footnote, the derived categories were exhumed three years ago with great fanfare (without my name being mentioned). The topos and the six operations are still awaiting their time, and the motifs too, except for the small piece which was unearthed two years ago, with an alternative authorship (see notes n°s 51, 52, 59). (May 13)

Although it may be “not serious”, it nevertheless allows these rare initiates to say in a host of cohomology situations “what we have the right to expect”. It thus gives rise to a multitude of intuitions and partial conjectures, which are sometimes accessible afterwards by the means at hand, in the light of the understanding provided by “yoga”. Several works by Deligne are inspired by this yoga (*), notably the one which (if I am not mistaken) was his first published work, establishing the degeneracy of Leray's spectral sequence for a projective and smooth morphism of algebraic varieties (in char. null, for the purposes of demonstration). This result was suggested by considerations of “weight”, therefore of an arithmetic nature. These are typically “motivic” considerations, I mean: formulated in terms of the “geometry” of the motifs. Deligne proved this statement using the Lefschetz-Hodge theory and (if I remember correctly) said nothing about the motivation (49), without which, however, no one would have had the idea of suspecting something so improbable. !

The yoga of patterns was born precisely, first and foremost, from this “yoga of weights” that I got from Serre(**). It was he who made me understand all the charm of “Weil's conjectures” (which became “Deligne's theorem”). He had explained to me how (modulates a hypothesis of resolution of the singularities in the characteristic considered) we could, thanks to the yoga of weights, associate with each algebraic variety (not necessarily smooth or clean) on any body “virtual Betti numbers ” — something that really appealed to me at the time

(**) (May 13) I now understand that the “very few initiates” were reduced until 1982 to the one and only Deligne. It is true that he revealed of this “secret science” what shines through certain important results included in this yoga, revealed gradually as he was able to prove them, to collect the credit for it all. by hiding his source of inspiration, which remained secret. If, however, for fifteen years no one has yet taken action to finally branch out onto a theory of large-scale motives, it is because our era is decidedly far from the bold dynamism of the heroic era of infinitesimal calculation!

(*) (May 13) Having finally read the bibliography somewhat, I now see that Deligne's entire work is rooted in this yoga. And my bibliographic sampling (as well as other cross-checks) make me suppose that in Deligne's entire work, the only reference to this source is in a terse line (quoting me in one breath with Serre) in “Hodge's Theory I” in 1970.

(See notes n°s 78₁ and 78₂.)

(**) What I get from Serre (early 60s?) is an initial idea or intuition, making me understand that there was something important to understand! This acted as an initial impulse, triggering a reflection which continued in the following years, first on a “yoga” of weights and soon on a broader yoga of patterns.

shot hit (469). It was this idea, I believe, that was the starting point for my thinking about weights, which continued (alongside my foundation writing tasks) throughout the following years. (It is also that I took up again in the 70s, with the notion of “virtual pattern” on any basic diagram, with a view to establishing a formalism of “six operations” at least for virtual patterns .) If throughout these years I spoke about this yoga of patterns to Deligne (acting as a privileged interlocutor) and to anyone who wanted to hear it (*), it was certainly not so that he and others maintain it as a secret science, reserved for them alone. (ÿÿ47)

(461) I would make an exception at most of the ideas and points of view introduced with the formulation that I had given to the Riemann-Roch theorem (and with the two demonstrations that I found), as well as various variations of it. If I remember correctly, such variations appeared in the last presentation of the SGA 5 seminar of 1965/66, which was lost together with various other presentations of the same seminar. The most interesting seems to me to be a variant for constructible discrete coefficients, which I do not know if it has since been explained in the literature(**). Note that this also admits a “motivic” variant, which essentially amounts to asserting that the “characteristic classes” (in the Chow ring of a regular scheme Y) associated with ℓ -adic sheaves constructible for numbers different primes (primes with residual characteristics), when these beams come from the same “pattern” (for example are $Ri f(Z)$ for a given $f: X \dashrightarrow Y$) are all equal.

(462) We can consider this formalism as a sort of quintessence of a formalism of “global duality” in cohomology, in its most “effective” form, free of all superfluous hypotheses (smoothness in particular for “spaces” and applications

(*) (April 10) It seems to me that Deligne was the only one to “hear” — and he took care to reserve for himself the exclusive privilege of what he heard. It is also true that in writing these final lines, I was “delaying” on events: two years ago, there was a partial exhumation of the yoga of motives without any allusion to a role that I would have in it. plays ! See on this subject notes nŷ s 50, 51, 59, prompted by an unforeseen discovery which shed unexpected light (for me at least) on the meaning of the burial which had taken place over twelve years. Until then I had realized rather vaguely that it was a sort of burial, without taking the leisure to look more closely... (**) (June 6)

I found it (in a form neighbor, and under the flattering name of “Deligne conjecture—Grothendieck”) in an article by Mac-Pherson published in 1974. See note nŷ 871 for details .

aged, or cleanliness for morphisms). It is necessary to complete it with a formalism of local duality, in which we distinguish among the admitted “coefficients” the objects or “complexes” called “dualizing” (notion stable by the operation *), ie those giving rise to a “theorem of Lf biduality” (in terms of the operation H^i) for coefficients satisfying suitable conditions of finiteness (on the degrees, and of coherence or “constructibility” on the objects of local cohomology). When I speak of the “formalism of the six variances”, I imply subsequently this complete formalism of duality, both in its “local” and “global” aspects.

A first step towards a thorough understanding of duality in cohomology was the progressive discovery of the formalism of the six variances in a first important case, that of Noetherian schemes and complexes of modules with coherent cohomology. A second was the discovery (in the context of slack cohomology of schemes) that this formalism also applied for discrete coefficients. These two extreme cases were sufficient to found the conviction of the ubiquity of this formalism in all geometric situations giving rise to a “duality” of the Poincaré type — a conviction which was confirmed by the work (among others) of Verdier, Ramis and Ruget. It will not fail to be confirmed for other types of coefficients, when the blockage which for fifteen years has existed against the development and large-scale use of this formalism has crumbled.

This ubiquity seems to me to be a fact of considerable significance. It made imperative this feeling of a profound unity between the duality of Poincaré and the duality of Serre, which was finally established with the generality required by Mebkhout. This ubiquity makes the “six variance formalism” one of the fundamental structures in homological algebra, for an understanding of “all-round” cohomological duality phenomena (*). The fact that this kind of rather sophisticated structure has not been explained in the past (nor has the “good” notion of “triangulated category”, of which Verdier's version is still a very provisional and insufficient form) n 'nothing changes; nor the one that topologists, and even algebraic geometers who pretend to be interested in cohomology, continue to ignore the very existence of the formalism of duality, just like the language of derived categories which found it.

(463) The point of view of $\mathcal{D}$ -modules and complexes of differential operators has been in-

(*) The interested reader will find a sketch of this formalism in the Appendix to this volume.

introduced by Sato and developed first by him and his school, from an perspective (I seemed to understand) quite different from that followed by Mebkhout, closer to my approach.

The various notions of “constructibility” for “discrete” coefficients (in the analytical-complex, analytical-real, piecewise linear contexts) were identified for the first time by me, it seems to me, towards the end of the years fifty (and I took them up again a few years later in the context of étale cohomology). I then asked the question of the stability of this notion by higher direct images for a proper morphism of real or complex analytical spaces, and do not know whether this stability has been established in the complex analytical case (*). In the real analytical case, the notion that I had considered was not the right one, for lack of having the notion of a real sub-analytic set of Hironaka, which has the essential liminal property of stability by direct images. As for operations of a local nature such as $R\Gamma$ it was clear that the argument which established the stability of the constructible coefficients in the framework of excellent schemes of zero characteristic (using the resolution of Hironaka singularities) worked as is in the complex analytical case, and the same for the biduality theorem (see SGA 5 I). In the piecewise linear framework, natural stabilities and the biduality theorem are “easy exercises”, which I had enjoyed doing as a check of the “ubiquity” of the duality formalism, at the time of starting étale cohomology (a main surprise of which was precisely the discovery of this ubiquity).

To return to the semi-analytic case, the “good” framework in this direction for stability theorems (coefficients constructible by the six operations) is visibly that of “moderate spaces” (see Outline of a Program, par. 5 , 6).

(464) Of course, the “-modules” point of view, combined with the fact that is a coherent bundle of rings, highlights for module crystals a more hidden notion of “coherence” than the one with which I had habit of working, and which maintains meaning in spaces (analytical or schematic) that are not necessarily smooth. It would only be fair to call it “M-coherence” (M for Mebkhout). It should therefore be quite obvious, for someone even slightly in the know (and in full possession of their healthy mathematician instinct), that the “good category of coefficients” which generalizes the complexes of “differential operators” in the smooth case, must be none other than the “M-consistent” derived category of

(*) (May 25) It was established by JL Verdier, see “Good references”, note n° 82.

that of crystals of modules (a complex of crystals being called M-coherent if its cohomology objects are). This retains a reasonable meaning without an assumption of smoothness, and should encompass both the theory of ordinary “continuous” (coherent) coefficients, and that of “constructible” discrete coefficients (by introducing for the latter hypotheses of proper holonomy and regularity). If my vision of things is correct, the two new conceptual ingredients of the Sato-Mebkhout theory, compared to the previously known crystal context, are this notion of M-coherence for module crystals, and the conditions of holonomy and regularity (of a deeper nature) concerning M-coherent complexes of crystals. These notions having been acquired, a first essential task would be to develop the formalism of the six variances in the crystal context, so as to encompass the two particular cases (ordinary coherent, discrete) that I had developed more than twenty years ago (and which some of my former cohomologist students have long forgotten in favor of undoubtedly more important tasks...).

Mebkhout had also ended up learning the existence of a notion of “crystal” by frequenting my writings, and he had felt that his point of view should provide a good approach to this notion (at least in terms of zero characteristics) — but this suggestion fell on deaf ears. Psychologically, it was hardly conceivable that he would embark on the vast work of foundations which was necessary, placed as he was in a climate of haughty indifference on the part of the very people who were figures of cohomological authority, and best placed to encourage — or to discourage...

(465) (May 13) This concerns, above all, the topos ringed by a local commutative ring. The idea of describing a “manifold” structure in terms of the data of such a sheaf of rings on a topological space, was first introduced by H. Cartan, and was taken up by Serre in his classic work FAC (Coherent Algebraic Sheaves). It is this work which was the initial impulse for a reflection leading me towards the notion of “schema”. What was still missing in Cartan’s approach taken up by Serre, to encompass all the types of “spaces” or “varieties” that have presented themselves to date, is the notion of topos (i.e. that is to say precisely “something” on which the notion of “bundle of sets” has meaning, and has the familiar properties).

(466) As other notable examples of topos which are not ordinary spaces, and for which there also does not seem to be any satisfactory substitute in terms

“admitted” notions, I will point out: the quotient topos of a topological space by a local equivalence relation (for example foliations of varieties, in which case the quotient topos is even a “multiplicity” ie is locally a variety); the “classifying” topos for almost any kind of mathematical structure (at least those “expressed in terms of finite projective limits and any inductive limits”).

When we take a “manifold” structure (topological, differentiable, real or complex analytical, Nash, etc... or even smooth schematic on a given basis) we find in each case a particularly attractive topos, which deserves the name of “universal variety” (of the species considered). Its homotopic invariants (and in particular its cohomology, which deserves the name “classifying cohomology” for the species of variety considered) should have been studied and known for a long time, but for the moment this is in no way the case...

(467) These are spaces X whose type of homotopy is described “naturally” as that of a complex algebraic variety. This can then be defined on a subfield K of the body of complexes, such that K is an extension of finite type of the prime body Q .

The profinite Galois group $\text{Gal}(\overline{K}/K)$ then operates in a natural way on the profinite homotopic invariants of X . Often (e.g. when X is a homotopic sphere of odd dimension) we can take the prime body Q for K .

(468) (May 13) At the time when I learned my first rudiments of algebraic geometry in Serre's FAC article (which would “trigger” me in the direction of diagrams), the very notion of change of base was practically unknown in algebraic geometry, except in the particular case of the change of base body. With the introduction of the diagram language, this operation has undoubtedly become the most commonly used in algebraic geometry, where it is introduced at any time. The fact that this operation still remains practically unknown in topology, except in very particular cases, appears to me to be a typical sign (among many others) of the isolation of topology from the ideas and techniques coming from algebraic geometry, and a stubborn legacy of inadequate foundations of “geometric” topology.

(469) (June 5) Serre's idea was that we should be able to associate with any schema finite on a field K , integers

$$h^i(X) \quad (i \in \mathbb{N})$$

which he calls his “virtual Betti numbers”, such that we have:

a) for Y a closed subscheme and U the complementary open

$$h^i(X) = h^i(Y) + h^i(U),$$

b) for smooth projective X , we have

$$h^i(X) = i\text{-th Betti number of } X$$

(defined for example via ℓ -adic cohomology, for ℓ prime to the characteristic of k).

If we admit the resolution of singularities for algebraic schemes on k , then it is immediately clear that the $h^i(X)$ are uniquely determined by these properties. The existence of such function $h^i(X)$ for fixed k , using the formalism of supported cohomology characteristic of Euler-Poincaré ℓ -adic (with proper support) of weight i is that deduced from the Weil conjectures, plus a weak form of the resolution of singularities. Even without resolution, Serre's idea is realized thanks to the strong form of the Weil conjectures (established by Deligne in “Conjectures of Weil II”).

I continued heuristic reflections along this path, leading me towards a formalism of six operations for “virtual relative schemes”, the base body k being replaced by a more or less arbitrary base scheme S — and towards various notions of “characteristic classes” for such virtual diagrams (of finite presentation) on S . Thus, I was led (returning for simplicity to the case of a basic body) to consider integer numerical invariants finer than those of Serre, denoted $h^{p,q}(X)$, satisfying properties analogous to a), b) above, and giving Serre's virtual Betti numbers by the usual formula

$$h^i(X) = \sum_{p+q=i} h^{p,q}(X)$$

(47) It will be noted that four among the five notions that I have just reviewed (precisely those which pass for “not serious” things) concern cohomology, and above all,

the cohomology of schemas and algebraic varieties. In any case, all four were suggested to me by the needs of a cohomological theory of algebraic varieties, for continuous coefficients first, then discrete. This means that a main motivation and a constant Leitmotif in my work, during the fifteen years from 1955 to 1970, was the cohomology of algebraic varieties.

Remarkably, this is also the theme that Deligne still considers today as his main source of inspiration, if I believe what is said on this subject in last year's IHES brochure (*). I learned of this with some astonishment.

Certainly, I was still “on the scene” and all that was connected, when Deligne (after his fine work on the Ramanuyam conjecture) developed his remarkable extension of Hodge's theory. Above all, it was, for him as well as for me, a first step towards a formal construction of the notion of motif on the body of complexes - to begin with! In the first years after my “turning point” in 1970, I of course also had an echo of Deligne's demonstration of Weil's conjectures (which also proved Ramanuyam's conjecture), and in the process, of the “Lefschetz theorem cow” as a positive characteristic. I expected nothing less from him! I was even sure that he must have proven at the same time the “standard conjectures”, which I had proposed towards the end of the sixties as a first step to found (at least) the notion of “semi-simple” motive” on a field, and to translate some of the predicted properties of these patterns in terms of properties of ℓ -adic cohomology and groups of algebraic cycles. Deligne later told me that his proof of Weil's conjectures would certainly not prove the standard (stronger) conjectures, and that he had no idea how to approach them. It must have been about ten years ago now. Since then, I have not been aware of any other truly decisive progress that has taken place in the understanding of the “motivic” (or “arithmetic”) aspects of the cohomology of algebraic varieties. Knowing Deligne's means, I tacitly concluded that his main interest must have turned to other subjects - hence my astonishment to read that this was not the case.

(*) (May 12) On the other hand, I have just noticed that nothing in the said brochure could make the reader suspect that my work has anything to do with the cohomology of algebraic varieties, or that of anything whatsoever. other ! See on this subject the note “The Funeral Eulogy (1) — or the compliments” (n° 98) written today. The brochure in question is the one mentioned in the footnote to the note “The salutary tearing away”, n° 42, and examined a little more closely in the note “The Funeral Eulogy” which we just mentioned.

What seems beyond doubt to me is that for a good twenty years it has no longer been possible to carry out a large-scale renewal in our understanding of the co-homology of algebraic varieties, without also doing little or nothing. proud figure of “continuer of Grothendieck”. Zoghman Mebkhout also learned this the hard way, and (to a certain extent) it was the same for Carlos Contou-Carrère, who quickly understood that he had everything interest in changing the subject (471). Among the very first things that we cannot do without to do, there is precisely the development of the famous “formalism of six variances” in contexts of various coefficients, as close as possible to that of the patterns (which currently play the role of a sort of ideal “horizon line”): crystalline coefficients in zero characteristics (in line with the Sato school and Mebkhout, Grothendieck sauce) or p (studied especially by Berthelot, Katz, Messing and a whole group of researchers more visibly motivated young people), “stratified promotions” at La Deligne (which appear as a dualized, or “pro”, variant of the “ind”-notion of a coherent $\mathcal{D}$ -module, or of a “coherent” crystal), finally “Hodge—Deligne” coefficients (which seem as good as the patterns, except that their definition is transcendent and limited to the basic schemas which are finite type on the body of the complexes)... At the other end arises the task of releasing the very notion of pattern from the mists which surround it (and for good reason...), and also, if can, tackle questions as precise as “standard conjectures”. (For the latter, I had thought, among other things, of developing a theory of “intermediate Jacobians” to projective and smooth varieties on a body, as a way perhaps to obtain the formula of trace positivity, which was one of the essential ingredients of standard conjectures.)

These were tasks and questions that burned in my hands until the moment again where I “left math” — hot and juicy things, none of which and to none moment appeared to me as forming a “wall”, a stopping point (*). They represented an inexhaustible source of inspiration and substance — something where it was enough to pull where it protruded (and it “protruded” everywhere!) so that something would come, the expected as well as the unexpected. With the limited means that I have, but without being divided in my work, I know well everything that can be done as long as we set about it, in one single day, or in a year, or in ten. And I also know, having seen it at work at a time when

(*) (May 25) However, this is what was kindly suggested in this famous jubilee brochure, under a anonymous pen that I think I recognize. See on this subject the note “L’Eloge Funèbre (2)”, which follows “L’Eloge Funeral (1)” cited in the previous note by b. from p.

he was not divided in his work, what are Deligne's means, and what he can do in a day, in a week, or in a month, when he wants to get started. But no one, not even Deligne, can in the long run carry out a fruitful work, a work of profound renewal, while looking down on the very objects that it is ultimately a matter of probing, as well as language and a whole arsenal of tools which were developed for this purpose by such a predecessor (and with his assistance what is more, among many others who put their hands to the work...) (59).

I am also thinking of the “Deligne—Mumford” compactification of the modular multiplicity $Mg, \tilde{y}$ (on $\text{Spec}Z$), for connected smooth algebraic curves of genus g with $\tilde{y}$ marked points. They were introduced (*) during the problem of proving the connectivity of the modular spaces $Mg, \tilde{y}$ in all characteristics, by a specialization argument starting from the zero characteristic. These are the most fascinating objects I have encountered in mathematics (472). $_{g, n}$ seem to me (with the group $SI(2)$) the most beautiful, encountered in mathematics (472). Their mere existence already, with such perfect properties, appears to me as a sort of miracle (perfectly understood what's more), of incomparably greater significance than the fact of connectivity that it is. was trying to demonstrate. For me, they contain in quintessence what is most essential in algebraic geometry, namely the totality (more or less) of all algebraic curves (on all imaginable basic bodies), which are precisely the building blocks of ultimate construction of all other algebraic varieties. But the kind of objects in question, “proper and smooth multiplicities on $\text{Spec}(Z)$ ”, still escape the “admitted” categories, that is to say those which we are disposed to (for reasons that we are careful not to examine) to kindly “admit”. Ordinary mortals talk about it at most in allusions, and with an air of apologizing for seeming to still be making “general nonsense”, while we were certainly careful to say “stack” or “field”, so as not to pronounce the taboo word “topos” or “multiplicity”. This is undoubtedly the reason why these unique gems have not been studied or used (as far as I know) since their introduction over ten years ago, except by myself in unpublished seminar notes . Instead, we continue to work either with “rough” varieties of modules, or with finished coverings of modular multiplicities which have the good fortune of being real diagrams - both of which, however, are not only sort of relatively faint and lame shadows of these perfect jewels from which they come, and which remain practically banished...

Deligne's four works on the Ramanuyam conjecture, on the structures of

(*) In Pub. Math. 36, 1969, p. 75–110. See comments in note no. 631 .

Hodge mixed, on the compactification of modular multiplicities (in collaboration with Mumford), and on Weil's conjectures, each constitute a renewal of the knowledge that we have of algebraic varieties, and thereby, a new point of departure. go. This fundamental work followed over a period of several years (1968–73).

For almost ten years, however, these major milestones have not been the springboards for a new launch into the glimpsed and the unknown, and the means for a renewal on a larger scale. They led to a situation of gloomy stagnation (473). It is certainly not that the “means” which were there ten years ago, in one and the other, have disappeared as if by magic; nor that the beauty of things within our reach has suddenly vanished. But it is not enough for the world to be beautiful - we must also deign to rejoice in it...

(471) I am thinking here of the promising start by Contou-Carrère, five or six years ago, of a theory of relative local Jacobians, their links with global Jacobians (called “generalized Jacobians”) for diagrams in smooth curves and not necessarily proper on any diagram, and with Cartier's theory of commutative formal groups and typical curves. Apart from an encouraging reaction by Cartier, the reception to Contou-Carrère's first note, by those who were best placed to appreciate it, was so fresh that the author refrained from ever publishing the second that he kept in reserve, and hastened to change the subject (without avoiding other mishaps) (*).

I had suggested to him the theme of local and global Jacobians, as a first step towards a program which dates back to the end of the fifties, oriented in particular towards a theory of an “adelic” dualizing complex in any dimension, formed with Jacobians- local rings (for local rings of arbitrary dimension), in analogy with the residual complex of a Noetherian scheme (formed with the dualizing modules of all its local rings). This part of my cohomological duality program found itself (with others) somewhat relegated to oblivion during the sixties, due to the influx of other tasks which then appeared more urgent.

(472) To tell the truth, it is the “Teichmüller tower” in which the family of all these multiplicities is inserted, and the discrete or profinite paradigm of this tower in terms of fundamental groupoids, which constitutes the object unique, the richest, the most fascinating that I have encountered

(*) (June 8) See subnote (951) to note “Coffin 3 — or the Jacobians a little too relative”, n° 95.

in mathematics. The group $Sl(2)$, with the “arithmetic” structure of the profinite compactified of $Sl(2, \mathbb{Z})$ (consisting of the operation of the Galois group $Gal(\overline{\mathbb{Q}}/\mathbb{Q})$ on it), can be considered as the main building stone for the “profinite version” of this tower. See the indications on this subject in “Outline of a Program” (while waiting for the volume(s) of Mathematical Reflections which will be devoted to this theme).

(473) This observation of a “gloomy stagnation” is not a carefully considered opinion, of someone who would be well aware of the main episodes, in the last ten years, around the cohomology of schemas and algebraic varieties . It is a simple overall impression of an “outsider”, which I gained, among other things, from conversations and correspondence with Illusie, Verdier, Mebkhout, in 1982 and 1983. There would surely be reason to qualify this impression. in many ways. Thus, the work “Weil Conjectures II” by Deligne, published in 1980, represents substantial new progress, if not a surprise in terms of the main result. It appears that there has also been progress in crystal cohomology of $\text{car. } p > 0$, without counting the “rush” around intersection cohomology, which ended up making some people return (reluctantly) to the language of derived categories, or even make them remember long-repudiated authorships...

III. Fashion — or the Lives of Illustrious Men

(48) As is well known, the theory of derived categories is due to JL Verdier. Before he undertook the foundational work that I had proposed to him, I had limited myself to working with the categories derived heuristically, with a provisional definition of these categories (which later turned out to be the correct one). , and with an equally pro-visory intuition of their essential internal structure (intuition which turned out to be technically false in the intended context, the “cone mapping” not depending functionally on the arrow in a derived category which is supposed to define it, and which defines it only up to non-unique isomorphism). The theory of duality of coherent sheaves (ie the formalism of “six vari-ances” in the coherent framework) which I had developed towards the end of the fifties (*), only took on its full meaning as it modulated a work of foundations on the notion of derived category, which was made by Verdier later.

(*) An operation Rf (proper support cohomology) was still missing for a non-proper morphism, which was introduced six or seven years later by Deligne, thanks to his introduction of the context of

The text of Verdier's thesis (completed only in 1967), of around twenty pages, seems to me the best introduction to the language of derived categories written to date, situating this language in the context of its essential uses (several of which are due to Verdier himself). It was only the introduction to a work that was being written, and which ended up being written later. I can flatter myself that I am, if not the only one, at least one of the very rare people who can testify to having held in their hands this work, which is supposed to establish the validity of the title of Doctor of Sciences awarded to his author on the faith of the only introduction! This work is (or was - I don't know if a copy still exists somewhere...) the only text, to date, which presents systematic foundations of homological algebra according to the point of view of the derived categories.

Perhaps I am the only one to regret that neither the introductory text nor the foundations themselves have been published(*), so that the essential technical knowledge for the use of the language of derived categories is scattered in three different places in the literature(**). This absence of a systematic reference text, of a weight comparable to the classic book by Cartan-Eilenberg, appears to me to be both a cause and a typical sign of the disaffection which struck the formalism of the derived categories after my departure from the mathematical scene in 1970.

It is true that as early as 1968 it had already proven (during the needs of a co-homological theory of traces, developed in SGA 5) that the notion of derived category in its primitive form, and the corresponding notion of triangulated category, were insufficient for certain needs, and that more in-depth foundational work remained to be done. A useful, but still modest, step in this direction was taken (especially for the purposes of the trace cause) by Illusie, with the introduction of "filtered derived categories" into his thesis. It would seem that my departure in 1970 was the signal for a sudden and definitive cessation of all reflection on the foundations of homological algebra, as also on those, intimately

coherent promodules, which appears to me to be an important new idea (successfully taken up in his theory of stratified promodules).

(*) (May 25) After these lines were written, I discovered that the first embryo of Verdier's thesis, dating from 1963 (four years before the defense) ended up being published in 1967. See this subject notes "Le compère" and "Thesis on credit and all-risk insurance", n° 63 and 81.

(**) These places are: Hartshorne's well-known seminar on coherent duality, containing the only published part to date of the duality theory that I had developed in the second half of the 1950s; one or two presentations by Deligne in SGA 4; one or two chapters of Illusie's voluminous thesis.

linked, of a theory of motives (481). However, as for the former, all the essential ideas for major foundations seemed acquired in the years before my departure (482). (Including the key idea of “derivative”, or “machine for manufacturing derived categories”, which seems to be the richest common object, underlying the triangulated categories that we have encountered until present; idea which will finally be developed somewhat in a non-additive framework, almost twenty years later, in a chapter of volume 2 of the *Pour-suite des Champs*.) In addition, a large part of the foundation work to be done had been already done by Verdier, Hartshorne, Deligne, Illusie, work which could be used as is for a synthesis taking up the ideas acquired in the broader perspective of the derivatives.

It is true that this disaffection in the past fifteen years (*) for the very notion of a derived category, which for some has been akin to the disavowal of a past, goes in the direction of a certain fashion, which affects to look with disdain any reflection of foundations, however urgent it may be(**). On the other hand, it is very clear to me that the development of scalable cohomology, which “everyone” uses today without looking twice (if only implicitly via the late Weil conjectures ...) could not have been done without the conceptual baggage represented by the derived categories, the six operations, and the language of sites and topos (first developed for precisely this purpose), not to mention SGA 1 and SGA 2 And it is just as clear that the stagnation that we can see today in the cohomological theory of algebraic varieties could not have appeared and even less taken hold, if some of those who were my students had known, during these years, following their healthy mathematician instinct rather than a fashion that they were among the first to establish, and which for a long time and with their support has acquired the force of law.

(481) The same thing can also be said (with certain reservations) of my entire program of foundations of algebraic geometry, of which only a small part was completed: it stopped abruptly with my departure. The judgment struck me especially in the duality program, which I considered particularly juicy. Zoghman Mebkhout's work, continued against all odds, is nevertheless in line with this program (renewed by the contribution of unforeseen ideas). The same is true of the work of Carlos Contou-Carrère

(*) (May 24) there is reason to qualify these “fifteen years gone by” — see on this subject note n° 473, as well as more detailed note “Thesis on credit and all-risk insurance”, n° 81.

(**) (May 25) For a reflection on the forces at work in the appearance and persistence of this fashion, see the note “The Gravedigger — or the entire Congregation”, n° 97.

of 1976 (which was discussed in note (471)) — work which he had the prudence to suspend sine die. There has also been work on duality in fppf cohomology of surfaces (Milne). That's all I knew about.

It is true that I never thought of writing an outline of the long-term work program which had emerged for me during the years between 1955 and 1970, as I did for the last twelve years, with the 'Outline of a Program. The reason is simply, I believe, that no particular opportunity has ever presented itself (like now my application for entry to the CNRS) to motivate such exhibition work. We will find in the letters to Larry Breen (from 1975) which are reproduced in the appendix to Chap I of the History of Models (Mathematical Reflections 2) some indications on certain theories (of dual-ity in particular) on my agenda before 1970, theories which are still waiting for arms to enter the common heritage.

(482) The same thing is also true for the theory of motives, except that it is undoubtedly destined to remain conjectural for a certain time.

(⁴⁸) While it is customary to call the key theorems of a theory by the names of those who accomplished the work of extracting and establishing them, it would seem that the name of Zoghman Mebkhout was deemed unworthy of this fundamental theorem, the culmination of four years of obstinate and solitary work (1975–79), going against the fashion of the day and the disdain of his elders. The day when the significance of the theorem could no longer be ignored, they took pleasure in calling it “the Riemann—Hilbert theorem”, and I trust them (even though Riemann nor Hilbert would surely have asked for so much). ...) that they had excellent reasons for doing so. After all (once the feeling of a need - that of an understanding of the precise relationships between general discrete coefficients and continuous coefficients, appeared against the general indifference, it was refined and clarified by delicate and patient work, that after successive stages the correct statement has finally been identified, that it is written in black and white and proven, and when finally this theorem, fruit of solitude, has proven itself where one least expected it — after all that) this theorem appears so obvious (not to say “trivial”, for those who “would have known how to demonstrate it”...) that there is really nothing to worry about. clutter the memory with the name of a vague stranger on duty!

Encouraged by this precedent, I propose to henceforth call any truly natural and fundamental theorem “Adam and Eve theorem” to a theory, or even to go back further.

again and to give honor where honor is due, by simply calling it “theorem of the good Lord” (*).

As far as I know, apart from myself, Deligne was the only one before Mebkhout to feel the interest in understanding the relationships between discrete coefficients and continuous coefficients in a broader framework than that of modules stratified, so as to be able to interpret any “constructible” coefficients in “continuous” terms. The first attempt in this direction was the subject of a seminar (which remained unpublished) by Deligne at IHES in 1968 or 69, where he introduced the point of view of “stratified promodules” and gave a comparison theorem (on the body of complexes) for the transcendent discrete cohomology and the associated De Rham type cohomology, which retains meaning for finite type schemes, on any basic body of car. nothing. (Apparently, he was not yet aware at that time of the remarkable results of his distant predecessors Riemann and Hilbert...) Even more than Verdier (*) or Berthelot(**), Deligne was therefore particularly well placed to be able to appreciate all the interest in the direction in which Mebkhout's research began in 1975, and subsequently the interest in Mebkhout's results and in particular in the “good God theorem”, which gives a more delicate and deeper understanding of the coefficients discrete in terms of continuous coefficients, than that which he himself had identified. This did not prevent Mebkhout from having to continue his work in painful moral isolation, and from the credit due to him (all the more, I would say) for his pioneering work still being evaded.

(*) I have not had in my life as a mathematician this pleasure of inspiring, or even being able to encourage, in a student a thesis containing a “theorem of the good Lord” — at least not of such depth and 'a comparable scope.

(*) It would seem that Verdier, as official thesis director for Zoghman Mebkhout's thesis (and who as such even “granted him some discussions”), was the main person concerned (apart from Mebkhout himself) in the evasion which took place around the authorship of this fundamental theorem, and the credit which goes to its “student” in the renewal which begins in the cohomological theory of algebraic varieties by the point of view of $\mathcal{D}$ -modules developed by Mebkhout. However, I am not aware that he was more moved

than Deligne. (**) (May 25) In writing these lines, I refrained (with some hesitation) from including the name of my friend Luc Illusie in this list of my students who would have been “best placed” to provide Zoghman Mebkhout the encouragement that should have gone without saying. I was not attentive then to a certain unease within me, which could have taught me that I was giving a little help in favor of someone I am fond of, to pretend to relieve him of a responsibility that falls to him just like my other “cohomologist students”.

today, five years later(**).

(49) Verification made (in Publications Mathématiques 35, 1968), I note that towards the end of the article “Lefschetz theorem and criteria for degeneracy of spectral sequences”, there is an allusion in three lines to “considerations of weight ” which had led me to conjecture (in a slightly less general form) the main result of the work. I doubt that this sybilline allusion could be useful to anyone, nor understood at the time by anyone other than Serre or me, who were already aware of it (*).

I point out in this regard that a very precise “yoga of weights”, including for the behavior of weights for operations such as $Ri f \tilde{y}$ and $Ri f$ Deligne) from that time, in the last sixties, in the in the... was well known to me (so also to wake of Weil's conjectures. Part of this yoga is finally established (in the context of bundles of $-adic$ coefficients, while waiting for it to be established in the more natural framework of patterns) in the work of Deligne “Conjectures de Weil II” (Publications Mathématiques 1980). Unless I am mistaken, during the approximately twelve years which elapsed between the two moments(**), there was no trace in the literature of a presentation, however succinct and partial it may be, of the yoga of weights (still entirely conjectural), which throughout this time has remained the exclusive privilege of a few (two or three?) initiates(**). Now this yoga constitutes a first essential key for an understanding of the “arithmetic” properties of the cohomology of al-gebraic varieties, therefore both a means of recognizing oneself in a given situation and of making predictions with a reliability which had never seen herself at fault, and at the same time

(**) (May 25) In fact, this evasion is primarily the work of Deligne and Verdier themselves.

On this subject, see the note “Iniquity — or the meaning of a return”, n° 75.

(*) (April 29) For a more careful examination of this article, instructive in more than one way, see the note “Eviction” (n° 63). (**) (April 19) I note on a list

of Deligne's publications that I have just received and read with interest, that there is talk of “weights” as early as 1974 in a communication by Deligne to the Vancouver Congress — that therefore six years of “secret around weights” instead of twelve. This secret, however, appears to me to be inseparable from the similar secrecy around the motives (during the twelve years 1970–1982). The meaning of this secret has come to light in a new light during today's reflection, in the long double-note which follows n° 51–52).

(**) (May 25) It would seem, according to all the elements of information that emerged during the reflection, that these “two or three initiates” limited themselves to the one and only Deligne, who seems to have taken great care in reserving the exclusive benefit of the possession of this yoga which he got from me, until 1974 (see previous b. de p. note), when the moment was ripe to be able to present it as ideas of his raw, without reference either to me or to Serre (see the notes nos

⁷⁸ 1, ⁷⁸ 2).

and thereby it represented one of the most urgent and fascinating tasks posed in the cohomological theory of algebraic varieties. The fact that this yoga remained practically ignored until the moment it was finally established (in certain important aspects at least), seems to me a particularly striking example of the role of blocking information that these people often play. even who by their privileged situation and their functions are supposed to ensure its wide dissemination (*).

(50) My first experiences in this direction were the unexpected fruits of my unsuccessful efforts to try to publish the thesis of Yves Ladegaillerie on the theorems of isotropy on surfaces - work certainly as good as any of the eleven doctoral works of state ("before 1970", it is true!) for which I had acted as "boss". If I remember correctly, these efforts continued for a year or more, and involved many of my former friends (not including one of my former students, of course)(**). The main episodes still seem to me today like so many vaudeville episodes!

It was also my first encounter with a certain new spirit and new morals (which had become common in the circle of my friends of yesteryear), to which I had already had occasion to allude here and there during my reflection. It was during that year (in 1976) that I learned for the first time, but not for the last, that it is today considered a lack of seriousness (at least on the part of of the first comer...) to demonstrate indeed delicate things that everyone uses and that predecessors were always content to admit (in this case, the non-existence of wild phenomena in surface topology)(***). Or to demonstrate a result which includes as a partial case-

(*) See also on this subject sections 32 and 33, "The ethics of mathematicians" and "The note — or the new ethics (1)", as well as the two notes which relate to it, "Ethical consensus and control of information" and "The snobbery of young people, or the defenders of purity", nŷ s 25, 27.

(**) See on this subject the note "coffin 2 — or the cut-outs", nŷ 94.

(***) See also on this subject the episode "the note — or the new ethics" (section 33). This famous "note" had precisely the mistake of explaining notions and statements which had until then been left vague, and which nevertheless were implicitly used by me to establish results which bear my name and which everyone uses. shamelessly for almost twenty-five years (something that the two illustrious colleagues knew perfectly well).

(June 8) See for more details the note "Coffin 4 — or the topos without flowers or wreaths" (nŷ 96). The "results that bear my name" are results on the generation and finished presentation of certain groups

culiers or corollaries several known deep theorems (which obviously shows that the so-called new result can only be a special case or an easy consequence of the known results). Or to take the trouble only, in the statement of a result or in the description of a situation in terms of another, to carefully formulate the natural hypotheses (a sign of a regrettable bombing), rather than to limit it to some specific case to the taste of the high-flying person who expresses his opinion. (Last year again, I saw Contou-Carrère criticized for not having limited himself in his thesis to placing himself on a basic body instead of a general schema - while still granting him the mitigating circumstance that it was surely at the insistence of his boss that he had to resolve to do so. The one who expressed himself thus was nevertheless sufficiently in the know to know that even limiting himself to the body of complexes, the necessities of the demonstration force the hand to introduce general basic diagrams...)

The errors of a certain fashion today go so far as to disgrace not only careful demonstrations (or even demonstrations, period), but often even formal statements and definitions. At the price of paper and the long-suffering of the overfed reader, there will soon be no question of burdening oneself with such an expensive luxury! Extrapolating current trends, we must be able to predict the moment when there will no longer be a question in a publication of explaining definitions or statements, which we will henceforth be content to name with code words, leaving it to the tireless and brilliant reader the care of filling in the blanks in accordance with one's own lights. The task of the referee will be made even easier, because he will only need to look in the "Who is Who" directory if the author is known to be credible (in any case no one could contradict the blanks and dotted lines which make up the brilliant article), or on the contrary an unmentionable stranger who will be (as is already the case today and for a long time) automatically ejected...

fundamental global and local profinis, "demonstrated" among others in SGA 1 by descent techniques which remain heuristic for lack of a careful theoretical justification, accomplished in the (apparently "unpublishable") work of Olivier Leroy, on the theorems of Van Kampen type for the fundamental groups of topos.

B. STONE AND THE PATTERNS

IV. The reasons (burial of a birth)

(51) (April 19) Since these lines (which end the note “My orphans”, n° 46) were written, less than a month ago, I have noticed that they are a little late on the events ! I have just received “Hodge Cycles, Motives and Shimura Varieties” (LN 900), by Pierre Deligne, James S. Milne, Arthur Ogus and Kuang-Yen Shih, which Deligne was kind enough to send to me, with additional a list of his publications. This collection of six texts, published in 1982, constitutes an interesting new fact since 1970, by the mention of the motifs in the title and a presence of this notion in the text, however modest it still may be, especially via the notion of “group of Galois motivic”. Of course, we are still very far from the overall picture of a theory of patterns, which for fifteen or twenty years has been awaiting the bold mathematician who is willing to paint it, vast enough to serve as inspiration, Ariadne's thread and of horizon line for one or more generations of arithmetic geometers, who will have the privilege of establishing its validity (or in any case of discovering the final word on the reality of the patterns...) (53).

It is also since 1982 (*), it would seem, that the tide of fashion has begun to turn more or less towards derived categories; Zoghman Mebkhout (perhaps in a somewhat euphoric surge) sees them already on the verge of “invading all areas of mathematics”.

If their usefulness, which simple mathematical instinct (for someone well informed) made very obvious from the beginning of the sixties, is just beginning to be admitted now, it is (it seems to me) above all thanks to the solitary efforts of Mebkhout, who for seven years struggled with the thankless task of cleaning up the plaster, with the courage of someone who trusts his sole instinct, against a tyrannical fashion...

Remarkably, when reading this first publication which marks (twelve years after my departure from the mathematical scene) a modest re-entry of the notion of pattern into the areopagus of accepted mathematical notions, nothing could make the uninformed reader suspect that my modest no one has been associated in any way with the birth of this long taboo notion, and with the deployment of a rich and precise “yoga”, which (in a very fragmentary form) appears there as if coming out of nothing, without allusion to any paternity (511).

(*) (May 25) I delay again, for a year this time — the turning point took place in June 1981 with the Colloquium of Luminy, see the note “Iniquity — or the meaning of a return”, n° 75.

When barely three weeks ago, I expanded in a page or two on the yoga of patterns, as one of my “orphans” and who was close to my heart more than any other, I must have been well at side of the plate! No doubt I dreamed, when I seemed to remember years of gestation of a vision, tenuous and elusive at first, and becoming richer and more precise over the months and years, in an obstinate effort to trying to grasp the common “motif”, the common quintessence, of which the numerous cohomological theories known at the time (54) were so many different incarnations, each speaking to us in its own language about the nature of the “motif” of which it was one directly tangible manifestations. No doubt I am still dreaming, remembering the strong impression that a certain intuition of Serre had made on me, who had been led to see a group of Profini Galois, an object therefore which seemed of an essentially discrete nature (or, at least, being reduced tautologically to simple systems of finite groups), as giving rise to an immense projective system of analytical adic groups, or even algebraic groups on $\mathbb{Q}$ (by passing to suitable algebraic envelopes), which even had a tend to be reductive - with the introduction of the whole arsenal of intuitions and methods (à la Lie) of the analytical and algebraic groups. This construction had a meaning for any prime number, I felt (or I dream that I felt...) that there was a mystery to be probed, on the relation of these algebraic groups for different prime numbers; that they must all come from the same projective system of algebraic groups on the only natural common subbody to all its basic bodies, namely the body $\mathbb{Q}$, the “absolute” body with zero characteristics. And since I like to dream, I continue to dream that I remember entering into this glimpsed mystery, through a work which surely was only a dream since I was not “demonstrating”^{And} anything; that I ended up understanding how the notion of pattern provided the key to an understanding of this mystery - how, by the sole fact of the presence of a category (here that of “smooth” patterns on a diagram of given base, for example the patterns on a given base field), having internal structures similar to those found in the category of linear representations of an algebraic pro-group on a field k (the charm of the notion of algebraic pro-group having been revealed to me previously by Serre as well), we can indeed reconstitute such a progroup (as soon as we have a suitable “fiber functor”), and to interpret the “abstract” category ” as the category of its linear representations.

This approach towards a “motivic Galois theory” was inspired by the approach that I had found, years before, to describe the fundamental group of a space

topological or a diagram (or even any topos - but here I feel that I am going hurt delicate ears that “topos do not amuse”...), in terms of the category of coverings spread over the “space” envisaged, and the fiber functors thereon. And the language even “motivic Galois groups” (which I could just as easily have called motivic “fundamental groups”, the two kinds of intuitions being for me the same thing, since the end of the fifties...), and that of “fiber functors” (which correspond very exactly to the “manifest incarnations” discussed above, namely to the different “cohomological theories” that apply to a given category of patterns) — this language was made to express the deep nature of these groups, and clearly suggest their links immediate with Galois groups and with ordinary fundamental groups.

I still remember the pleasure and wonder in this game with functors fibers, and with the torsors under the Galois groups which pass from one to the other by “twisting”, to find in a particularly concrete and fascinating situation everything the arsenal of notions of non-commutative cohomology developed in Giraud's book, with the sheaf of fiber functors (here above the flat topos, or better, the fpqc topos of $\mathbf{Q}$ — non-trivial and interesting topos if ever there was one!), with the “link” (in groups or algebraic progroups) which links this sheaf, and the avatars of this link, being realized by groups or various algebraic progroups, corresponding to the different “sections” of the sheaf, it is to say to the various cohomological functors. The different complex points (for example) of a zero characteristic diagram gave birth (via the corresponding Hodge functors) to as many sections of the sheaf, and to torsors passing from one to the other, these torsors and the progroups operating on them being provided with algebraic-geometric structures remarkable, expressing the specific structures of Hodge cohomology — but there I anticipate another aspect of the dream of patterns... It was the time when those who make fashion today had not yet declared that topos, sheaves and the like did not amuse them and that it was therefore bullshit to talk about it (that's not what would have bothered me moreover to recognize topos and sheaves where they are...). And now twelve years have yet passed and the same people pretend to discover and teach that the sheaves (otherwise again the topos), it does indeed have something to do with the cohomology of al-gebraic varieties, or even with the periods of abelian integrals...

I could evoke here the dream of another memory (or the memory of another dream...) around the dream of the patterns, also born from a “strong impression” (definitely I am in the middle of

subjectivity!) that certain comments by Serre made to me on a certain “philosophy” behind Weil’s conjectures. Their translation into cohomological terms, for p -adic coefficients with variable p , made one suspect remarkable structures on the corresponding cohomologies - the structure of “filtration by weights” (*). Surely the “pattern” common to the different p -adic cohomologies must have been the ultimate support of this essential arithmetic structure, which suddenly took on a geometric aspect, that of a remarkable structure on the geometric object “pattern”. It is certainly still deceiving me to speak of a “work” (while of course it was still a question of guessing games, nothing more and nothing less) when it was a matter of “guessing” (with as the only guide that of the interior coherence of a vision which was formed, with the help of scattered elements known or conjectured here and there...), on the specific structure of the different cohomological “avatars” of a motif, how the filtration of weights(**) was translated, starting with Hodge’s avatar (at a time when the Hodge-Deligne theory had not yet seen the light of day, and for good reason... (***)).

This allowed me (in a dream) to see Tate’s conjecture on algebraic cycles (here is yet another third “strong impression” which inspired the Dreamer in his dream of patterns!) and that of Hodge (55), and to draw out two or three conjectures from the same water, about which I spoke to some who must have forgotten them because I never heard of them again, any more than “standard conjectures”. In any case, these were only conjectures (and, moreover, not published...). One of these did not concern a particular cohomological theory, but gave a direct interpretation of the filtration of weights on the motivic cohomology of a non-singular projective variety on a body, in terms of the geometric filtration of this variety itself. -even by closed subsets of given codimension (the codimension playing the role of “weight”) (*).

And there was also the work (I should use quotation marks for “work”, and yet I cannot bring myself to do it!) of “guessing” the behavior of the weights by the six operations

(*) (January 24, 1985) For a correction of this distorted memory, see note n° 164 (I 4), and the subnote giving details on the origins of “yoga of weights”. 1641, (**)

(February 28, 1985) There is a slight confusion in my mind here. It is, in fact, filtration closely linked by the “levels”.

(***) It was at a time when young Deligne had probably not yet heard the word “schema” in a mathematical context, nor the word “cohomology”. (He became acquainted with these notions through my contact, from 1965.)

(*) (February 28, 1985) It is in fact filtration by “levels” that is involved (see note from bottom of previous page).

(lost body and well since then...). Here again, I never had the impression of inventing, but always of discovering — or rather of listening to what things were telling me, when I took the trouble to listen to them with pen in hand. What they said was of peremptory precision, which could not deceive.

Then there was a third “dream-motives”, which was like the marriage of the two previous dreams — when it came to interpreting, in terms of structures on the motivic Galois groups and on the torsors under its groups which serve to “twist” a fiber functor to obtain (canonically) any other fiber functor(**), the different additional structures with which the category of patterns is provided, and one of the very first of which is precisely that of the filtration by weights. I seem to remember that there less than ever it was a question of riddles, but rather of mathematical translations in due form. These were so many new “exercises” on the linear representations of algebraic groups, which I did with great pleasure for days and weeks, feeling that I was getting closer and closer to a mystery. which has fascinated me for years! Perhaps the most subtle notion that had to be understood and formulated in terms of representations was that of “polarization” of a motif, drawing inspiration from Hodge's theory and trying to decipher it. which retained meaning in the motivic context. This was a reflection which must have been made around the time of my reflection on a formulation of the “standard conjectures”, both inspired by the idea of Serre (always him!) of an analogue “Kählerian” of Weil's conjectures.

In such a situation, when things themselves whisper to us what their hidden nature is and by what means we can most delicately and most faithfully express it, while yet many essential facts seem beyond our immediate reach. - based on a demonstration, simple instinct tells us to simply write in black and white what things insistently tell us, and all the more clearly as we take the trouble to write under their dictation! There is no need to worry about demonstrations or complete constructions - burdening oneself with such requirements at this stage of the work would amount to denying oneself access to the most delicate, most essential stage of a vast-scale work of discovery — that of the birth of a vision, taking shape and substance out of apparent nothingness. The simple fact of writing, of naming, of describing — even if only

(**) Just like the fundamental groups $\pi_1(x)$, $\pi_1(y)$ of some “space” are reduced from each other by “twisting” by the twister $\pi_1(x, y)$ of the classes of paths from x to y ...

describing elusive intuitions or simple “suspicions” reluctant to take shape — has a creative power. This is the instrument above all of the passion for knowledge, when it invests itself in things that the intellect can apprehend. In the process of discovery in these things, this work is the creative stage among all, which always precedes the demonstration and gives us the means - or to put it better, without which the question of “demonstrating” something does not even arise, before anything that concerns the essential has yet been formulated and seen. By the sole virtue of an effort of formulation, what was formless takes shape, lends itself to examination, making what is visibly false settle from what is possible, and above all from that which accords so perfectly with the set of things known, or guessed, that it in turn becomes a tangible and reliable element of the vision being born. This is enriched and clarified as the formulation work progresses. Only ten things suspected, none of which (Hodge's conjecture, let's say) leads to conviction, but which mutually illuminate and complement each other and seem to contribute to the same harmony which is still mysterious, acquire in this harmony the force of vision. Even though all ten would ultimately prove false, the work that led to this provisional vision was not done in vain, and the harmony it gave us a glimpse of and allowed us to penetrate so little is not an illusion, but a reality, calling us to know it.

Only through this work have we been able to come into intimate contact with this reality, this hidden and perfect harmony. When we know that things are right to be what they are, that our vocation is to know them, not to dominate them, then the day when an error emerges is a day of exultation (56) — just as much as the day when a demonstration teaches us beyond all doubt that such and such thing that we imagined was indeed the faithful and true expression of reality itself.

In either case, such a discovery comes as a reward for work, and could not have taken place without it. But while it would only come at the end of years of effort, or even if we never learn the final word, reserved for others after us, work is its own reward, rich in each moment of what this very moment reveals to us.

(511) (June 5) Zoghman Mebkhout has just drawn my attention to a mention of “Grothendieck motifs” made on page 261 of the cited volume, in an article by Deligne which “resumes and completes a letter to Langlands”. We read: “it will not be about Grothendieck's patterns, as he defined them in terms of algebraic cycles, but about patterns

absolute Hodge cycles, similarly defined in terms of absolute Hodge cycles". The "Grothendieck motifs" (not underlined) are named here, not as a source of inspiration, but to stand out from them and insist that it is something else (which we take care to underline). This distancing is all the more remarkable since the validity of Hodge's conjecture (a conjecture known to Deligne, I suppose, as to any reader of his article-letter, starting with its original recipient Langlands) would imply that the two concepts are identical!!

Of course, from 1964 when I had developed the notion of motivic Galois group, it was well known to me that a notion of "Hodge motif" could be developed on the same model, with a corresponding notion of "group of Galois—Hodge motivic", which was introduced independently by Tate (I cannot say whether it was before or after) and then received the group name of Hodge—Tate (associated with a Hodge structure). The gross fraud (but which does not seem to bother anyone, coming from such a prestigious character) consists of purely and simply evading the authorship of a new and profound notion, that of motive, and of a whole rich web of intuitions that I had developed around this notion, under the paltry pretext that the technical approach taken towards this notion (via absolute Hodge cycles, instead of algebraic cycles) is (perhaps, if the Hodge conjecture is false) different from the one I had (very provisionally) adopted. This yoga, which I had developed over a period of almost ten years, has been the main source of inspiration in Deligne's work since its beginnings in 1968. Its fertility and its power as a tool of discovery were very clear well before my departure in 1970, and its identity is independent of any technical approach followed to establish the validity of this or that limited part of this yoga. Deligne had the merit of identifying two such approaches, independently of any conjecture. On the other hand, he did not have the honesty to name his source of inspiration, striving since 1968 to hide it from everyone's eyes to reserve the exclusive benefit of it, while waiting to claim (tacitly) the credit in 1982.

(52) Coming back to the dream of the patterns, I seem to remember also that I had dreamed it out loud. Certainly, dream work is by nature solitary work - but the adventures of this tenacious work which continued for years, on the sidelines of a vast work of writing foundations which absorbed the majority of my time - these adventures had a day-to-day witness, much closer than Serre, who limited himself to following things from afar...(*).

About this day-to-day confidant, I wrote in my retrospective that he had “acted a bit like a student” around the mid-sixties, and that I had “told him what little I knew in algebraic geometry”. I could have added that I told him even what I did not “know” in the common sense of the term — these mathematical “dreams” (on the theme of patterns as on others) which always found an attentive ear in him. and an alert mind, like me, eager to understand.

It is true that when I wrote that Pierre Deligne had been able to appear “a bit like a student”, this is still a completely subjective impression (57), which is not corroborated (to my knowledge) by any written trace or at least printed, which could make anyone suspect that Deligne could have learned something through my mouth - whereas it is a pleasure for me here to remember that I never spoke mathematics with him without learning something. (And even when I stopped talking about mathematics with him, I continued to learn things from him that were more difficult and perhaps more important, including on this very day when I am writing these lines...).

Having recently been informed by a third person, who had guessed (one wonders how!) that the thing could perhaps interest me, of the existence of a text by Deligne and others where it would be a question of motives or at least “Tannaki-*enne* categories”, and having spoken to Deligne, he was sincerely surprised that I could be interested in this kind of thing. Looking through the copy that he kindly sent me, however, I can see that his surprise was perfectly justified.

Obviously, my person is entirely foreign to the subject in question. At most, it is alluded to in a passing sentence, in the introduction, that certain “standard conjectures” (which I had made at the time, one wonders why) would have a consequence for the structure of the category of patterns on a body... The reader curious to know more would be hard pressed, because throughout this book he will not find any precision or reference on these conjectures, of which there is no longer any question; nor mention of the one and only published text where I explain the construction of a category of patterns on a body in terms of standard conjectures; nor of the only other text published before 1970 where there is a question of motifs, due to Demazure (in a Bourbaki Seminar, if I remember correctly), which followed my

(*) (May 25) The beginnings of my reflection on motives, however, took place before the appearance of Deligne. My handwritten notes on Galois motivic theory are dated 1964.

principle of ad hoc construction, from a slightly different perspective...(*)

Still Neantro Saavedra, who had the chance to be one of my “students before 1970”, was duly cited. He had done a thesis with me on what I believe I called “rigid tensor categories”, and which he called “Tannakian categories”. We are wondering again by what miraculous chance Saavedra was able to foresee the needs of the theory of motifs from Deligne, which would blossom ten years later! In fact, in his thesis he does very exactly the work which technically constitutes the key to a motivic Galois theory, all as JL Verdier's thesis was in principle the work which technically constitutes the key for a formalism of the six operations in cohomology. A difference (among others) in Saavedra's honor is that he took the trouble to publish his work; he hadn't had, he is true, the pen of Hartshorne, Deligne and Illusie united to exempt him from such formality. However, ten years later, Saavedra's thesis is reproduced ab ovo and practically in toto in the remarkable collection, this time from the pens of Deligne and Milne. The thing was perhaps not essential, if it was only a matter of rectifying two particular points of the work of Saavedra (58). But everything has its reason for being, and I believe I discern the reason for which Deligne himself took this trouble (*), quite contrary to his own criteria of requirement pushed to its extreme degree in terms of publication, and that it is known to apply with exemplary rigor when it comes to others...(**)

(*) Verification done, I note that apart from a few pages on standard conjectures (Algebraic Geometry Bombay, 1968, Oxford Univ. Press (1969) pp. 193–199), there is no published mathematical text of mine where it's a question of motives. In the presentation by Demazure (Bourbaki Seminar n° 365, 1969/70), following the presentation by Manin in Russian, mention is made of presentations that I had given at IHES in 1967, and which were (I suppose) constitute a first overall sketch of a vision of the motives. A talk on standard conjectures and their relation to Weil's conjectures, more detailed than the announcement at the Bombay Congress, is made by Kleiman (Algebraic Cycles and the Weil conjectures in Ten exhibited on diagrams the cohomology of Holland, 1968, p. 359–386). I have not been aware of any reflection on the standard conjectures, notably towards a demonstration of them, apart from my own before 1970. The deliberate intention of ignoring these key conjectures (which I said, in my Bombay sketch, that I considered, with the resolution of the singularities of excellent diagrams, as the most important open problem in algebraic geometry), me seems to have a lot to do with the impression of stagnation that the cohomological theory of varieties gives me algebraic, by the echoes that came back to me.

(*) See the reflections on this subject in the note “La slate rase”, n° 67.

(**) (June 8) And even more, when it comes to works that bear the trace of my influence — see about this the episode “The note — or the new ethics”, Section 33.

As for the authorship of the notions and of motivic yoga themselves, for an uninformed reader (and informed readers are starting to become rare and will end up dying a beautiful death...) this authorship cannot do the object of the slightest doubt - without there being any need here to disturb distant Hilberts and Riemanns and even less the good Lord. If the prestigious author, whose beautiful result on absolute Hodge cycles on abelian varieties appears as the starting point, and the birth, in short, of the theory of patterns, does not breathe a word about his authorship, it is there a modesty that honors him and is in perfect agreement with the customs and ethics of the profession, which want us to leave it to others (if necessary) to give honor where honor is visibly due: to the legitimate Father. ..

(53) Touched by the vicissitudes of this orphan, and doubting that another will do the work for which I am apparently the only one, even today, to feel the need and the magnitude, I presume that the “bold mathematician” in question will be none other than myself, once I have completed the Pursuit of the Fields (which I anticipate will keep me busy for about another year).

(54) Since then, two new cohomological theories have appeared for al-gebraic varieties (apart from that of Hodge—Deligne, a natural extension, in the “motivic” spirit, of Hodge’s cohomology), namely the theory of “promodules stratified” by Deligne, and especially that of crystals, “-modules” version à la Sato-Mebkhout, with the new light provided by the theorem of the good Lord (alias Mebkhout) which was discussed previously. This approach towards constructible discrete coefficients is probably called upon to replace Deligne’s earlier version, because it undoubtedly lends itself better to the expression of relations with De Rham cohomology. These new theories do not provide new fiber functors on the category of smooth patterns on a given diagram, but rather (modulate more in-depth foundation work than that which has been done up to now) a way to understand precisely the “Hodge” incarnation of a pattern (not necessarily smooth) on a finite type diagram on the body of complexes, or the “De Rham” incarnation on a finite type diagram on a body of zero characteristic. It is also probable that the (apparently still unwritten) theory of Hodge—Deligne coefficients on a finite type scheme on $\mathbb{C}$, will end up appearing as contained in the (equally unwritten) theory of crystal coefficients à la Sato —Mebkhout (with additional filtration data to boot), or more precisely as a sort

of intersection of this with the theory of discrete constructible $\mathbb{Q}$ -vector coefficients...

As for the elucidation of the relationships between the crystal theory of Mebkhout with that developed as a positive characteristic by Berthelot and others, this is a task felt by Mebkhout even before 1978, in a climate of general indifference, and which seems to me one of the most fascinating that arises immediately for our understanding of “the” cohomology (unique and indivisible, motivic knowledge!) of algebraic varieties.

(55) I was dreaming, but my dream about the relationship between Hodge's patterns and structures made me put my finger, without even intentionally, on an inconsistency in Hodge's “generalized” conjecture as it had been initially formulated by Hodge, and to replace it with a rectified version which for the moment (I would bet) must be neither more nor less false than the “usual” Hodge conjecture on algebraic cycles.

(56) I am thinking in particular, in the context precisely of the cohomology of algebraic varieties, of the discovery by Griffiths of the falsity of an attractive idea that we had had for a long time on algebraic cycles, namely that a cycle homologously equivalent to zero had a multiple that was algebraically equivalent to zero. This discovery of a completely new phenomenon had then struck me enough for me to spend a week of work trying to fully grasp Griffiths' example, by transposing his construction (which was transcendent, on body C) into a construction “as general as possible”, and valid in particular on bodies of any characteristic. The extension was not entirely obvious, involving (if I remember correctly) Leray's spectral sequences and Lefschetz's theorem.

(June 16) This reflection was the opportunity for me to develop, in the etal context, the cohomological theory of “Lefschetz brushes”. My notes on this subject are developed in the SGA 7 II seminar (by P. Deligne and N. Katz) in lectures XVII, XVIII, XX by N. Katz (who takes care to refer to these notes, which he followed from close). In the introduction to the volume by P. Deligne, on the other hand, where it is said that the key results of the volume are the presentations The author is careful not to point out that I have something to do with this “key theory” of Lefschetz's brushes. Reading the introduction gives the impression that I have nothing to do with the themes developed in the volume.

The long SGA 7 seminar, which followed, in 1967–69, the SGA 1 to SGA 6 seminars

developed under my leadership between 1960 and 1967, was carried out jointly by Deligne and me, who kicked off with a systematic theory of groups of evanescent cycles. The writing of the presentations by various volunteers having dragged on, the two volumes of the seminar (SGA 7 I and SGA 7 II) were only published in 1973, by Deligne. While it had been understood at the time of the seminar that it would be presented as a joint seminar, after my departure Deligne told me of his desire (which seemed strange to me) that the seminar be cut in two, one part presented as directed by me, the other by him and Katz. I now perceive there an “operation” which prefigures “operation SGA 41/2”, aiming (among other things) to reveal the entire series of foundations SGA 1 to SGA 7 which in its spirit and its conception was inseparable from my person, just as much as the EGA series of Elements of Algebraic Geometry, like a collection of texts from all sources, where my person would only play an episodic, even superfluous, role. This trend appears very clearly, even brutally, in volume SGA 41/2 and especially in the massacre of the SGA 5 seminar, to which this volume is indissolubly linked. See on this subject, among others, the notes “The tabula rase” and “The massacre”, nos . 67 and 87, and especially “The remains...” (no. 88).

(June 17) The overall conception of the SGA 7 seminar (where I did not distinguish between parts “I” and “II”, and still do not distinguish any yet) was due to me, on the other hand Deligne had brought important contributions (pointed out in my report on the work of Deligne, written in 1969, see n^os 13, 14 of this report), the most crucial for the needs of the seminar being the Picard—Lefschetz formula, proven by an argument for specialization based on the transcendent case already known. Cutting the seminar into two parts was unjustified both mathematically and with regard to the respective contributions — there are substantial contributions from both Deligne and me in each of the two “pieces” of SGA 7.

Of course, I would have been delighted if Deligne had continued the series of SGA foundations that I had inaugurated — which was very far from having reached the end of the race! This “SGA 7 operation” is in no way a continuation, but I feel it as a sort of brutal “saw” (or chainsaw...), putting an end to the SGA series, with a volume that stands out ostensibly of my person, while he is linked to my work and bears its mark just as much as the others. While my person is hidden there as far as possible, the tone towards my work is not yet that of barely disguised contempt for “operation SGA 41/2”,

which represents an even more brutal blow in the unity of the SGA 4 and 5 seminar, and the means and pretext for the complete ransacking of the unpublished part SGA 5 of it, the torn pieces of which are shared equitably between Deligne and Verdier...

(57) I hasten to add that the same remark applies to the other mathematician of great means of whom I ventured to say (in note n° 19) that he had “made a bit of a figure 'student', ten years after Deligne.

(58) This reminds me that Lectures Notes (which had published six or seven doctoral theses “before 1970” done with me) never wanted to publish that of Yves Ladegaillerie, “after 1970” (reason: they do not publish theses!). We can say that on the other hand they published Saavedra's thesis a second time... I had also spoken to Deligne about the beautiful isotopia result of Ladegaillerie which was refused everywhere (with the secret hope of more than he would help to publish it) — but I was not fortunate enough to interest him (reason: his incompetence in surface topology...). Curtain...

(59) (April 20) A few weeks since these lines were written, which note a contradiction and its price, I was surprised to note that the person concerned had already two years ago found a very simple way to “ resolve” said contradiction — it was all about thinking about it! We could call it “the method of early burial” (which the reader can read about in the double note (50)(51), written yesterday, in the fresh emotion of the discovery). I am sorry that the unexpected reappearance of the anticipated deceased on the famous “mathematical stage” (which sometimes definitely resembles a free-for-all...) risks introducing technical complications for the smooth application of this shine. This method!

In a previous note (“ethical consensus - and control of information”, § 6) I felt (still a little confusedly) that the mostⁿ universally accepted rule of ethics in the scientific profession “remained a dead letter” in The absence of respect, by the people who hold control of scientific information, for the right of all scientists to be able to make their ideas and results known. Around this time of reflection I also took the trouble to describe in a fairly detailed manner a specific case where the contempt for this right was blatant to me, and where I felt, moreover, that this contempt was bordering on contempt also for the first rule, which is the subject of general consensus. (See “note — or

the new ethics", section 30).

This is not the only time I felt this very particular discomfort, when I saw the spirit of this first rule despised, while the one who did it was "thumb" as well by his position (above all suspicion!) and by its means, than by the casualness of the form.

I try to identify this uneasiness in the note ("the snobbery of young people — or the defenders of purity") which relates to the cited section. When we allow ourselves to despise the "obvious" things that I am talking about here, and in the same spirit also (could I now add) the (perhaps profound) things that are neither demonstrated nor patented as published "conjectures" and known to all, we can just as well (given how little!) consider them as common property (trivial, that goes without saying) (*), therefore also, at the right time, as "one's own" with the greatest casualness and better conscience in the world — it being understood, of course, that we would not dream of appropriating a muscular demonstration of ten pages or a hundred (or only ten lines) which establishes a result "that we would not have been able to demonstrate" (59). I did not believe I felt so well or said so well (regarding "dead letter"), since I was given to see the undecided "limit" of the case cited above happily crossed — and surely crossed with the better awareness of the world still, given the little: a dream, and what's more, is not even demonstrated (nor above all, published...)!(**)

Fortunately I have defenses - I manage when necessary to express as best I can what I feel and what I want to say, I have acquired (rightly or wrongly) credibility, and by there a chance to be listened to when I have something to say, or to publish it if I feel the need. On the other hand, I realize more keenly this "feeling of injustice and powerlessness" of those who are wronged without recourse, when they feel tied hand and foot before the arbitrariness of "those who have everything in their hands" — and use as they please.

It is true that it has happened to me in my life as a mathematician to have behaviors

(*) This was the fate of the "God theorem" (aka Mebkhout). (June 8) Taking care, as with the yoga of patterns, to skillfully create the appearance of authorship, without ever saying it clearly! See on this subject (in the present case) the note "Le Prestidigitateur" n° 75, and for the brilliant general method or style, the note "Pouce!" n° 77, as well as the note which follows "Appropriation and contempt", n° 59 (**). It would be wrong to be embarrassed, when the event seems to show that the general consensus of our days considers the thing quite This is normal - at least from someone of such high caliber! What we call "good conscience" is nothing more, nothing less, than the feeling of agreement with the consensus that prevails in the environment of which we are a part.

hangable with an equally good conscience, and I had the opportunity in my reflection to speak of the cases that this one brought to the surface from the mists of oblivion and the ambiguity never examined. By probing them I finally understood that I need not be surprised if today (and for a long time) the student cheerfully surpasses the master, nor should I disavow anyone to whom I have a sympathy or affection. But it is healthy, for me as for everyone, to call a spade a spade, whether that cat is in my house or that of someone else.

(159) (June 8) I am no longer at all convinced of this, regarding my friend Pierre Deligne, having had the opportunity to note that he ended up slipping into the game of "tacit authorship" with respect to the p -adic cohomological tool, ie what I call "mastery" of equal cohomology. There has been a remarkable evolution between "operation SGA 41/2" (where my name is still pronounced, but with an affectation of casual contempt towards this central part of my work, from which his comes), and "The Funeral Eulogy" where any reference to the very word "cohomology" is banned in relation to my name. (See the notes "The Clean Slate" and "Being Apart" for the initial phase, and the notes "The Eulogy (1), (2)" for the final phase.)

As intermediate phases in this escalation, there is in 1981 the "memorable article" on the so-called "perverse" bundles (see on this subject the notes "Iniquity — or the meaning of a return" and "Pouce!"), n° 75 and 77), and the exhumation of the motifs in LN 900 the following year (the Eulogy taking place the following year again, in 1983). In all these cases and others of lesser scope, which I have been able to observe, the inner attitude and the "method" which allows Deligne to appropriate the credit for the ideas of others with a perfect good conscience, is that of contempt (which remains partially tacit, while being cleverly suggested) towards the "little" that we are preparing to appropriate — so "little" in fact that it is not the It's hard to even talk about it, when we're going to use it so quickly to do really powerful things - Weil's conjectures, the theory of so-called "perverse" beams... Once the operation is accomplished, appropriation being a thing made and accepted by all, it is always time to rectify the situation and to strut modestly with what has been appropriated. The same contribution is an object of casual contempt, as long as it still seems tainted with the name of one of those who are to be buried, and is exaggerated when it has been appropriated by himself (p -adic cohomology, patterns, while waiting for the yoga of Mebkhout) or by such a good friend (yoga of derived categories, yoga of duality, appropriated by Verdier with the active encouragement of Deligne).

V. My friend Pierre

(60) (April 21) To return to this dream of a memory, which is not only the memory of the birth of a vision... I remember well (even though I have forgotten so many things!) the pleasure each time renewed that I had in speaking with the one who had quickly become much more the confidant of everything that intrigued me, or of what became clear and which enchanted me day by day in my loves with the mathematics, that he had never been a "student". His always alert interest, the ease with which he learned about everything ("as if he had always known it...") were for me a constant source of enchantment. His listening was perfect, driven by this thirst for understanding which animated him like me - a highly alert listening, a sign of communion. His comments always went ahead of my own intuitions or reservations, when they did not shed some unexpected light on the reality that I was trying to understand through the mists that still surrounded it. As I have said elsewhere, very often he had answers to the questions I raised, often immediately, or he developed them in the days or weeks that followed. This means that listening was shared, when he in turn explained to me the answers he had found, that is to say quite simply the reason for things, which always appeared with this perfect naturalness, with this same ease which had often enchanted me with some of my elders like Schwartz and Serre (and also with Cartier). It is this same simplicity, this same "obviousness" that I had always pursued in understanding mathematical things. Without having to say it, it was clear that through this approach and through this requirement, he and I were "from the same family".

I felt clearly from our meeting that his "means", as they say, were of a very rare quality, far beyond the modest means available to me, whereas through the passion to understand and the demand for understanding mathematical things, we were on the same page. I also felt, confusedly, without knowing how to formulate it, that this "force" that I noticed in him (and that I also felt in myself, but present to a lesser degree), that of "seeing" the obvious things that no one saw, was the strength of childhood, the innocence of the child's eyes. There was something of a child in him, much more apparent than in the other mathematicians I have known, and this is surely not a coincidence. He told me that one day, when he was still in high school I think, he had fun checking the multiplication table (and along the way and by force of circumstances, the

addition table also), for numbers from 1 to 9, in terms of definitions. He certainly did not expect any surprises - if there was a surprise (pleasant, as always...), it was that the demonstration could be done nicely and completely in just a few pages, a story of half a year. -hour maybe. I felt, when he told me the story with a laugh, that it had been a half hour well spent - and that's something I understand even better today than then. This little story struck me, even impressed me (without letting anything show, I think) — I felt in it the sign of an inner autonomy, of a freedom vis-à-vis received knowledge, which had also been present in my relationship with mathematics in my childhood, from the first contacts (69) (*).

This relationship as a privileged interlocutor for each other, while we saw each other practically every day I believe(**), continued over a period of five years, from 1965 (if I remember correctly) to 1969 inclusive. I still remember the pleasure I had, that year, in writing a detailed report on his work, when I proposed to co-opt him as a professor in the institution where I had worked since its foundation (in 1958).), and where the greatest part of my mathematical work was accomplished. I no longer have a copy of this report (64), in which I reviewed a good dozen, I believe, of my friend's works, almost all of them unpublished at the time (many of which have remained so), and most of which otherwise all of them were, in my opinion, the main substance of a good state doctoral thesis. I was prouder and happier to present this eloquent report than if it had been a question of presenting a report on my own work (something I have only done twice in my life, and each time with obliging...). Many of these works were answers to questions I had raised (the only published of these being the already mentioned work on the degeneracy of the Leray spectral sequence for a clean and smooth morphism of schemes (63)). The two most important on the other hand were the answer to questions that

(*) It seems to me, moreover, that this freedom was never entirely eclipsed during my life as a mathematician. mathematician, and that it is present again as it was in my childhood.

Two or three years ago I recalled the little episode of the multiplication table for my friend. I felt embarrassed by this evocation of a childhood memory, which no longer visibly corresponded to the image he has of himself. I was not really surprised by this embarrassment, but nevertheless saddened to see confirmed once again something that I knew well and yet still had difficulty admitting...

(**) This was the case at least as long as I lived in Bures, where he was housed in a studio at IHES. From 1967 (when I moved to Massy), I think we still saw each other once or twice a week, at least as long as I continued to invest myself in mathematics.

Deligne himself had posed, and it was clear that their scope was of a completely different order than a “good state doctoral thesis”. These were his work on the Ramanuyam conjecture (published in the Bourbaki seminar), and the work on mixed Hodge structures, also called “Hodge—Deligne theory”.

It's a strange thing and one that I was far from suspecting when I wrote this shocking report, that less than a year later I was going to leave this institution where I was preparing to co-opt my young and impressive friend, and where I intended to end my days. And (now that I put these two double episodes together) it is another strange thing, and no more surely the effect of a simple “chance”, than this same (now less young!) friend announced to me a month or two ago his own departure from this same institution, although it had also been a year since I resumed regular mathematical activity, in the sense of a sort of “return” unexpected on the mathematical scene (if not in the “big world”...).

More than once I had the opportunity in *Récoltes et Semailles* to talk about my departure – about this “salutary uprooting” – and even more about the “awakening” which followed it closely, and which made this episode a crucial turning point in my life. In the intense years that followed, the world of mathematicians, with those I had loved there, and the very thing that had most fascinated me in mathematics itself, became very distant - as if drowned in the mists of the memory of another “myself”, who would have been dead for ages...

But both before this episode, and in the years following this first major turning point, I knew that the man who had been (a little (*)) my student and (a lot) a confidant and a friend, had only to follow the spontaneous impulse within him of a child who plays and who wants to know, to discover and bring to light new and unsuspected worlds, and to probe them and know their intimate nature - and thereby also reveal them to his peers just like himself. Also, if after my departure (with no intention of returning!) I saw “a bold and inspired mathematician painting in broad strokes (to begin with...) this vast picture which I had glimpsed and of which I had only yet traced 'a series of partial and provisional drafts, it was indeed him — who had everything in hand to do it! To paint this first large-scale picture, a “master builder” bringing together in a common vision the essentials of what was known and what was guessed about the cohomology of algebraic varieties, for the one in whom such

(*) For the meaning of this scruple in me to consider the (too!) brilliant Deligne as one of my students, see the note “Being apart” (n^o 67).

overall vision was already ready to emerge from the mists of the not-yet-written, was the work of a few months, not even years. (Even if it means taking it up again and deepening it over the years, or generations if generations were necessary - until the final word on the reality of the motives is fully understood and established.) And I had no doubt that this work, which previously "burned in my hands", was going to be done from one moment to the next, and at least during the two or three years that followed and while it was still hot. After my departure, there was certainly only one person left who was called, by his very impulse of knowledge, to do this burning and fascinating work. Even if it means, once the "master builder" has written and tested, and the construction of the work has progressed more or less well, leaving it to others to continue this work, however fascinating it may be, to embark on other adventures, in this world of mathematical things where each turn of the path reveals the promise of a new and limitless world, as long as we have open and new eyes to see...

At the time when my life was still taking place in the hot scientific oven which isolated it from the noise of the world, and when Deligne was developing his extension of Hodge's theory (this must have been in 1968 or 69), it was something that entered. It was obvious to us that this work was a very first step to realize, to test and to clarify a certain part of this "table of motives", which had never been put in black and white as a whole (*). In the years following my departure from the laboratory, at a time when mathematics was very distant to me, it was certainly no surprise that I learned that Weil's conjectures had finally been proven. (If there was a surprise, it was that the "standard conjectures" were not demonstrated at the same time, whereas these had been released precisely with a view to an approach towards the Weil conjectures, at the same time time as a means to establish at least a theory of semi-simple patterns on a body(**).) I knew well that neither by this first draft towards a general theory of coefficients à la Hodge, nor by

(*) That subsequently this Hodge—Deligne theory never (to my knowledge) went beyond the stage of this first draft, that it never expanded into a theory of "Hodge—Deligne coefficients" (and the "six operations" on these) above the finite type diagrams on the body of the complexes, is inseparable from this other strange fact: that this vast "table of motifs" has never been painted, and that its very existence has been carefully silenced until today...

(**) It is only in recent years that I have vaguely realized (but more precisely recently!) that the "standard conjectures", as well as the very notion of motive of which they provided a first "constructive" approach, had been buried, for reasons that appear to me

this demonstration of certain key conjectures (among a number of others more or less well known) he did not yet give its full measure - he was even far from it.

And I waited without impatience, while most of my attention was absorbed elsewhere.

(ŷŷ61)

(61) I had the privilege of seeing the first flowering of a child's enthusiasm, carrying the promise of a large-scale deployment. Over the next fifteen years, I came to realize that this promise continued to be continually deferred. There was this delicate thing in him that I had been able to sense and recognize (at a time when I was insensitive to so many things!), a thing which is of an entirely different nature than cerebral power (which also crushes that it penetrates...) — an essential thing above all for all truly creative work. I had felt this thing in others sometimes, but in no mathematician I had known had it manifested itself with comparable force.

And I expected (as a matter of course) that this thing would continue to blossom in him and to transform, and to express itself effortlessly through a unique work, of which I would have been a modest precursor. But another strange thing (and surely there is a deep and simple link between so many “strange things”) — I saw this “delicate thing”, this “strength” which is neither that of the muscle nor of the brain, gradually erased over the years, as if buried under successive and thicker layers - layers of something else that I know only too well - the most common thing in the world! This does not necessarily mix badly with cerebral power, nor with consummate experience or a flair exercised in a particular discipline, which can force the admiration of some and the fear of others or both at the same time, by accumulation of works, brilliant perhaps and certainly having their strength and beauty. But that's not what I was thinking of when I spoke of “deployment” or “development”. The fulfillment I was thinking of is the fruit of an innocence, eager to know and always ready to rejoice in the beauty of things small and large in this inexhaustible world, or in this part of this world (such as the vast world of mathematical things ...). It is he who alone has the power of profound renewal, whether it is the renewal of oneself, or that of the knowledge of the things of this world. It is the one which was found fully realized, it seems to me, in the modest person of a Riemann

now particularly clearly. (Compare also with the previous footnote).

(*). This true fulfillment is foreign to contempt: to contempt for others (of those we feel far below us...), or that of things too “small” or too obvious for us to deign to be interested in, or those that we consider to fall short of our legitimate expectations; or even the contempt of such a dream perhaps, telling us insistently about the things we profess to love... He is foreign to contempt, as he is foreign to the conceit that fuels it.

Certainly, by his impressive “means”, but even more by this delicate thing which impresses no one and which creates, the “student” was called to far surpass “the master”. I had no doubt that in the years that salivated over my departure from this place where I had witnessed such beautiful flight, Deligne would give his full measure in the deployment of a vast and profound work, of which I would have been a precursors. The echoes of such a work would not fail to reach me over the years, while I myself, pursuing other quests far from mathematics, could only imperfectly appreciate the full scope and all the beauty of the new worlds that he would discover.

But the student cannot surpass the master by disavowing him in his heart of hearts, by striving in secret, in front of himself as in front of others, to erase all traces of what he has brought (whether the contribution has been for better, or for worse...) — any more than the son can truly surpass the father by disavowing him. This is something that I learned especially through my relationship with my children, but also (subsequently) through that with some of my former students; and especially with the one, among all others, whom I have always scrupled to call by the name of “student”, having clearly felt from the moment of meeting that I had to learn from him, as much as he from me (*). But it was only almost ten years after this meeting, after 1975 and especially since I have meditated on the meaning of what I experience and what I witness, that I began to feel this hindrance in the one who continued to be dear to me. And I also felt, obscurely, that this secret disavowal of myself and of a role that I had played in crucial years of his life, was also, more profoundly, a disavowal of himself.

(*) The work of Riemann (1826–1866) is contained in a modest volume of around ten works (it is true that he died in his forties), most of which contain simple and essential ideas which have profoundly renewed the mathematics of his time. (*) (June 14) Regarding this persistent deliberate intention in me to minimize what I had to contribute, and to It is obvious that there is no deny the reality of a master-student relationship, see the note “Being Apart”, n° 67 common measure between what my friend learned from my contact (“as if he had always known it”, certainly!), and what I learned from him. It would undoubtedly have been different if I had continued an intense mathematical investment until today, and regular mathematical contact had been maintained between us.

(This is undoubtedly the case every time we disavow and want to erase something that has indeed happened, and of which it is up to us to reap the fruit...).

However, for lack of being so little “connected” to “what was being done in maths”, and to what he was doing there himself (*), I never measured, before thinking about it a few weeks ago, to what extent this obstacle also weighed on the very thing in which he had invested his all: his mathematical work. Certainly, more than once in the last eight or nine years I have seen simple common sense or the healthy instinct of a mathematician as erased by a deliberate expression of disdain (towards me) or contempt (towards others whom it was in his power to discourage) (66). He was not the only one of my former students, with or without quotation marks, in whom I witnessed such attitudes towards people who were close to my heart (or towards others). But in no other have I been touched so painfully. More than once during my reflection over the past two months, I have alluded to this experience, “the most bitter that I have had the opportunity to live in my life as a mathematician” — and I also said what she ended up teaching me, at the end of this reflection Harvests and Sowing. This pain was so intense, it taught me something of such significance about a person who was always dear to me (while I continued to evade what it also taught me about myself and my past. ..), that the question of the impact of this thing on a greater or lesser mathematical “creativity”, in him or even in someone who was discouraged or humiliated, became entirely incidental, not to say derisory.

The note “Refusal of an inheritance — or the price of a contradiction” is the first written reflection where I took stock of what had come back to me in bits and pieces here and there, over the years, both on “I ‘state of the art’, than on the work of the man I had known so well and so little. It was also the first time when I finally saw, in one glance, all the “price”, or all the weight, in his very work as a mathematician, of this refusal that he has carried within him for more than fifteen years. without a doubt. In writing this note I was “delaying” however, since for two years already (and without “anyone” thinking it useful to inform me), the reasons had come out of the secret where they had been kept for twelve years... And today where I am writing this final stage (I believe) of my reflection on my past as a mathematician, two days after having read the broad outlines of this memorable volume which devotes this furtive “re-entry”, the perception of

(*) Since 1970, I have received four separate prints from Deligne, which I scanned quickly (like most of the separate prints that I still receive), on the spot. It was not enough to give me an idea of a mathematical work, even in broad outline or through its main themes.

this crushing weight became gripping. It is the weight that likes to drag, day after day and through a hundred detours, the one who is made to fly - with a supple and light, joyful and intrepid flight to meet the unknown, for his joy and for that of the wind which carries it...(*)

If he doesn't steal, and if he is content to be a man admired and feared, accumulating proof of his superiority over others, I don't have to worry. If he drags the weights he likes to drag, surely he finds satisfaction in it - as I myself have enjoyed dragging weights, and continue today to drag those of which I did not know still separate myself on the way. From what I had to give him, the best and the worst, he took what he liked. I don't have to worry about his choices, which are his alone; nor even to decree here whether they are the best or the worst (62). What is "best" for one is "worst" for another, or sometimes for the same thing (as long as it changes, an uncommon thing it is true...).

But the choices we make, and the actions that express them (even though our words often deny them), we make at our own risk. If they often bring us the expected gratifications (which we receive as "the best"), these very gratifications sometimes end up having setbacks (which we reject as a "worse", and often as an outrage). When we finally understand that setbacks are not an outrage, we often consider them as a price to pay, which we pay reluctantly. But it also happens that we understand that such setbacks are something other than ruthless cashiers, to whom, willingly or unwillingly, we have to pay for the good time we have had. That they are patient and stubborn messengers, who never tire of returning to always bring us the same message; an unwelcome message certainly and constantly refused - because even more than the setback itself, it is its humble message always challenged which appears to us as "the worst": worse than a thousand setbacks, worse often than a thousand deaths and the destruction of the entire universe, of which we no longer have anything to f...

The day finally when we are pleased to receive the message, our eyes suddenly open and see: what was feared as "the worst" is a liberation, an immense deliverance — and this weight

(*) I in no way intend to suggest that it is the privilege of a few exceptional beings to be called to "fly" and discover the world. Surely we are all called to it by birth! This ability, however, rarely finds the opportunity to flourish in any way, even if only in a very limited direction (such as mathematical work). But in such a person I was able to see such a particularly brilliant capacity (in the "mathematical" direction) preserved as if by a miracle, only to subsequently regress over time.

years.

overwhelming from which we are suddenly relieved is the very thing to which only yesterday we clung, as “the best”.

(62) (April 21) I will be told that if I have nothing to worry about, why then do I go on for pages and pages about a personal relationship that concerns only me and the person concerned? !

If I felt the need for this retrospective reflection on certain important aspects of a relationship, it is under the impact of a specific event which touches me closely (even though I am learning about it after two years of delay). This event, on the other hand, is in the public domain, even more obviously than the behaviors and routine acts of prominent mathematicians (such as Deligne, or myself) towards others of lesser renown or beginners. (while their effect on the lives of others is often of a completely different scope than in the present case). The event in question (namely the publication of the “memorable volume” of Lecture Notes LN 900, alias “funeral volume”) like what surrounds it seemed unhealthy to me, rightly or wrongly. It seemed healthy for everyone, starting with “the person concerned” himself, to give detailed testimony on certain ins and outs, which get to the bottom of things as I perceive them today.

Through this testimony and through this reflection, I am not trying to convince anyone of anything (something much too tiring, and moreover hopeless!) (*), but simply to understand events and situations in which I found myself involved. If they encourage others to genuine reflection, beyond the usual clichés, this testimony will not be published in vain.

(63) (April 22) This article (*) appeared in Publications Mathématiques in 1968, two years before I left the world of mathematicians. Its starting point had been a conjecture which I had spoken to Deligne, of a property of degeneracy of spectral sequences which

(*) (May 25) If I felt the need here to repeat to myself that it was “much too tiring” and “hopeless” to want to convince, it is undoubtedly that somewhere within me, the intention to convince was nevertheless indeed present, and also perceived. All the reflection between April 19 (when I read the “memorable volume” LN 900) and April 30, is marked by a state of inner tension, of division too, faced with the impact of an entirely unexpected “event”. whose message I am trying as best I can to assimilate. This tension was finally resolved with the note “The Return of Things” (n° 73) of April 30, when the reflection had finally returned to my own person, to immediately provide me with the obvious key to this message.

(*) This is Deligne's article on the degeneracy of spectral sequences and Lefschetz's theorem (Publications Mathématiques 35, 1968) cited in the note “Canned weight and twelve years of secrecy”, n° 49).

at this moment could seem quite incredible, and which nevertheless became plausible by “arithmetical” means, as a consequence of Weil’s conjectures. This motivation was of great interest in itself, because it showed all the benefits that could be drawn from a “yoga of weights” contained implicitly in Weil’s conjectures (yoga first glimpsed by Serre, in certain important aspects). From that time I commonly applied it to all kinds of analogous situations, to draw conclusions of a “geometric” nature (for the cohomology of algebraic varieties) from “arithmetic” arguments. These remained heuristic as long as Weil’s conjectures were not established, but nevertheless had great probative force, and represented a means of discovery of the first order. Deligne’s “geometric” demonstration for the particular conjecture in question, using Lefschetz’s theorem (established then in zero char. only), had an interest in a completely different direction, in addition to the first merit of not depend on no conjecture. The link indicated by the two approaches between two things which could appear to have no mutual relationship, namely on the one hand the conjectures of Weil (and the yoga of weights which then represented for me the most fascinating aspect), and on the other hand Lefschetz’s theorem — this link was in itself very instructive.

The interesting thing here for my own present, and which only became apparent to me in its full sense today, is that the reader of this article will have very little chance of suspecting that I was for anything thing in the initial motivation for the main result, and no chance at all of learning from this article what that motivation had been. (See also the beginning of the note (49).) The spontaneous approach (including, I am convinced, by the author himself), for the exposition of a result like that, would have been to starting from the conjecture (admittedly striking), to indicate the first reason found, just as striking, which was a good opportunity to finally “sell” this famous yoga of weights, of much greater significance in itself as the main result of the work (*); then continue with the “Lefschetz theorem”(**) point of view which made it possible to demonstrate the initial conjecture under

(*) It was yoga that remained secret (it seems to me) for the next six years! (June 7) And (as it has since emerged) which was then presented by Deligne “on his behalf”, without any 1.78 2). (**) (June 17) The idea allusion neither to Serre nor to me. (See notes n^o 78 of using the Lefschetz (“Cow”) theorem to demonstrate a degeneracy of spectral sequences is due to Blanchard, who however only obtains the degeneracy theorem. by means of the draconian hypothesis (rarely verified) that the local system formed by the rational cohomology of the fibers is trivial. I knew Blanchard’s work, and did not fail to talk about it to Deligne, who was therefore inspired

somewhat more general conditions (any basic pattern, not necessarily clean and smooth on a body), but in zero characteristic only. The exposition followed begins on the other hand with generalities of homological algebra (pretty as you would expect, and presented with the customary elegance of the author), generalities that he must have since forgotten like everyone else, axiomatization style of Lefschetz's theorem. The main result (the only one of course that everyone remembers) appears as horn. "

I no longer remember the impression the article made on me when it appeared - as I was in the loop, I had to content myself with taking a quick glance. I must surely have felt an intention to "distance myself", but also felt that it was a very natural thing for my friend to be keen not to risk appearing as a disciple (or "foal") of a "master"(***). It is true that if there had been in him the quiet assurance of his own strength, he would have had no hesitation in writing a work of greater significance and more useful for all (including surely for himself).), without fear of not being seen for what he is... (65)

The situation was somewhat similar with the publication of his first major work.

of Blanchard's idea for his demonstration, even if he had not read the article. Serre, who remembered Blanchard's demonstration better than I, pointed out to Deligne that his demonstration was in fact an easy adaptation of Blanchard's. This is what Deligne points out in his remark 2.10. This remark, in which he quotes Serre, is however written in such a way as to give the impression that he was only aware of Blanchard's idea after the fact, which is in no way the case. There was therefore an evasion of the two main sources for his article: on the one hand the arithmetic motivation, which made it possible to foresee a considerable strengthening of Blanchard's result, and on the other hand Blanchard's idea of demonstration, which he manages to adapt with elegance to obtain a result that Blanchard had undoubtedly not dared to hope for, and for this reason not

even tried to "get" by his method. (***) (May 26) Concerning this attitude in me, see the note which follows this one, "The ascension" (n^o 63). (June 8) By making the connection with a certain style of his own of appropriating the ideas of others, of which I see here the first typical example, I realize moreover that my friend's motivation was in no way that of preserving "autonomy" in relation to a prestigious "master", but of avoiding the role of the ideas of others in the genesis of one's own, while waiting to also appropriate these ideas of others (in a second time). (See on this subject the two notes "The Conjurer" and "Appropriation and contempt", n^o 75 and 59.) On the subject of my share of responsibility in the unhindered development of this propensity in my friend, see the two notes "The ascension" and "The ambiguity", as well as "Being apart" (n^o 63, 63, 67), where appears the role of a certain complacency which I demonstrated towards of the brilliant young man Deligne.

scope the following year, on the mixed Hodge theory. (I then considered this work to be comparable in scope to Hodge's theory itself, seeing it as a starting point for a theory of "Hodge—Deligne coefficients," which unfortunately never saw the light of day. ...) As I said, it was very obvious to him as well as to me that this work had its "motivation" in the yoga of patterns that I had arrived at in previous years — it was a first approach towards a tangible realization of this yoga. To emphasize such a link in his work, it seems to me (and it must have also seemed to me then), would have immediately given his work a scope of even greater scope than that which it already had on its own merits. At the same time, it was again an opportunity to draw the reader's attention to the reality of the motifs, perceptible at every step behind that of Hodge's structures (631).

It is only with hindsight that these omissions take on their full meaning, against the background of six years of silence on the yoga of weights, of twelve years of silence (not to say, of prohibition) on the reasons, of the unusual return of these in the burial volume LN 900, stagnation in the theory of Hodge-Deligne after a dazzling start... But no one can do great things in the mood of an undertaker!

In any case, if I had been more mature when I left IHES in 1970, it would have been very clear to me from that moment that there was a deep ambiguity towards me in the one who, over the past five years, had been his closest friend. Moreover, behind the friendly facade of good company relations within the same cozy institution, my departure ultimately suited everyone, for reasons that I believe I can discern with hindsight, and which were not the same at all. Obviously this departure suited my young friend, who had recently settled in the place, wonderfully, and for whom it would have been enough to show solidarity with me (in the face of the hesitant indifference of the other three permanent colleagues) to reverse an indecisive situation. If I didn't understand the meaning of what was happening, it was because I definitely didn't want to understand things that were quite clear and even eloquent! As so often during my life, there was then in me an anxiety (never called by that name!) which signaled to me a "takeoff" between a reality that was all that was tangible and simple, and a image of the reality from which I did not want to separate myself: the image of what my role had been in the institution that I was leaving, and even more, perhaps, the image of what the relationship had been to my friend. It is this refusal to take cognizance of an irrefutable reality, and anxiety is a sign of this contradiction

which I was clinging to, which made the episode of this “salutary tearing away” so painful at the time (*).

To tell the truth, for lack of having ever yet devoted a written reflection to this relationship (except for certain beginnings of reflection in a few episodic letters to my friend, none of which received any response...), I had not realized before that the first signs (discreet certainly, but which cannot deceive) of the ambivalence in the relationship between my friend and me, date back at least to 1968, two years before “the big turning point”. It was a moment when the relationship appeared perfect, a communion without cloud on a mathematical level, in the context of a simple and affectionate friendship. It will be easy to joke about innocence, the creative child and the rest!

However, I know well that this communion was a reality, in no way an illusion; just as this “delicate thing” was a reality — this creative force, of which the work that followed gives only a pale reflection. “Innocence” and “conflict” are two tangible realities, recognizable to a somewhat awakened perception, in no way concepts; and they seem to me to be by nature foreign to each other, one excluding the other. However, there is no doubt that these two realities coexisted in my friend's relationship with me, at different levels(**). It does not seem that at the time I am talking about, “conflict” interfered with mathematical creativity — at least not in work done in solitude, or that which was done in one-on-one conversations. It is also true that in the two articles I have just spoken about, which after all are among the most tangible fruits of this work, the imprint of the “conflict” already appears clearly. And with the hindsight of fifteen years and through the reflection of the days and weeks that have passed, I see that this imprint (however discreet it may be) prefigures in a striking way the particular form that this progressive hold of the conflict on the momentum would take. initial, stripping it over the years of its rarest essence — that which makes great destinies (*).

(*) See note n° 42 about this episode .

(**) On two or three other occasions, I was able to observe such coexistence in the same person at one given moment, including in my own person at certain moments.

(*) Such a noble lyrical flight made me lose a little contact with earthly realities. If I qualify here this “imprint” as “discreet”, it is because I myself am trapped in a thickness, that I find it difficult to separate myself from the blinders which remain dear to me! Having ended up getting rid of it, I realize that the “imprint” in question is a crude sleight of hand, which I did not want to see due to a certain complacency in myself, which I clearly see in the note from the June 1 “Ambiguity”, n° 63. As for “the influence of conflict on

(631) (May 26) Compare also with the remark in footnote (*) at the end of note 60, noting the “blocking” of the natural development of the Hodge-Deligne theory, as a result of attitudes of rejection towards with respect to certain key ideas introduced by me (here, the six operations - to which the motifs are indissolubly linked), of the same nature as that examined here, therefore apparent from the publication of Hodge Theory I and II.

The same attitude, striving as far as possible (or even beyond!) to erase all traces of my influence, is also found in the work (already mentioned in note 47) written in collaboration with Mumford, on Mumford compactifications—ⁿ Deligne of modular multiplicities (This work also predates my departure.) The work uses a principle of passing from topological results on the body C (known transcendently) to results in $\text{car. } p > 0$, which I introduced at the end of the 1950s, for the theory of the fundamental group. From the beginning of the sixties, I suggested using this method to prove the connectivity of modular varieties in all characteristics (*). This idea, however, came up against technical difficulties which had stopped Mumford, and which were elegantly overcome in their work by the introduction of modular multiplicities, and a “compactification” of these which has perfect properties. The very idea of modular multiplicities is found, “between the lines” at least, in my “Teichmüller” presentations at the Cartan seminar, made at a time when the language of sites and topos did not yet exist. The very language used by Deligne (“algebraic stack”) where there was a whole language of sites, topos, multiplicities tailor-made to express this kind of situation, shows quite clearly (with hindsight and in the light of “later, much larger operations”) with the intention of erasing the provenance of some of the main ideas

the initial impulse” of my young and brilliant friend, I speak of it almost as a regrettable fatality of which the poor would be the very involuntary victim, losing at the same time, unfortunately, the benefit of the “great destiny”. Yet he is responsible for his destiny just as I am for mine. If he chose the role of his master's gravedigger even before my departure (to begin with), and if the circumstances (including the spirit of the times) were conducive to this choice, granting him galore the role of Grand Boss to who goes all out, he also chose to taste to the dregs the privileges that prestige and power can give, including that of crushing (discreetly) and despoiling. One cannot have everything at once, and it is in the nature of things that he loses by this choice (in which he is in good company) the benefit of more delicate and less common things... (Footnote of undated page, from early June.).

(*) (September 1984) Once verified, this circumstance is indeed noted in the introduction to the cited work (p. 75).

implemented in this brilliant work. It is surely this attitude (as I sense for the first time in the note "Refusal of an inheritance - or the price of a contradiction", § 47) which had a "chainsaw effect", cutting short a subsequent reflection on modular n multiplicities, which nevertheless appear to me to be among the most beautiful and fundamental of all the "concrete" mathematical objects identified to date.

I point out in passing that the arguments that I introduced at the end of the fifties make it possible (thanks to the compactification of Mumford—Deligne) not only to prove the connectivity of modular multiplicities in all characteristics, but also to determine their "fundamental group prime at p ", as being the "prime profinite compactification at p " of the ordinary Teichmüller group.

(⁶³) (May 10) With further hindsight of less than three weeks, I now realize that this attitude which was intended to be "understood" in relation to this "very natural" intention to distance oneself, was in reality a lack of clairvoyance and complacency towards my young and brilliant friend. If I had then trusted my healthy faculties of perception, instead of letting myself be dazzled and fooled by vague clichés posing as an "understanding" attitude or even "generosity" ("I'm not going to make remarks to him because he doesn't make a big deal about my name..."), I would have noticed then what I see now, sixteen years later. I could call it a lack of integrity towards the reader, towards me and towards himself. Seeing things simply and not afraid to call them by their name, I would have been able to talk about them simply, as I am now, and my friend would then have the opportunity to learn from them - or at least he would have understood that even with the means available to him, his elders (or at least one of them) expected from him the same probity in the work that they put into it themselves. I therefore see that on this occasion, which took place before my departure from the mathematical scene, at a moment when I was in no way "out of the game" and where I undoubtedly exercised a certain moral influence over my young friend, I did not live up to my responsibility towards him, through this laxity that I showed then (*).

This was confirmed during the publication of "Hodge II Theory", which is the work of

(*) (May 28) The word "complacency" better expresses the nature of my attitude here than the somewhat elusive word "laxity". This complacency in my relationship with my young and brilliant friend appeared more clearly to me in yesterday's reflection, see the note "Being Apart", n° 67

Deligne's thesis and where he alludes neither to the motives nor to me. It is true that already at that time mathematics and my friend's very person were very far away and appeared to me as if through a fog!

In the light of what I was able to see in the evolution of my friend, both spiritual and mathematical (and the two aspects are closely linked), I see that at the moment when I met him and where I was impressed by his intellectual means, by his acuity of vision and by his liveliness of understanding in mathematics, I in no way discerned a lack of maturity in him; nor (subsequently) the effects that would have on him his vertiginous social rise, in the space of barely four years, from the status of unknown student to that of star of the mathematical world and permanent professor, invested privileges and considerable powers, in an already prestigious institution. I do not regret having made this ascent easier for him and having made it faster - but I see that due to a lack of discernment and maturity in myself, this "service" that I rendered him was not a service. It will not have been a "service", at least as long as my friend himself has not been to the end of this harvest, which he prepared with my careless assistance.

(163) (June 1) In the three weeks since this observation of "laxity" (or "complacency", to use the more appropriate expression that has appeared in the meantime) appeared in my relationship with my friend Pierre, I had the opportunity in my reflection to realize more clearly a certain lack of rigor, a complacency in myself. They manifested themselves in my relationship first of all to the one whom, more than any other, I treated as "being apart", but also to other mathematicians for whom I seemed like an elder. What I have detected so far in this sense has been expressed by a certain ambiguity in me, and undoubtedly also in the person who acted as a student, in situations where he took up ideas as his own. and methods that he took from me, even a detailed project manager of all the work he was doing, without clearly indicating its source or even sometimes alluding to it. Such situations were quite frequent both in the sixties, after my departure and until very recent years. It seems to me that in all these situations, at a certain level I felt the ambiguity, which was expressed by a shadow of unease, never examined before these very last days. The motivation which made me enter into the game of a certain complicity, and which made me overcome this discomfort without ever paying attention to it, was in the desire to conform to a certain image that I had of myself, and what

must have been a so-called “generosity”. True generosity is not born from conformity, from a concern to be (and to appear, in front of oneself and others) “generous”. The repressed unease was each time a very clear sign that this “generosity” was artificial, that it was an attitude, not the spontaneous, unreserved gift of true generosity.

In this discomfort I identify two components of different origin. One comes from the “boss”, from the “me” who remains frustrated, because he has not been able to win on both counts: to participate in the credit for work for which he knows that there was a (more or less broad) part, and at the same time live up to a certain brand image, where the cliché label “generosity” appears (among many other things). The other component comes from “the child”, from the one in me who is not fooled by attitudes and facades, and who has the simplicity to sense what is wrong with this situation (*). Not only false towards myself, but also towards others. In short, my “generosity” consisted of entering into a game where the other presents as his own ideas which come to him from others, therefore where he gives an image of himself and of a certain reality, of which he and I know full well that it is false. We are therefore united in what we can call a “cheating”, where everyone, him like me, found his benefit.

It is a “cheat” at least according to the consensus which prevailed “in my time”, and which, it seems to me, continues today to be paid lip service, surely I do not I would not have entered into such a game if it had been about the ideas of someone other than me, which were used as if they had been found by my “protege” (*). However, the fact that

(*) (June 5) When I say here that the discomfort comes (in part) from “the child”, it is a way of speaking which gives a false image of reality. It is not the candid perception of a false situation that creates any discomfort. Discomfort is the sign of resistance against this perception, of a separation between reality well and truly perceived at a certain level (here that of a false situation), and an image of reality to which I cling. (in this case, that I am being “generous” and that I could not do less!), for the benefit of which I dismiss, I repress the inappropriate perception. In this case, as soon as I let go of resistance and allowed perception to appear in the field of conscious gaze, the “discomfort” ceased, along with the false situation. I was going to add “assuming that this is a false situation involving my present, and not a situation in the past”. But upon reflection, I realize that these false situations “from the past”, which I have just spoken about, have remained present as such until today, or at least until the reflection three days ago. , due to the simple fact of never having been examined and thereby resolved. I remained a prisoner of it, to the point of mechanically reproducing the same situations whenever the opportunity presented itself. The knowledge of my “power” of meditation (which I spoke about in the section “Desire and meditation”, n° 36) was of no use to me, for lack of being attentive from day to day to the situations in which I am involved, and in the incessant game of perception and “sorting” of perceptions, this game of the child and the boss

I give my tacit agreement for ideas born in me to be presented as those of others, without changing anything essential, it seems to me, to the nature of the thing - the only difference is that in this case we There are two of us cheating, instead of just one. And even apart from this aspect concerning my person (that I myself participate in cheating, in behavior contrary to the very consensus to which I claim to adhere), it is very clear that there is no generosity in encouraging others to cheating (even if this seems to be done at our sole expense - which is however in no way the case), or at least to an attitude of ambiguity towards a consensus to which he also pretends to adhere to it, while breaking it. True generosity is of a beneficial nature for all, starting with the one in whom it manifests and the one to whom it is addressed. My ambiguous attitude, arousing or encouraging ambiguity in others, and allowing me to pose for "generosity" when in good logic the other must appear as a bit of a cheater on the edges (and in fact we cheat the one and the other) — this attitude is a benefit neither for me nor for the other.

It was enough to examine the thing for the evidence to appear, without even having to refer to an experience, to a "lesson of events". However, these are the events that ultimately led me to this exam, making me finally discover an obvious fact that I was just as capable of discovering thirty years ago, before yet another student appeared on the scene. horizon to learn a profession with me, and to imbue themselves with my contact with a certain spirit in the exercise of this profession. I had the opportunity to talk about the "rigor" in the work itself, which I believe I demonstrated (see the section "Rigour and rigor", n° 26). But today I also notice, apart from the "work" itself, an absence of rigor, expressed by the ambiguity, by the complacency that I said. It seems to me that this ambiguity in me was not communicated to me by any of my elders, who (I believe) all had a requirement towards me comparable to that which they had towards themselves . Beyond the ambiguity of the particular attitude, I detect an ambiguity in my very person, which I had occasion to speak about more than once during the first part of *Récoltes et Semailles*. This ambiguity began to be resolved with the discovery of meditation in 1976, while some of the signs of this ambiguity, expressed in attitudes and behaviors that became

(*) This expression "my protégé", which one of my former students had used to designate one of my current students who had just done great things in mathematics, made me cringe. However, the situation of ambiguity that I am examining, all things considered, establishes a false relationship in which one of the two protagonists is indeed the "protege" of the other.

usual habits (especially in my relationship with my students) must have persisted until today.

Obviously this ambiguity in me found favorable ground in some of my students. What was done by tacit agreement has even become, it seems, a basic note in the morals of the “big world” of mathematics today, where fishing in troubled waters (with or without the agreement of “the person concerned”), see regular looting (when the person who allows it is part of the intangible elite), seem to have become such a common practice that no one seems to be surprised by it anymore, so that everyone is careful not to talk about it. The “boss” in me would like to stand out, denounce, take offense — and yet in doing so, I only perpetuate the same ambiguity in myself whose prolific harvest I can now see.

(⁶³) (April 24) (*) Two days ago leafing through a separate print of Mebkhout that I had just received, I came across a reference to a work by JL Verdier entitled “Derived Categories, State 0” published in SGA 41 /2 (Lecture Notes n° 569, p. 262–311). I am forgivable for not having noticed this publication sooner, having never had the honor before today of holding this volume in the hands of Verdier nor Deligne (who is the author). did not deem it useful to send me a copy, when it was published or later. I do not know if C. Chevalley and R. Godement, who with me constituted the jury which awarded JL Verdier the title of “doctor of sciences” on the basis of a 17-page introduction (still unpublished) , were entitled, ten years later, to receive “State 0” (50 pages this time) of this “thesis” like no other! I seem to remember having held in my hands one day a serious work of foundations of a few hundred pages, which could reasonably pass for a good doctoral thesis, and which roughly corresponded to the work of foundations that I had proposed to Verdier around 1960 — except that it had already become clear at that time that the framework of “triangulated categories” developed by him (to express the internal structure of the derived categories) was insufficient.

It is hardly necessary to say that my name does not appear anywhere in this “State 0” of a thesis. We really wonder what he would do there. It is well known that the derived categories were introduced by Verdier, to enable him to develop duality

(*) This note comes from a footnote to “Instinct and fashion — or the law of the strongest” (n° 48) — note where I asserted that Verdier's work on categories derivatives had never been published, without realizing that a “State 0” of his thesis had appeared in 1977. For an overview of Verdier's strange twists and turns in relation to the theory which was supposed to constitute his thesis work, see the note “Thesis on credit and all-risk insurance”, n° 81.

called “Poincaré—Verdier” of topological spaces, and that called “of Serre—Verdier” of analytical spaces, while waiting for a vague unknown service (*) to develop on his behalf a synthesis of the two, called as appropriate (the Unknown Student could not do less!) “duality of Poincaré—Serre—Verdier”. After all that, I just had to follow the movement and make the few adaptations that were necessary to develop the duality of Poincaré—Verdier and that of Serre—Verdier in the very particular framework, in my opinion, of flat cohomology or consistent patterns...

I have only just recently become aware (libraries are useful!) of SGA 41/2 (**), where I was once again given the honor of being listed as a co-author, or rather as a “collaborator” (sic) of Deligne (without considering it useful to inform me and even less to consult me). This is obviously a precursor of the memorable “funeral volume” published five years later, of which I had the pleasure of reading a few days ago (see notes n° 50, 51 et seq., inspired by the event). But I did not have to hold in my hands the pre-funeral volume, with this piece of evidence of a phantom thesis which does not say its name, to understand last year that the following state of this “thesis” will never be written by anyone other than myself. This is how I got down to work with the Pursuit of the Fields, where it pleased my illustrious ex-pupil to stop, seventeen years ago.

(64) (April 25) However, I found a copy yesterday in my office at the University. These are in fact two reports which follow one another a year apart, written in April (?) 1968 and April 1969. In it, I review, in seventeen pages, fifteen works, carried out over three years. scientific activity at IHES. Among these, there is the work on the Ra-manuyam conjecture, that on the compactification of modular sites, and the extension of Hodge's theory. All of the work reviewed in this report (if only the works that I have just named) testifies to a prodigious creativity, unfolding with perfect ease, as if playing. Leaving aside the demonstration of Weil's conjectures, still in the wake of this first launch into the unknown, it seems to me that the subsequent work only gives a pale image of this unique flight of a young mind with the means exceptional, and also benefiting from exceptional conditions for its development.

(*) See the note “The unknown service and the theorem of the good Lord” for some information on this dubious character (note n° 48).

(**) See, regarding this volume, the note “La slate rase”, n° 67.

We must believe, however, that something in these “exceptional conditions” must have given nourishment to this other force, foreign to the drive for knowledge, which ended up investing and supplanting it and diverting and absorbing the initial momentum. . And obviously also, this “something” was linked to me...(*)

This short commented report (which I plan to include as an appendix to this volume) seems interesting to me in more than one way, including from a mathematical point of view (while some of the work reviewed remains unpublished even today). In several places in the report I foresee that such works of which Deligne was content to outline the broad outlines and treat the crucial points, would be developed by future students. These students never appeared, given the changes that subsequently took place in his relationship with ordinary mortals(**). Among the ideas that I review, the only one to my knowledge that was developed by someone else (who would thus appear to be a student of Deligne) was the theory of cohomological descent, developed by Saint Donat in SGA 4 (therefore still in the period of the initial momentum), a theory which has since become one of the most commonly used tools in the cohomological arsenal.

An amusing and characteristic detail: for three of the four works which have since been the subject of articles by Deligne (*), I take touching care to convey, in passing, the relationship of these works to ideas that I had introduced and to questions that I had raised - as if to take the lead, one would say, on the silence that the author was going to maintain on their subject

(*) (May 26) Concerning a certain complacency in me which gave nourishment to this “something”, see the note (two weeks later than this note) “The ascension” (n^o 63) .

(**) At the time when I met him regularly at IHES (in my seminar in particular), Deligne's relationships with other mathematicians, and more particularly with young researchers (often beginners) who came to the seminar, were marked by kindness. I noticed there the same openness to the thoughts of others, even if they were clumsy to express or even confused, as in our mathematical tête-à-têtes. He had this ability to follow the thoughts of others in the images and language of others, which I always lacked, and which (it seems to me) predisposed him much more than me to the role of “master”. capable of stimulating the development of a vocation, of creativity in others.

(*) The only one of the four works in question which is not directly influenced by me is the work on the Ramanuyam conjecture, deducing it from the Weil conjectures. It places itself in a direction of research (that of modular forms) which constituted one of the most serious “holes” in my mathematical culture. The other three works are those on the degeneracy of the Leray spectral sequence, on the theory of Hodge—Deligne, and on modular multiplicities (in collaboration with Mumford), which was discussed in the note “Eviction” (n^o 63) and in subnote n^o 631 .

in his articles (each of which had not appeared or even, I believe, been written, at the time I was reporting).

(65) (April 26) It is also clear that keeping within oneself a “yoga” of vast scope (that of weights, and beyond that, that of motives), which I had spoken about here and there to other than him, but which he was the only one to have assimilated intimately and to grasp its full significance, conferred on him an additional “superiority”, as the exclusive holder of an incomparable instrument of discovery for an understanding of the cohomology of algebraic varieties . I do not think, however, that this temptation played a determining role, at a time when I was still present and active in the mathematical world, and when nothing suggested my departure *sine die*. She must have appeared with or after my departure, which was the unexpected “opportunity” to seize an inheritance (which was nevertheless rightfully hers!), by hiding both the inheritance and its provenance.

It is here that I see revealed again, in an extreme and particularly striking case, the knot of a profound contradiction, which goes far beyond any specific case. I am talking about the ignorance, the disdain, the deep-seated doubt that surrounds the creative force within us — that unique heritage of greater value than anything a person could ever pass on. It is this ignorance, this insidious alienation of what is most precious, rarest in us, which makes us envy the strength perceived in others, and covet for ourselves the fruits and external signs of this strength in the other that we have forgotten in ourselves. As long as this desire, this desire to supplant takes root and finds the opportunity to proliferate, as long as it channels the energy available for creative flourishing, this alienation in us becomes deeper, takes root. The closer we approach the coveted “goal” of supplanting, ousting, dazzling, the more we move away and cut ourselves off from this delicate force within us, and cut the wings of our own creative impulse. In our tenacious effort to rise we have long forgotten to fly, and that we are made to fly.

In his relationship with me, since the day we met, I have felt my friend perfectly at ease, without any sign that could have made me suspect that he was in the least impressed or dazzled by my reputation or by my person, or that there is in him any unexpressed doubt, whether concerning his gifts or faculties in the mathematical field, or on any other subject. It is also true, it seems to me, that he had received from me and in the

environment that was mine, also including in my family, a friendly and affectionate welcome, which was likely to put him at ease. But this simple and apparently problem-free nature which attracted me to him as she attracted others, had surely not waited for this meeting to appear and blossom. The impression that her person gave off, and which made her so endearing, was that of a harmonious balance, where her penchant for mathematics in no way took on the appearance of a devouring goddess. Next to him, I was a bit of an unrepentant “thriller”, not to say “thick brute” – and I remember his discreet astonishment at my lack of deep contact with the nature around me and the rhythm of the seasons, which I crossed without seeing anything to say...

However, this deep “doubt” that I would have been incapable of perceiving then (or perhaps even today, placed in similar circumstances), must have been present in my friend well before our meeting. Looking back, I see the first unambiguous sign of it in 1968, and other even clearer signs throughout the years that followed (*).

These are “indirect” signs, however – none of those that I have been able to observe first hand present themselves in the form of a doubt, of a lack of confidence – rather, and more and more over the years by what may seem the opposite: a self-importance, a deliberate expression of disdain, even contempt. But such an “opposite” reveals its counterpart, with whom it forms a pair and of which it is the shadow.

I also learned through someone that for such a prestigious mathematician (and reputedly difficult) whom he had not had the opportunity to ever meet familiarly, he would have been in great tension waiting for a meeting, in a sort of irrational fear of not being considered by the great man as living up to his own greatness. This testimony was so much the opposite of what I myself had seen in my young friend, that I had difficulty believing it (this was in 1973). With hindsight, it nevertheless overlaps with the signs of division which are known to me elsewhere and which all go into the same sense.

This division, and the role that I played as a sort of fixer of a conflict which undoubtedly remained diffuse before our meeting, would probably have remained hidden in the usual circumstances of the evolution of a relationship with someone who was (in one sense or another) a “master”, or at least someone who transmits or entrusts. So my departure

(*) (May 10) In fact, another “very clear” sign already dates back to 1966, see footnote ??(*) to note n° 82 (p. 329 ỹ??ỹ).

will have revealed a conflict unknown to all, and which I am perhaps the only one to know.

And my "return" today is a second revelation, undoubtedly more untimely. I would be incapable of imagining what he will reveal to me, beyond what he has taught me now about my own past and my present, and about beings whom I have loved and to whom I still remains linked today. Nor what it will reveal to the one who for a week has been at the center of this final stage of my reflection, which I called last month (and I did not think I said it so well...) "the weight of a past".

(66) (April 25) This deliberate statement of disdain and antagonism in the relationship between my friend Pierre and me was limited exclusively to the mathematical and professional level. The personal relationship has remained until today one of affection and friendly respect, manifested more than once by delicate attentions which touched me, surely signs of true feelings and without ulterior motive.

In the intense years that followed my departure from IHES, it ended up sinking into oblivion, just like the long-misunderstood teaching that this episode brought me. Also, for more than ten years, my friend remained for me (as a matter of course) my privileged contact in mathematics; or more precisely, between 1970 and 1981 he was the only interlocutor (except for one episode) to whom I thought of speaking during periods of my sporadic mathematical activity, when the need for an interlocutor was felt.

It was also to him, as the mathematician closest to me, that I addressed myself just as spontaneously on the first occasions (between 1975 and 1978) when I had to ask for assistance, guarantee or support for students working with Me. The first of these opportunities was the defense of Ms. Sinh's thesis in 1975, which she had prepared in Vietnam under exceptionally difficult conditions. He was the first one I contacted to be part of the thesis jury. He recused himself, suggesting that this could only be a bogus thesis, to which there was no question of him providing his support. (I had the skill, however, to manage to circumvent the good faith of Cartan, Schwartz, Deny and Zisman to lend me a hand for this deception - and the defense took place in an atmosphere of interest and warm sympathy.) It took three or four experiences of the same kind, over the next three years, before I finally understood that there was in my prestigious and influential friend a deliberate intention of antagonism towards my "post-1970" students, like

also with regard to works which only bear the mark of my influence (at least those undertaken “after 1970”). I do not know if the attitudes of manifest contempt that I was able to observe on several of these occasions are also found more or less in his relationship with other mathematicians whom he considers to be very far below him. The very spirit of a certain excessive elitism that he prides himself on professing would make me assume that yes. Still, since 1978 I have refrained from contacting him for anything. This did not prevent its power to discourage from still finding an opportunity to manifest itself effectively.

It was also around the same year that the first signs appeared, discreet at first, of an attitude of disdain towards my own mathematical activity. The first occasion was my reflection on cellular cards, after a discovery about them which had stunned me (see on this subject: Sketch of a Program, par. 3: “Body of numbers associated with a child's drawing”). This discovery (admittedly “trivial”, and which had nothing to move or even interest my prestigious friend) was the starting point and the first material of this other mathematical dream, of dimensions comparable to that of patterns, which began to take shape only three years later (January–June 1981), with “The Long March through the theory of Galois”. These notes and others from the same period (in the two thousand handwritten pages) constitute a very first tour across this “new continent” that a trivial remark on a child's drawing had given me a glimpse of.

During this intense work, I happened to describe it two or three times to my friend, to share with him some of my ideas, and occasionally to submit questions of a technical nature to him. When he liked to express himself on the subject of my questions, his comments were always as clear and as relevant, and bore witness to the same “means” which had already impressed me at a young age. But a complacency had blunted this eagerness to understand which had enchanted me then, and this faculty also to apprehend big things through “small” things, like that of apprehending or conceiving great designs, listening to each other. This faculty is not of the order of the intellect, of a simple “efficiency”, or of a “mastery” of an already constituted discipline or of known techniques.

It is the reflection, at the level of the intellect, of something of an entirely different essence than itself — of this child's gift of wonder. This gift in him seemed extinct, as if it had never been. It was like this at least in his relationship to me, after it had been like this first in his relationship to my “later” students. He had become an important man, and his approach to mathematics had become nothing more, nothing less than this “sporting” attitude that I examined

for the first time barely a month or two ago, and to which I myself was in no way a stranger...

Perhaps I would have managed to come to terms with the obvious absence of this communion in a common passion, of this deep bond which had once connected us. I would have been content, no doubt, to submit (when the opportunity arose) more or less technical questions or simple requests for information to the astuteness of my friend, and to his vast knowledge of the world of mathematical things. . But in that year (1981) the signs of this affection of disdain suddenly became so brutal (*), that I lost all interest in still communicating with him on mathematical questions, even occasionally. (jy67)

(67) (April 26) It was while writing the preceding lines yesterday that I made the connection between this new turning point in our relations and the publication in 1982 (therefore practically at the time of this draconian turning point) of the “remarkable volume” of the Lecture Notes, consecrating my mathematical burial without flowers or wreaths! While I was decreed as “dead” mathematically, it was a sort of grace that my friend gave me to continue here and there to still answer mathematical questions which, basically, no longer had any place to ask. be...

Trying to listen to the meaning of events, I have the feeling that it is no coincidence that the first appearance of a disdain, of a mathematical disinterest (towards things, of more, which his mathematical “sound instinct” must have told him were hot and juicy), in his relation to my own person at least, is placed roughly around the time of the publication of the SGA pre-funeral volume 41/2, five years before (*).

The circumstances already surrounding the publication of this volume alone attest to a

(*) (May 28) For new insight into this second turning point, see also the note “La Perversité”, nř 76.

(*) See on this subject the note “Le compère” (nř 63) from the day before this one.

(June 5) The reflection of this note is taken up in this note and the three following ones (“The clean slate”, “Being apart”, “The green light”, “The reversal”), which provide a glimpse of the meaning of “operation SGA 41/2” and its link to the “dismantling” of the mother seminar SGA 5. This reflection is taken up again in the procession “My students”, and in particular in the following “My students (1) –(7)”, where little by little the picture of a real massacre at the seminary where my cohomologist students learned their trade is revealed. Throughout this operation there is a casual contempt, of which the “discreet disdain” (which I was able to observe the appearance around the same time), in the relationship between my friend and me, was only a very pale one. reflection.

Another association came to me a week or two ago, for the moment of this “first turning point” in

deliberate expression of disdain, discreet and ostentatious at the same time. The mere fact of introducing myself as a “collaborator” of Deligne, without deigning to consult me or even inform me, and taking care not to send me a copy, seems to me in itself more eloquent than a speech. Not to mention that this work by Deligne was intended, essentially, to make more accessible to a wide audience works that I had developed more than fifteen years previously, at a time when I had not yet heard the name of Deligne mentioned. my brilliant friend! A disdain, and subsequently an arrogance, must have been fueled, on the one hand by my absenteeism which meant that I did not realize anything and in short “cash in” without knowing it; but on the other hand also by a certain climate, which meant that this kind of misinterpretation could “pass”, without apparently provoking the slightest comment. Still, I received no response from anyone (notably among the many friends I thought I still had in the world of mathematicians) about this volume, nor about the funeral volume that he prepared.

In the introduction, the author does not beat around the bush to announce the color. The aim of the volume is to prevent the non-expert from “recourse to lengthy presentations of SGA 4 and SGA 5”, “to prune unnecessary details”, “to allow the user to forget SGA 5, which we could consider it as a series of digressions, some very interesting” (it’s nice for these “digressions” though!). The existence of SGA 41/2 “will soon allow SGA 5 to be published as is” — a mysterious assertion, because one wonders what this publication (of something that we advise to forget), which had dragged on, was about. already for a dozen years, and which presented a perfectly coherent set of results (and which had not waited for Deligne to be identified and proven) could be subordinated to the existence of SGA 41/2(*).

By asking the question, I also glimpse a simple answer, and a possible explanation of the vicissitudes of this poor seminar SGA 5 (68), (which I had developed at length

my friend's relationship with me, at the end of 1977 or during 1978. It was in 1978 that my friend got his well-deserved “medal” (for the demonstration of the Weil conjecture). The way in which this new title (linked to the demonstration of a conjecture “of proverbial difficulty”) was internalized by my friend, appears strikingly in the Eulogy (concerning my deceased person) and its counterpart (concerning his own), published, it is true, only five years later during a “great occasion”. See on this subject the note “The Funeral Eulogy (1) — or the compliments”, n° 104.

(*) See a footnote (from April 28) to the note “The green light” (n° 68) for an elucidation of this “mystery”.

in 1965/66, eleven years before the publication of volume SGA 41/2 by Deligne)(*). We can already see this dawning on us when it is said (page 2) that in the original version of SGA 5 “the Lefschetz—Verdier formula was only established conjecturally” (which is stupid for Verdier, who is supposed to have been able to demonstrate his theorem, which is prior to SGA 5 (**)) and that “moreover, the local terms were not calculated there”. This may appear to be a regrettable gap for the non-expert reader (to whom this volume is primarily aimed). The reader who is a little in the know knows well that the said local terms are still not “calculated” today, and that the brilliant and peremptory author himself would be in great difficulty if he asked him what he means in this case (in the general case) by “calculate”(***) (but apparently no one thought of asking him this indiscreet question).

An ambiguous sentence “this seminar (?) contains another demonstration, it completes, in the particular case of the Frobenius morphism”, seems to suggest that SGA 5 does not give (one would have suspected this, for a volume of digressions!) , at the end of the endings, a complete demonstration of the main “result” that he announces, a formula of traces therefore implying the rationality of functions L à la Weil; fortunately “this seminar” comes to save, better late than never, a very compromised situation...

On page 4, we learn that the goal of the “Arcata” talks was “to provide proofs of the fundamental theorems in equal cohomology, free of the gangue of nonsense (*) that surrounds them in SGA 4”. He has the charity not to dwell on this regrettable nonsense which rages in SGA 4 (such as the topos and other similar horrors - the reader can flatter himself of having escaped narrowly by the providential appearance of this brilliant volume , finally making a clean slate of the regrettable “gangue” which had preceded it...) (67)(671).

(**) (June 10) See, for details on this subject, subnote n° 872 of note “The massacre” n° 87. (***)

(June 10) In the Lefschetz formula— Verdier general, for a cohomological correspondence between a bundle of coefficients and itself, the “local terms” (corresponding to the connected components of the set of fixed points) are defined without ambiguity by the very fact of writing the formula. The question of the “calculation” of these local terms only takes on precise meaning in specific cases, one of the simplest of which is that of the Frobenius morphism, where they are given simply by the ordinary traces of endomorphisms induced on the fibers. at these points. This formula had been completely demonstrated in the oral seminar as a particular case of another much more general one.

(*) The term used in English “general non-sense” (in the sense: generalities sometimes painful, but often necessary) did not have a pejorative connotation “in my time”, rather a bit joking and good-natured. It is surely no coincidence that the dedicated qualifier “general” was here “forgotten”, so as to say “non sense”, which means neither more nor less than nonsense in good French, and suggests the idea bombing, “bullshit”.

By browsing the introduction to the volume and the introductions to its various chapters, I have reproduced the assessments and declarations of intentions which seem to me to most clearly set the tone, among two or three others (style: digressions, certainly, but “very interesting”) which seem to me mainly intended to “make the pill go away” (which indeed passed without problem). Thus, the author has the honesty to clearly say at the beginning that “for complete results and detailed demonstrations, SGA 4 remains essential”. This volume, as ambiguous as it is in its spirit and in its motivations, does not resemble a fraud operation(**). Its role seems to me more like that of a probe, visibly conclusive: there was really no need to be so embarrassed!

There is a sort of escalation in the absurdity (apparently unnoticed by everyone!) from a volume to the one he is preparing (SGA 41/2, and LN 900). In both, we see a man with impressive means, made to discover and travel and probe vast worlds, endeavoring to “redo” the work of a predecessor, myself first of all, a former student of mine (Saavedra) then, even though in doing so he had nothing essential to contribute to the work of these predecessors, which had been done with care and by getting to the bottom of things. (What he contributed in total could be explained in some twenty or thirty pages, it seems to me.) In the first case, the reason given was plausible: to allow the non-expert user tear-free access to cohomology. flat (*), without having to rely on the voluminous SGA 4 and SGA 5 seminars. (This is the first time, however, that we see in the author such concern for the common

(**) (May 26) However, see the note two days later, “The reversal” (n^o 68), where I return to this impression, which turns out to be hasty. In the continuation of the reflection, a large-scale operation “SGA 41/2— SGA 5” is gradually revealed which was carried out, for the “benefit” mainly of Deligne, with the help or tacit agreement of all my “cohomologist” students. “The honesty” that I believe I can observe (based on the declaration, in line 7 of the introduction, which has just been cited), plays here the role of the “witness line” intended to give the changes, in true “thumb!” style. My friend used this style since 1968 (see “Canned weight and twelve years of secrecy”, and “The eviction”, notes n^o 49 and 63). See also the “Thumb!” notes. and “The dress of the Emperor of China”, n^o 77 and 77 (*) (June 10) In writing this note, I had barely “disembarked” and had not yet felt the true meaning of the “operation SGA 41/2” (and its link with the vicissitudes of SGA 5, of which I had only just had a sudden foreknowledge). I have since understood that the heterogeneous collection of texts published under the misleading name of SGA 41/2 (see the note “The reversal”, n^o 68) is in no way presented as a

popular book (“without tears”) of the SGA 4 and SGA 5 seminar (which constitutes the heart of my published mathematical work), but that it represents a maneuver to replace it (acting as a precursor, a little muddy around the edges), and to appear as the true master work on equal cohomology, which would be due to Deligne. For a

mortals, taking precedence here over the pleasure of doing math...) The second time, the work practically consisted of copying in substance the thesis that Saavedra had done with me! This thesis constituted a perfect reference, and the fact that the demonstration of one statement was false and that another statement contained a useless hypothesis, was surely not the reason to rewrite the entire article. Of course, no “reason” was given for such a strange thing.

However, I did not have to hold SGA 41/2 in my hands to feel the meaning of this seemingly absurd thing: Deligne “redoing” Saavedra's thesis, ten years later! It is surely the same as the meaning of this barely less absurd thing which had prepared it: Deligne making (twelve years later) a “digest” (a little condescending on the edges), of a certain part of the Grothendieck's published work. This is precisely the part that he cannot under any circumstances pretend to do without, if indeed he continues to be interested in the cohomology of algebraic varieties (from which he cannot break away). And Saavedra's thesis is the work of all, published and bearing the mark of my influence, which he cannot in any case do without, if he wants to take up “on his own” the notion of a motivic Galois group that I had developed, and finally exploited (fifteen years later!) this visibly crucial notion. By writing SGA 41/2 first, and five years later by the seminal article Milne—Deligne (alias Saavedra) in LN 900, my friend took pleasure in giving himself an illusory feeling of liberation from to something that he surely felt as a painful obligation: to have to constantly refer to the very one that it is a question of supplanting and denying, or even if only to such and such another who refers to him.

To arrive at this intimate conviction about the common meaning of these two “absurd” acts, there was no need for me to go through all of the (fifty-one) publications of my prolific friend, from which I received (for the first time) a list about ten days ago. To be honest, I didn't even think of going through the four separate prints in my possession again (*), to look for confirmation of what I think I know. If in the future I still happen to consult my friend's work, it will be to find something other than what is already sufficiently known to me elsewhere, surely I will then have the pleasure of learning

striking formulation (by a pen that remains anonymous) of such an imposture, six years after the “probe” called SGA 41/2, see “The Funeral Eulogy (1) — or the compliments” (note n^o 104) .

(*) Not counting the work found in the IHES Mathematical Publications, which the director, Nico Kuiper, has been kind enough to send me for almost fifteen years.

beautiful mathematical things, which formerly I had the even greater pleasure of learning orally and from his mouth!

(671) (June 14) I noted two other (retail) micro-scams in SGA 41/2. One in the “Breadcrumbs for SGA 4, SGA 41/2, SGA 5” (admire the suggestive sequence!), where the author writes (p. 2) that to establish flat cohomology a “formalism of duality analogous to that of coherent duality... Grothendieck used the resolution of singularities and the purity conjecture”, thus giving the impression that this formalism is finally established only by him, Deligne, in the case (sufficient for many of applications) finite type diagrams on a regular diagram of dimension 0 or 1 (see same paragraph). He knows very well that the formalism of the six variances (hence the theory of global duality) was established by me without any “conjecture”, and that its restriction is only founded for the theorem of biduality (or “local duality”) — which therefore becomes “Deligne’s theorem” in SGA 5 (under the pen of Illusie)!

On the other hand, on page 100 there is a section entitled “The Nielsen—Wecken method”, which is the method that I introduced into algebraic geometry to prove a Nielsen—Wecken type formula, proven by these authors (in the transcendent context) by a technique of triangulations unusable in the algebraic context. Deligne learned this method (as well as the names of MM Nielsen and Wecken, whose beautiful article in German he did not need to read!) from me, in the SGA 5 seminar of “technical digressions”, which SGA 41/2 is intended to make people forget! In this section, there is no allusion either to SGA 5 or to me, and the reader has the choice, for the authorship of this method, between Nielsen—Wecken (if he is very poorly informed) and the brilliant and modest author of the volume.

Interestingly, in this entire volume, Verdier’s “Woodshole” proof for a trace formula including the case I needed (for Frobenius morphisms) is not mentioned. This demonstration (apparently forgotten, in favor of the more general method developed in SGA 5) was the missing link to fully justify my cohomological interpretation of the L functions. Obviously, there was agreement (tacit no doubt) between Deligne and Verdier — Verdier giving up to Deligne the credit on the trace formula for Weil’s conjectures, in return for the part of SGA 5 that he had taken over on his own the previous year (in 1976). (See on this subject the note “Good references” n° 82.) Other compensation: the publication in SGA 41/2 of “State 0” of derived and triangulated categories, from which my name is equally absent. Four years later

moreover, later, under the pen of Deligne, the duality in algebraic geometry took the name of “Verdier duality” — Verdier had not made a bad deal! (See end of note 75 “Iniquity — or the meaning of a return”.)

n⁹

(⁶⁷) (May 27) (*) The passages cited, like all the circumstances which surrounded the publication of this remarkable volume called SGA 41/2, testify in my friend to a deliberate intention of derision and contempt vis-à-vis the central part of my work, represented by the set of two intimately united seminars SGA 4 and SGA 5. Among these “circumstances” which revealed themselves during the reflection from April 24 (see the note “The accomplice”, n^o 63) until May 18 (see the notes “The remains...”, “... and the body”, n^o 88, 89), the ransacking of the original SGA seminar 5, materializing in the massacre edition of 1977, is not the least. (See in particular the note “The massacre” n^o 87.)

This deliberate comment of derision by my friend takes on its full meaning, if we remember that the SGA 5 oral seminar represented the young man Deligne's first contact with diagrams, cohomological techniques and in particular the duality formalism, and with cohomology. -adique, when he arrived at IHES in 1965 at the age of 21, with the specific aim of learning “algebraic geometry” with me. It was in this oral seminar, and in the notes of the SGA 4 seminar which took place two years before, that he had the privilege of learning first-hand the ideas and techniques which have dominated his work until 'to today (*).

This essential aspect of the context of “operation SGA 41/2 — SGA 5”, and beyond this, of the very relationship of my friend Pierre to my person, was visibly not present when writing the note preceding (“The Clean Slate (1)”, n^o 67), any more than in the part of the reflection on the Burial which precedes it. The memory of this “young Deligne man”, arriving in the SGA 5 seminar where he still had everything to learn and where he indeed (and very quickly) learned a lot, only ended up coming back to the last training courses. reflection, as if against my will. The deliberate intention in me, since the very year of the appearance of young Deligne in my mathematical “microcosm”, not to count him among the number of

(*) This note comes from a footnote to the previous note “The clean slate”, of which it constitutes a complement, written one month to the day.

(*) More or less, the same comment can be made for each of my other cohomologist students Verdier, Illusie, Berthelot, Jouanolou — see on this subject the note “Solidarity”, and the four notes which follow (notes n^o 85 to 89).

my students (as if in doing so I would have failed in an obligation of modesty towards such a brilliantly gifted person), made me also minimize, or to put it better, completely ignore until these very recent weeks, a reality that is nevertheless obvious and tangible, which is commonly expressed by this double designation (which I rejected) of “teacher-student” (**). I liked to forget, to ignore that there had indeed been a “transmission” of something from me to him, of something which for me as for him had great value, surely in a sense very different for him and for me. What I transmitted, in these four years of close mathematical contact between him and me, was something in which I had put the best of myself, something nourished by my strength and my love - something of which (I think) I donated without reservation and without measuring or even, perhaps, really feeling the price.

Surely, what I gave was fuel for a passion to know him in tune with that which animated me - and for something else too which I only felt much later and without yet linking it to this “transmission” which had taken place and which I was happy to ignore. To put it another way, what I gave was also received, at another level which remained hidden to me, not as tools to probe a fascinating and inexhaustible Unknown, but as instruments to supplant (first), and more late to establish domination, a ruthless “superiority” over others.

Without even distinguishing between what came to the “child” in my friend, eager to discover, and what came to the “boss” in him, eager to supplant, to dominate (even, to crush), but from the more superficial point of view of the part that certain ideas, techniques, tools take in a work - it has been an unexpected discovery during these last six weeks, to what extent the work of my friend, which takes its growth from the year we met, would be nourished until today by what I had transmitted to him. I had imagined, when leaving the mathematical scene fifteen years ago, that “the little” that I had brought to my non-student friend (a “little” of which I nevertheless clearly saw the role in his impressive initial momentum) was going to be a first springboard for a flight which would take him very far beyond his starting point, which would distance him from my work and my person. What happened, however, was that my friend remained attached to this starting point until today,

(**) (June 14) This deliberate intention is clearly apparent in the way I finally resolve to speak about him (as if in doing so I were breaking an obligation of reserve or modesty, with regard to the one who took pleasure in distancing himself from me...) four months ago, in the note “Jesus and the twelve apostles” n° 19.

attached to the very work that it was at the same time to deny, to deliver to derision or to oblivion, and to “use”, this is the typical case of a conflicting link to the father or to the mother, who indefinitely keeps in the orbit of those he is destined to leave and surpass, the one who likes to cultivate this conflict within himself, instead of rushing out to meet the world...

I see today that by this deliberate intention of treating my young friend as a “being apart”, and not simply as one of my students who was fortunate enough to have more means than the others – and by the deliberate intention also to minimize or forget in my relationship with him the price of what I transmitted (and also the power that I therefore placed in his young hands...) - through these attitudes in myself, I nourished my unknowingly a conceit and a conflict in him, both of which remained hidden from me. At the same time, I entered into a certain game - or rather, there was a game between two in perfect harmony, of which I would be hard-pressed to say who “had started it” (assuming that the question was a sense): myself out of “modesty” pretending that my young friend was far too brilliant to be a student of anyone, and that the little I had been able to give him was really not worth talking about — and he - even distancing himself (from before my departure) from my person and my work, denying (under my complacent eye) the soil which had indeed nourished him.

It is only by writing this note that I finally see clearly this game, of which a diffuse perception must have been present for only a week or two. And I also see that this “modesty” or “humility” in me was a false modesty, a false humility: a lack of simplicity, to see things simply for what they are. There was in this game a complacency towards my young friend - seeds which proliferated a hundredfold! — and, more subtly, a self-indulgence, by making a sort of pedestal for a “privileged relationship”, extraordinary and everything (*). (As any lack of simplicity perhaps, or close to it, is ultimately self-indulgence...)

(68) (April 27) To tell the truth, I have never thought about the meaning behind the strange vicissitudes of the SGA 5 seminar. Its oral proceedings in 1965/66 did not give rise to any particular difficulties, whereas writing by successive and often failing volunteers

(*) Compare with the note of May 10 “The Ascension” (n^o 63) where for the first time I perceive this ingredient of complacency in what my relationship with my friend Pierre was. This perception had remained isolated and fragmentary until today, when it became clearer during the reflection which took place in this note “Being apart”.

dragged on for eleven years(**)! It was in 1976 that Illusie finally took matters into his own hands, taking care of writing up what remained in the plan and publishing it all. Today is the first time (after almost twenty years which have passed since this seminar) that I realize “that there is something to understand”. Maybe I'm the only one...

The first idea that comes to me is that among the more or less active listeners of the seminar, and also more or less familiar with the previous seminars SGA 1 to SGA 4, there must have been a phenomenon of saturation compared to the tide of “grothendieckeries”, sweeping over them like a sort of tidal wave without response(***). Obviously, faith was lacking in certain editors, who must not have very well understood where all this was going, and why on earth I had been so stubborn, for an entire year, in wanting to go round and round in all the meaning until complete mastery of the essential formal properties of stagnant cohomology, and the whole arsenal of new notions attached to it. Above all, the fact that there remains no trace of either the final presentation of the seminar, setting out open problems and conjectures (never published to my knowledge), nor of the introductory presentation reviewing the formulas of the Euler type—Poincaré and Lefschetz in various contexts is a particularly eloquent sign of general disaffection. I don't remember having noticed this disaffection then (nor even after, until today (*)), bogged down as I was in my current tasks.

The fate of SGA 5, which originally had as strong a unity as any of my other seminars, and which was gradually dismantled (68) during the eleven years of non-editing which followed, could have shown me that the big projects I was pursuing if

(**) Writing the entire seminar, based on my detailed notes for the oral presentations, would have represented barely a few months of work for me.

(***) This is associated with this impression of students who remained “a little stunned”, expressed in the letter cited in the note “Failure of teaching (2) — or creation and conceit” (n° 44).

(*) (May 26) It was after getting back a little more “in the bath” of the SGA 5 seminar, that I remembered a feeling of unease that I had had, when I leafed through (it must have been in 1977, the year of its publication) the copy of the published seminar that I had just received. This impression of “mutilation” (which then remained in diffuse, unformulated form) was mainly due, perhaps entirely even (I did not have to spend much time looking more closely, although it would have been well worth suddenly...), to the absence of the introductory and final presentations, and above all (I believe) to the casualness with which this absence was announced, as something almost self-evident - why then would we have taken the trouble to include them ! I must have at some level “felt something”, which I only took the trouble to let rise and examine this month (nearly seven years later!), in the note “The massacre ” and in the two notes “The remains... ”, “... and the body” which follow it.

stubbornly, and for which I had found arms to support me for several years, had in no way become a joint enterprise, but remained personal to me.

My program gave rise to occasional collaborations here and there, without transforming into a driving idea in any of my students at the time - into a force which would have encouraged them to work on a longer-term basis and with a broader vision than the one that he had pursued with me in his thesis, the main role of which in his life was to make him learn this profession of mathematician that he had chosen.

The only one, it seems to me, to have grasped as a whole (if not adopted) a certain overall vision, going beyond the framework of a particular "collaboration" on a particular type of question or for the development of such particular tools, has been Deligne. This is surely why I must have seen in him (without the thing ever having to be formulated) much more of a "heir" than a "pupil". The term "heir" here better describes what I want to express than the term "continuator" which initially presented itself to me, but which could suggest the idea of a work which would be limited by an inheritance received. On the contrary, I felt this "heritage" as a simple contribution that I was able to make for the deployment of a personal vision, which would be nourished by many other contributions (as has indeed already been the case even before my departure), and which was called to effortlessly surpass everything that had preceded and nourished it.

Coming back to the sad fate of SGA 5, the thought that occurred to me yesterday was that this fate was perhaps not unrelated to the ambiguity of Deligne's relationship to my person and my work, seen in particular the influence that his strong mathematical personality could not fail to exert on all of my students (*). Surely he must have found his account in his heart in the vicissitudes which struck the notes of this seminar, stripped of what made the unity and the momentum of the oral seminar. Upon reflection, it is clear, however, that it is not in the dispositions of a single one of the participants that the primary cause is found and is

(*) (April 28) An eloquent concrete sign of this ascendancy is that the publication of SGA 5 only ended up being done when Deligne saw fit to signal Illusie to take care of it. actively — that is to say, at the precise moment when he himself needed it as a basic text for his "digest" SGA 41/2, intended to replace him. (See on this subject the end of the introduction to SGA 5, written by Illusie.) This clarifies and gives full meaning to this declaration (which I still described as "mysterious" the day before yesterday in the "Clean Slate" note (note § 67)), that "the existence of SGA 41/2 will soon make it possible to publish SGA 5 as is". The "as is" here is a touch of humor that I was probably the only one to sense (from the day before yesterday), and to appreciate its value! (Given the "dismantling" that the published version represents compared to the original seminar.)

sentinel of these vicissitudes. Without clearly discerning this cause yet, there is no doubt in any case that it concerns above all my own person and the people who had pretended in 65/66 to take charge of the writing of the seminar, surely it is found in their relationship to me, or perhaps also, in their relationship to a certain way of doing mathematics (or to a certain program, or to a certain vision of things) that I embodied for them. The fate of SGA 5 now appears to me as an eloquent and tenacious revealer of something that I have never taken the trouble to examine, for lack of even realizing it, and that even at this moment I do not just glimpse(**).

Perhaps these lines will encourage some of the protagonists of this collective misadventure to share with me their own impressions on this subject.

Perhaps there is, however, a lesson (at least provisional) that I can draw from the SGA 5 episode, which first foreshadowed, and then illustrated, this spectacular stop after my departure, almost entirely, of the famous "program" in which I was embarked. Contrary to what I must have believed more or less in the euphoric sixties (happy as I was to have finally found goodwill to help me!), it appears to me today that the realization of a vast personal vision through tenacious and meticulous work cannot be in the nature of an adventure or a collective enterprise. Or rather, if there is a "collective enterprise", it is not one that would be carried out in ten or twenty years (or even thirty) of work around the same person. As long as the vision must become a common heritage for all, it will be incarnated here and there under the sole pressure of needs, through the day-to-day work of this or that other who will perhaps only know by name (and again!) this predecessor, whose vision had been too vast for his arms alone to be enough to make it take shape (*).

(**) (May 26) This is the very "something" referred to in the penultimate footnote, and which has finally surfaced during the reflection of the past weeks, and especially from the moment (May 12) when I finally took the trouble, for the first time since its publication in 1977, to look a little more closely at what "a splendid seminar" had become in my hands. of my cohomologist students, in the massacre edition which was made eleven years

later. (*) (April 28) Perhaps "my arms alone" would have been enough to carry out the vast work program that I envisaged towards the end of the sixties, but on the condition that I would do it for the next twenty or thirty years. were going to follow the exclusive servant of this program. I am happy today not to have followed this path, which could have been mine and whose trap and danger I now clearly see.

(⁶⁸) (April 28) As an example (among many others(**)) of this dismantling, I thought back to the fate of one of the key presentations of SGA 5, which ended up being written by none other than Deligne (who took charge of it I believe in 1965, to “keep” his commitment eleven years later...) according to my oral presentation, to be incorporated without further ado into SGA 41/2! This is the formalism of the cohomology class associated with an algebraic cycle on a regular diagram, which develops with ease by passing to “supported” cohomology in the support of the envisaged cycle. Like almost all constructions in equal cohomology (also useful in a good number of other contexts, where they have become common practice), I developed this one at the end of the 1950s in the framework of coherent cohomology (here, cohomologies of Hodge and De Rham, which, in the context of “abstract” algebraic geometry, are studied for the first time in one of my first Bourbaki talks). It is so natural that it obviously implies the usual compatibility with cup products (*).

In writing these lines I realize that the sleight of hand (transmitting this crucial presentation into SGA 41/2) made it possible to arrive at this brilliant result that Deligne, who had participated in the SGA 5 seminar in 65 /66 (**), does not appear on the cover among the number of my “collaborators” (something which had already struck me yesterday, while leafing through the published volume Reading Notes n° 589) and that it is me on the other hand who has the right (eleven years after the seminar) to do

(**) (May 28) I only decided to go around this “dismantling” in the reflection of May 12, in the note (with a more appropriate name) “The massacre” (n° 87).

(*) (May 28) In the coherent framework, see my Bourbaki presentation n° 49 (May 1957), §4. In the note “Good references” (n° 82) of May 8, I discovered that these ideas, as well as those that I had developed in the same SGA 5 seminar for the homology classes associated with cycles (and numerous others) were taken over by JL Verdier, without saying a word about the existence of an SGA 5 seminar or about my person. This operation took place in 1976, a year before “operation SGA 41/2” (with which it appears to me to be closely linked), and in full view of all the ex-auditors and participants of the mother seminar SGA 5 of 1965 / 66.

(**) (May 28) And it was even there that he heard for the first time of the things he sets out so brilliantly in the pirate volume SGA 41/2! On this subject, see the note “Being apart” from yesterday (n° 67). Compared to the procedures of his friend Verdier the year before, and to those that he himself practiced on other occasions, my friend here nevertheless remains below the limit of patent pillage, since he presents me as the author of the presentation on cycles (with, it is true, the brilliant result of being able to present myself as his collaborator), and that he does not yet pretend to be purely and simply unaware that I have something to do with the theory of flat cohomology, the trace formula etc. For decisive progress in this direction, however, see the note “The Funeral Eulogy (1) — or the compliments” (n° 104).

figure of “Deligne collaborator”. This is a pretty brilliant reversal of the situation, it must be said! At the time of the publication of SGA 41/2, to which I collaborated without knowing it, it had been seven years since I had stopped all public mathematical activity - so much so that I never took care of the publication of this poor SGA 5, which for me was part of a past that I had left behind...

(April 30) As for SGA 5, it now appears as a collection of somewhat heterogeneous texts, without tail or head (these were lost along the way!), and which only “stand up” by reference to the text SGA 41/2. a remarkable thing and which I only notice at this very moment, the very name SGA 41/2 does indeed suggest that this text precedes SGA 5, which would only exist by reference to it(**). If the author of this text had been in less ambiguous dispositions (*), and if he wanted for sentimental reasons to insert his “digest” (“plus some new results”) in the SGA series where he had played its role, the obvious name was of course SGA 5 1/5.

I see here a second sleight of hand, which makes me realize that Deligne's part in the fate of SGA 5 is heavier than I thought even three days ago. This also makes me come back to the feeling expressed the day before, that SGA 41/2 did not resemble a fraud operation. If apparently no one (starting with Illusie, whose good faith is certainly not in question(**)) noticed the “operation”, this is undoubtedly due to this

(**) (May 28) For a deeper meaning of this “violent insertion” of SGA 41/2 between the two indissoluble parts SGA 4 and SGA 5 of a whole, forming the heart of my written work, see the note “The

remains...” (n° 88). (*) (May 28) This expression “ambiguous provisions” is definitely a euphemism here!

(**) It is also high time to take this opportunity to thank Luc Illusie for the care and self-sacrifice with which he took care to bring to a successful conclusion the writing of certain distressed presentations and the publication of “pack”; and this in certainly not encouraging conditions, among which my total absenteeism was certainly not the least!

(May 26) In the light of the subsequent reflection, continued in notes n° 84 to 89 and particularly in the note “The massacre”, these thanks lavished on Illusie take on an enormous and unforeseen comic dimension, which I was far from to sense while writing these lines! It is true that I wrote them against a reluctance in me, which was expressed in particular by a “forgetting” of the thanks (already planned) in the “main” text of the note, so that I had to “catch up” with a footnote. This reluctance was undoubtedly due to the discomfort that I had already felt from the first time that I held in my hands this volume which had the name SGA 5 (and which I no longer had the opportunity to hold in my hands, I believe, before these last few weeks), malaise which I spoke of in the footnote (dated today May 26) to the previous note “The

“ascending” that I have already been able to observe, and also I think of the charm of my friend's person, both of which place him above all suspicion!

(69) (April 27) Around the age of eleven or twelve, while I was interned in the Rieucros concentration camp (near Mende), I discovered compass drawing games, particularly enchanted by the six-branched rosettes which are obtained by dividing the circumference into six equal parts using the opening of the compass carried over the circumference six times, which makes it land right on the starting point. This experimental observation convinced me that the length of the circumference was exactly equal to six times that of the radius. When later (at Mende high school I think, where I ended up going), I saw in a class book that the relationship was supposed to be much more complicated, that we had $= 2\tilde{y}R$ with $\tilde{y} = 3, 14\dots$, I was convinced that the book was wrong, that the authors of the book (and those undoubtedly who had preceded them since antiquity!) must never have made this very simple outline, which showed clearly that we simply had $\tilde{y} = 3$. Typically, I realized my error (which consisted of confusing the length of an arc with that of the rope which joins the ends) when I opened up about my astonishment at the ignorance of my predecessors to someone else (an inmate, Maria, who had given me some voluntary private lessons in math and French), at the very moment when I was getting ready to to show him why we had to have $= 6R$.

This confidence that a child can have in his own knowledge, by trusting his faculties rather than taking at face value the things learned at school or read in books, is a precious thing. However, she is constantly discouraged by those around her. Many will see in the experience that I report here the example of a childish presumption, which had to bow to received knowledge - the facts finally bringing out a certain ridicule. As I experienced this episode, there was however in no way the feeling of disappointment, of ridicule, but rather that of a new discovery (after the one that I had hastily interpreted by the false formula $\tilde{y} = 3$): that of an error, and at the same time that we must have $\tilde{y} > 3$, because obviously the length of an arc is greater than that of the string

signal". This inattention clearly illustrates the importance, in meditation, of vigilant attention to what is happening in one's own person in the very moment. Lacking such vigilance, the reflection here remained below meditation, at a superficial level - whereas attention to this reluctance would have led me to probe its origin, and thereby look more closely also what had become of this beautiful seminar (something I only did two weeks later).

which joins the two ends. This inequality also went well in the direction of the challenged formula $\tilde{y} = 3, 14\dots$ which, as a result, took on reasonable appearances, at the same time that I must have glimpsed then that there was perhaps not-so-stupid people who must have looked into the matter. At that moment, my curiosity was satisfied, and I don't remember wanting to know more about the ins and outs of this number, so important, one had to believe, that a letter was intended for him. by himself (*).

This experience was undoubtedly one of the very first which taught me a certain prudence, when my own knowledge seems to contradict generally accepted knowledge: that such a situation may merit careful examination. Prudence, which is a fruit of experience, marries and completes (without altering it) the spontaneous confidence in one's own capacity to know and discover, and the assurance that the original knowledge of this power gives.
in U.S.

(70) (April 28) Thinking last night of this cover story of SGA 41/2, where I appear without knowing it as a “collaborator” of my illustrious ex-student, the thing seemed so incredible to me that a doubt came to me if I had not been betrayed by my memory, and had not indeed been consulted and would have given my agreement without thinking too much about anything. But this assumption goes so far against the attitude that was mine until last year, namely that there was no question of me still publishing mathematics (and even more so). his, not as a “collaborator” of someone, and of someone whose relationship to me already appeared to me as charged with a profound ambiguity) — that it is much more “incredible” even than what it was supposed to “explain”, and which ultimately has nothing mysterious or inexplicable for me! Out of conscience, I still checked my friend's letters between 1976 and today (there aren't a lot of them and it was a quick thing), without finding, of course, any allusion upon publication of SGA 41/2. I still wrote a few lines to the person concerned himself, to ask him if he could give me

(*) (April 28) The preceding evocation brought back other memories, which show that this famous number $\tilde{y}$ intrigued me more than I initially thought I remembered. The approximate value $355/113$, found in a book (perhaps the same), struck me — it was so pretty that I had difficulty believing that it was only approximate! Not knowing any other numbers than fractional numbers, I was intrigued by the appearance that the numerator and denominator of the irreducible fraction which expressed $\tilde{y}$ could have - these must be very remarkable numbers! Needless to say, I didn't get very far with these childish reflections on squaring the circle.

explanations about this “hoax” that I hardly appreciated...(*).

When in my reflection three days ago I mentioned the turning point that took place three years ago in my relationship with my friend Pierre, when I lost interest in continuing to communicate with him on mathematical issues (see “Two turning points”, note (66)), I remembered a certain impression, which had been strongly present then. To situate it, I would first have to specify that during the ten years which had passed, while my friend had played for me the role of practically the one and only mathematical interlocutor, I had expected (as a matter of course as much of himself as this role that I made him play) that he would relay the mathematical thoughts and ideas that I shared with him, to communicate them in turn to mathematicians who might be interested in them. As I have explained elsewhere (see section 50, “The weight of a past”), it was the feeling of having such a relay interlocutor that gave my sporadic periods of mathematical activity a deeper meaning. than that of satisfying a craving, by linking them to a collective adventure going beyond my own person. It is also this feeling, no doubt, which meant that for so long, I did not feel the shadow of a desire to publish what I found, and even less the shadow of a regret to be removed from the mathematical scene. (Such a regret, moreover, never appeared, and I “reappeared” on the said “scene” without deliberate intention, and before I even realized it!)

I cannot say to what extent my friend responded to this expectation - it is possible that he played the expected role as long as he maintained this mathematical availability towards me, driven by curiosity and by an affectionate sympathy at the same time, which had

(*) (May 26) My friend kindly honored me with an answer, which finally dispelled the last trace of doubt. He had listed me as a “collaborator” indeed because of the presentation of SGA 5 that he had written and included in SGA 41/2 — and he had not deemed it necessary to ask for my agreement for this transfer, or to appear as a “collaborator”, nor thought it necessary to send me a copy of this volume to which I had collaborated so well, given that “it had been seven

years since I had done math”. (June 5) I have just received (better late than never!) a letter (dated May 30) from Contou-Carrère, responding to a letter of April 14 in which I asked him (out of conscience) if he had never seen a copy of SGA 41/2 among my books. It would seem that there was indeed such a copy, which Contou-Carrère had kept with him (unless he had bought it and no longer remembered it?). On the other hand, Deligne’s response seems to confirm that he did not consider it useful to send a copy: “It could indeed have been a good idea to send you a copy of 41/2; I doubted that you would not have seen the benefit of it” (letter of May 15).

made possible and quite natural this exceptional role that he played in my relationship to the world of mathematicians (and also, to a certain extent, in my relationship to mathematics itself). When I asked myself the previous question, a day or two ago I received (as in immediate partial response!) a letter from Larry Breen, sending me copies of various correspondence from 1974 and 1975, including two lines from Deligne from 1974, accompanying the copy of a letter (which I had just written to him about the formalism of Picard's fields), which asked his opinion on the subject of my letter. He refers to me as "the master", in which I think I sense a half-joking, half-affective intonation. I don't remember any other occasion where I heard from others about things that I had shared with my friend since my departure in 1970. It is quite possible that there were some and that I forgot, not to mention that even during the episodes of my mathematical activity, it was relatively rare that I felt the need to consult my friend, and until 1977 or 1978 the reflections that I shared with him on occasion were of limited scope. So there was not much to "relay", strictly speaking, until around this time (*).

Things changed in 1977, when for the first time since the sixties, I became very strongly "hooked" on a substance of exceptional richness. It was the beginning of my thoughts on cards, and one thing led to another (around the same time), on a

(*) I could make an exception for my first reflections on a theory of unscrewing stratified structures, about which I had to say a word to Deligne towards the beginning of the 70s. He had received my expectations on this subject with sympathy. indulgent, a bit like that given to a big child who doubts nothing. (These are dispositions that he often had in his relationship with me, and which were surely often founded!) My friend's skepticism, motivated by the knowledge he had of certain phenomena of savagery that I was unaware of, did not, however, convince me - rather, the facts that he pointed out to me made me suspect from that moment that the context of "topological spaces", commonly adopted for "doing topology", was inadequate to express flexibly certain topological intuitions that I felt were essential, such as that of "tubular neighborhood". Over the next ten years I hardly had the opportunity to return to these reflections and I had to forget my "suspicions" a little, which became current again (and then became an intimate conviction) through my reflections. from December 81 - January 82, stimulated by the needs of a theory of "unscrewing" the "Teichmüller tower". (Compare

on this subject Outline of a Program, par. 5, 6.) (June 5) As another exception, I could count my reflections on virtual relative schemas and virtual motifs (above a schema of general base), which I seem to remember having shared with Deligne. As these were things closely linked to a yoga that he had decided to bury (until the time of the exhumation in 1982), it is not surprising that he did not pretend to cling to the ideas that I explained to him and which, of course, delighted me. For some information on them, see note n° 469 .

new approach towards regular polyhedra (see Sketch of a Program, par. 3 and 4).

From that moment too, it was clear to me that the facts I had just put my finger on opened up unsuspected perspectives, of a breadth and depth comparable to those I had glimpsed (and more than glimpsed, subsequently) with the birth of the notion of motive.

It is strange that on this occasion, I again addressed my friend with the expectation that he would echo these things which had amazed me and what they gave me a glimpse of - then that the total silence which for seven or eight years had already surrounded the very name "motive" was quite eloquent to teach me that my expectation was illusory! This astonishing lack of discernment clearly illustrates the deliberate intention that was in me (even after the discovery of meditation one or two years earlier) to pay no attention to my relationship to mathematics or to mathematicians, supposed to be part of a far past and well past! My first reflection in this direction (*) took place precisely in 1981, the year of the second "turning point" in the relationship with my friend, about whom I had occasion to speak. But even in this meditation which lasted for several months, the relationship with other mathematicians was barely touched upon, and the relationship with the one among them who had undoubtedly been the closest of all (at least at the level of our common passion) was not even touched upon, as far as I remember. It would have been very useful though!

Still, with hindsight and through my current reflection, it becomes clear that what happened at that moment and which had surprised and frustrated me so much (the sudden appearance of a discreet disdain, where I expected to share the still fresh joy of a discovery which had made a profound impression on me) was indeed what was to happen. It was precisely the scope of what I had to communicate, which had motivated my expectation of an interest in tune with mine, which was to arouse in my friend, for the first time in his relationship with me, the reflex to discourage. This reflex must have been all the stronger, as I was already "pre-buried" from that moment by the publication of SGA 41/2. When I returned to the charge three years later, while my friend (armed with his beautiful theorem on absolute Hodge cycles) was preparing to take care of the proper burial, with the "memorable volume" published the following year(**), this same reflex worked, but with a completely different

(*) On the subject of this reflection, see "The spoilsport boss — or the pressure cooker" (s. 43).

(**) This is volume Lecture Notes 900, see note "Memories of a dream — or birth of motifs"

end to communication at the mathematical level, but without “discouraging” me...)

In both cases, the disinterest was obviously sincere, as it had also been in other cases, when it was expressed towards people other than myself. It was not the first time that I saw in him (or in others) forces foreign to the thirst for knowledge neutralizing it, and replacing the flair of the mathematician.

It was on these two occasions, in 1978 and then in 1981, that I glimpsed for the first time, as if in a flash, the “price” of this contradiction in my friend who had been known to me for many years, but the significance of which, as an obstacle and limitation in his work and in his understanding of mathematical things, had never appeared clearly to me until then. But it was only during the meditation that I have been pursuing for a month, on the meaning of a certain burial which has taken place insidiously since my departure, that this significance ended up gradually appearing in full light.

On the obvious level, the burial that I discovered over the course of these last days and weeks, anticipated for several years but without me thinking of attributing a particular role to anyone, was above all the burial of my mathematical work, and through it and above all, of my person. Certainly the best placed of all to take part in this burial (which many others in their heart of hearts were calling for), and to preside over the anonymous funeral, was the friend who had previously in the eyes of all appears as the legitimate heir. If he presided over it, surely he was not the only one to participate in this funeral! But more profoundly, the one that my friend buried thus discreetly, throughout these twelve long years, was none other than himself; this thing in him, rather which impresses no one, a delicate and elusive thing like the perfume of a flower or a fruit, and which has no price. (ŷŷ71)

(71) But following the thread of associations, I moved away from my purpose, which was to evoke a certain “strong impression”, the memory of which has come back to me insistently for three days. This impression takes place at the moment of this “turning point” in the relationship with my friend, when I saw myself confronted with signs (both muffled and brutally obvious) of a sort of deliberate expression of contempt — these signs that made me end our relationship on a mathematical level. I understood then that the moment had arrived when I had nothing left to

(nŷ 51).

expect the continuation of such a relationship, and the "decision" made itself, without division nor regret, as the first fruit of this late (and very partial) understanding.

There was no anger in me and even less bitterness. (I do not remember not during our relationship having felt any anger towards my friend, nor bitterness except at the time of the episode of my departure from IHES, where he was not the alone to be included in it.) But there was a sadness, turning this page in the relationship with a being who continued to be dear to me, while the strongest link which had attached me to him had withered and perished. And like a sting that remained even in the following years, there also remained this unresolved frustration, of this joy that I had brought it to share it with him, to the one who seemed closest and best to me placed to share it, and which had come up against the closed doors of complacency. This frustration was finally resolved, it seems to me, by the meditation that I am pursuing at the moment. Even today, it comes back to show me that what was happening to me was what had to happen, and that the first person responsible for this frustration is none other than myself, who had seen fit to indulge in an illusory image of a certain reality, rather than to use my healthy faculties and look at this reality with awake eyes!

It is against the background of this sadness, and also that of this frustration of an expectation, that this strange impression appeared, which came then not like the fruit or the outcome of a reflection (which did not take place then), but as an immediate and irrefutable intuition. It was that everything I could say to my friend on a mathematical level, and everything I had said to him for years, I was entrusting him to a tomb. or had confided it. While I have never spoken of this feeling to anyone, and I do not nor did I write it down in black and white during some subsequent reflection, I remember well that it was this image of a tomb which was present at the time, and the very word which expresses it (in French), and which I have just written. This "impression" or image must have arisen, this moment, as the visual expression (so to speak) of some understanding which, at a certain level, must have been formed and been present for a long time, as the fruit of everything a set of perceptions that must have taken place over months and years, without attention does not hold them nor memory records them; very simple perceptions and all of them undoubtedly obvious, but which I had not "remembered" because they appeared unwanted to someone in me who often has the power to sort as he pleases... Neither at this moment nor subsequently, this peremptory image was not associated with any precise, tangible memory of a

“event” going in the direction of this image, and which could have given rise to it in me. The memory of this sudden image must have rarely crossed my mind afterwards, and today is the first time that I have dwelled on it even slightly.

If no memory or association presented itself then, it is surely because I did not have the minimum availability to welcome it. Strange thing, I was then engaged (if I place the moment correctly (*)) in a meditation on my relationship to mathematics, without this episode which spoke to me quite strongly, after all, of a certain past through a present, makes me think of interrupting the “thread” of my reflection, to include a reflection on the ins and outs of what had just happened then and which was not without consequences in my life.

The first (and to be honest, the only) association that presented itself just now (having just evoked this image and saying that on the spot it appeared disconnected from any memory or association...) is the fate which had been reserved for my “dream” of patterns — the mathematical vision above all that had been dear to me, in my past as a mathematician. If this past perhaps still continued to have some secret hold on me, it was through this dream - and this secret hold (which I believe I glimpse at the moment of writing these lines) itself had the strength, beyond words, beyond dreams. If, as a legacy of a past investment, of a passionate investment in mathematics, an unexpressed and profound frustration could have appeared over the past ten years, it was indeed that of seeing a dead silence surround these things which for me were alive, and which I had entrusted to my friend as living and vigorous things, all ready to leap into the light of day! When I left, it was he and no one else who had the power and vocation to watch over this blossoming, to make available to everyone what he alone (with me) felt intimately. And without ever telling me in these terms or in any other - without ever stopping (as far as I remember) even for the space of a thought about the fate of what I had left — somewhere in me I must have understood, over the years, that this dream which was always dear to me, it was to a “tomb” that I had entrusted it.

And suddenly, with this evocation and with this first association that it arouses in me, I see an influx of other associations presenting themselves in the wake of this one, revealing to me that I have indeed just touched a nerve place — the point above all, perhaps, where

(*) (June 11) Cross-checks confirm to me that this is indeed the case. This “second turning point” is located in the second half of 1981.

the weight (long ignored) of my past as a mathematician is exerted.

But this is not the place, it seems to me, to follow these associations, while this stage
"ultimate" of my reflection is already starting to get long. I seem to have said enough
in this reflection on the subject of my friend Pierre as on the subject of motives - and surely
even too much for the taste of many! And I think it's time, as far as these notes are concerned, to
close them, with a sort of assessment of what this reflection on a
double burial.

VI. The Return of Things — or Unanimous Agreement

(72) (April 29).

(*)

It seems to me that most of the work of description and decantation that had to be done,
on the subject that occupies me, is completed, with regard to the "partial images" on the subject of a
certain situation. (It is obvious, moreover, that these notes, intended for publication, are not
only give a shortcut of the actual work, while it is out of the question here to explain by
the menu all the elements which contribute to the formation of this or that partial "image"...)
Surely also, through this same work a certain overall image could not fail to emerge.
form, still vague, and waiting to be formulated to take shape and life and tell me what
what she has to say to me. Since my reflection yesterday, I feel it ready to bloom and pushing me
to give him voice.

To tell the truth, what yesterday's reflection especially taught me (which I just reread
same) concerns no one other than myself. It is with some relief that I see
reflection return to the firm ground of a reflection on myself, while for a
week it often gave me the feeling of involving the person of others more than the

mine. Yesterday's reflection finally revealed to me one thing that is surely very obvious: namely

the strength of my attachment to a certain past, to my "past as a mathematician", and the role
particular role played by this famous "dream" of motifs.

Once the thing is finally said, its obviousness is obvious - the most recent and clearest sign perhaps being the emotion triggered by the discovery (two years later)

(*) I thought it would be good here to spare the reader a good page of considerations on meditation in general,
which were a way of beating around the bush - a sign of resistance to getting to the heart of the matter.

of a certain “event”, of this “furtive” (and late) re-entry of patterns into the mathematical menagerie, under the leadership of my ex-“student” and friend! This emotion immediately translated into the resumption of a reflection which seemed finished, - a resumption which was also materialized by a flow of fifty pages of retrospective reflections! As a result (and the observation has already occurred to me several times during this untimely resumption) it would seem that I have not yet “gone out of the loop” as much as I believed a month or two ago in the exultation at the end of a stage and the feeling of liberation (in no way illusory) that this stage had brought me — with the teaching that “I was not better than the others”, and that “I had not to amaze me if the student surpassed the master” (*). This teaching did not, however, prevent me from being surprised — it was enough for the “student” to surpass me in a direction that I had in no way anticipated! But if the teaching did not prevent “I am surprised”, it was nonetheless valuable to me more than once during the past reflection, to protect me from the usual traps (or at least from some of them). these traps).

To return to the strength of this “hold”, to the strength of my attachment to this dream of motifs, it has already appeared in many other places in this volume, both in *Récoltes* and *Semailles* (where it is a question of motifs several times and in quite eloquent terms), that in the Outline of a Program (where “objectively” the motives had nothing to do), or in the Thematic Outline (where the motives figure somewhat of unincubated eggs in a flock of vigorous chicks). In this last text, which dates back twelve years and which is visibly written in distant dispositions, this last paragraph on the motives is the only one, it seems to me, where we suddenly feel a warmth passing...

The remarkable thing is that this attachment never appeared to me during the fourteen years since I left, until yesterday when I finally saw the obvious, and finally formulated it today. During the meditation almost three years ago (July to December 1981), I ended up noticing the first evidence, namely the permanence in me of a passion for mathematics, which had been expressed in over the past years in a very eloquent way. But my attachment to a past, as far as I remember, went unnoticed at that time, and has remained so until today.

However, I must have begun to glimpse it with the reflection “The weight of a past”, which came as if by conscience while the meditation on my past as a mathematician seemed already to be completed (except that I have not yet knew how to perceive the weight of this past!). I

(*) See the section “Finish the merry-go-round!”, n° 41.

Moreover, I felt clearly while writing it that I was still remaining on the surface of things, without really penetrating them. The notes that I was then led to add (first (46)(47)) then led me in a direction which for a good while took me away from myself, by focusing my attention on a mathematical work (and on the aspects of it which seemed the most "important" to me), then on the vicissitudes of this work and the role of others in them, rather than on myself.

I have just reread this reflection "The weight of a past" (s. 50). Towards the end of it, I begin to see that the "shifting force" (towards a mathematical-ematic investment other than episodic) could be the result of an "attachment to the past" (from a mathematician), but rather to "the past of the last ten years, the past "after 1970" therefore, and not the past of things already written in black and white, of things done, those before 1970". A few lines later, however, I remember, but only "in passing", that in the "vast program that I then had before my eyes... only a small part was realized". In writing these lines, I had to think above all about the parts of the "vast program" which were immediately achievable, whose motivational force (!) was however far from reaching that represented by the "dream of motives". (Its justification (but by no means its formulation...) then appeared as one of the major tasks "on the horizon"...))

It is clear that my attachment to the "dream of motives" is (like undoubtedly all attachments) above all (if not exclusively) of an egotistical nature. It is the desire, not only to contribute to a collective work, but also to see this contribution recognized. Supposing that the "vast picture of motives" had indeed been painted in all the scope that I saw in it since the end of the sixties, but that the part which had been mine in the blossoming of this vision be silent, my displeasure would undoubtedly have been no less (and perhaps greater?) than that which I experienced upon reading the "memorable volume" (in which I clearly see the repetition of certain notions and ideas which I had released and brought to light, but (at least so I felt) deprived of the breath and the intense life which had so fascinated me in them) (*).

As long as this egoistic desire to see certain things from my distant or more recent mathematical past is "recognized", it is undoubtedly premature to claim that I "came out of the

(*) (June 14) This "displeasure" is due above all, it seems to me, to this impression of impudence, of deliberate contempt for a link that we pretend to ignore, to consider negligible. The situation is quite different when ideas or results that one has discovered are rediscovered by others, something that commonly happens.

merry-go-round". The mathematical "merry-go-round" no longer contains me, as it once contained me and as it contains some of my friends. But surely I still have one foot there, and I suspect that the foot will stay there as long as I dabble in doing math!

(73) (April 30) I thought earlier about the fate of the SGA 5 seminar, and how this fate was linked to the publication of SGA 41/2. A situation which had been confusing, and which I have only examined in recent days and with passing glances, now appears to me very clearly. I have just added a footnote (*) on this subject to my reflection of three days ago (see "The signal", note (68)), and it seems to me that with the comments that I had already done there before yesterday (also in footnotes) and with the reflection of the day before ("Clean slate", note (67)), I expressed myself clearly enough so that it is useless to do again a summary overview of a situation which now appears sufficiently eloquent(**).

Having reached this point, it is important for me to note that the first and main person responsible for the "sad fate" that befell SGA 5, and the use that was made of an abandonment situation, is none other than myself. If the various "volunteers" (who took charge of writing that they did not really want to do) were obviously not clear with themselves, neither was I, who persisted in not listening to the lesson of a situation that is nevertheless eloquent, and relying on "collaborators" without conviction, instead of taking matters in hand and doing the writing work myself, which was therefore my responsibility. After all, three whole years passed between the end of the oral seminar, and the moment of my departure from the mathematical world (which immediately translated into a practically total lack of interest on my part in my published work, during the fourteen years which followed). It is true that during these three years I was fully absorbed by my other tasks, including the continuation of the SGA seminar (with SGA 6 and SGA 7), the writing of the EGA, the reflection on the often juicy questions arising from day to day. day, and among these, the progressive maturation of an overall vision of the reasons... Taken by these tasks, I made the choice to turn a blind eye to the fate of a past seminar, which constituted (together with SGA 4 of the previous year) the most profound mathematical contribution that I have been able to make, in terms of the work entirely accomplished I mean, and also the one which undoubtedly has the most extensive

(*) This prohibitively long footnote became a separate note "The Reversal" (n^o 68).

(**) However, I returned to it on May 9 and the following days, see notes n^o s 84–89.

scope.

The situation could only deteriorate after my departure without return, allowing the most prestigious among my ex-students this brilliant operation to insert his famous SGA 41/2 between the gangue of nonsense and superfluous details of SGA 4 and SGA 5, by doing me the honor of promoting myself as collaborator of what presents itself as the central key text, intended (as he says with this candor which is his charm) to charitably “forget” the heavy gangue which surrounds it...

In short, the choices I made, before my departure and by my departure, implied consequences for the fate of my published work, or (for SGA 5) pending publication, just as for the part of my “work” which remained in the state of a dream – an unpublished dream, what's more. I do not regret my choices, and it is not my place to complain, when I see today certain consequences of these choices which are not to my taste! On the other hand, it is my responsibility to examine these consequences (and all the more so since they displease me!), to form an overall picture of the facts (*) (which is done), and to learn from them what lessons they can give me. This is what remains for me to do, and today's reflection will perhaps be, at the very least, a first step in this direction. Certain connections have been made in me in recent days, which I would first like to put in black and white.

The main force, the “drive” which was behind the investment that I made in my students in general, in the first period of the sixties, was the desire to find “arms” to carry out “tasks” that my instinct designated to me as urgent and important (at least from the perspective of mathematics which is mine). This “importance” surely was not purely subjective, it was not a simple question of “tastes and colors”, and often (I believe) the student who took on such a task that I proposed to him felt that she “made the weight”, and also, perhaps, what could be her place within larger designs.

However, as for this “drive”, this motivational force in me which pushes me towards the completion of tasks, it was not a certain “objective” importance which was at stake – whereas “the “importance” of Fermat's conjecture, of Riemann's hypothesis

(*) (May 28) Read here “facts known to me”. Two days later, completely unexpected new facts will relaunch reflection on the Burial and lead me to triple the volume of notes relating to it. carry.

or that of Poincaré left me perfectly cold, that I did not really “feel” them.

What distinguished these tasks from all others, in my relationship to them, was that they were my tasks; those that I had felt, and made mine. I knew well that having felt them had been the culmination of delicate and profound work, of creative work, which had made it possible to identify the crucial notions and problems which were the subject of this task, or that. other. They were, and undoubtedly (to a large extent) they still remain today, a part of me. The bond that bound me (or still binds me today) to them was in no way severed when I entrusted a certain task to a student - on the contrary, this bond acquired new life and vigor! This link did not have to be said (and I “say” it here, if only to myself, for the first time). This link was obvious both for the student who had chosen to work with me, and on a task of his choice, as well as for me, and also (I am convinced) for everyone else. It is the deep link between the one who designed a thing, and this thing - and which is not altered, but (it seems to me) reinforced by those who, after him, also make this thing “theirs” and bring it the best of themselves.

This is a connection I have never looked closely at. It seems to me to be deeply rooted in the nature of “me”, and of a universal nature. It's a link that we sometimes pretend to ignore, as if we were above such pettiness - it is even possible that I happened to enter into such an affectation (*). But the few times, in recent years (or in recent days and weeks) where I have happened to be confronted with an attitude in others which affects to ignore this link (of which he is aware) which connects me to such a task which has been accomplished (by another, or by myself) or only designated, I am touched in a sensitive place. We can call this place “vanity” or “fatuity” and dress it up with other words — and I do not claim that these terms are out of place here, but whatever name we give it, I do not I'm not ashamed to talk about it or to be the way I am, and I know that the thing I'm talking about is the most universal in the world! No doubt this attachment of a person to “his works” does not have the same strength from one person to another. In my life, where “Doing” has been since my childhood the constant focal point of my great investments of energy, this link has been strong and remains so today.

I can therefore say that the main force which animated my relationship with my students was that I

(*) What is certain is that I followed the “good tone”, consisting of ignoring this kind of thing, contrary to the correct images!

(May 30) See regarding this link the note “...and the body”, n° 89.

saw in them welcome "arms" to carry out "my" tasks. The formulation may seem cynical, whereas it only expresses an obvious reality, surely felt by my students as well as by myself. The fact that these were "my" tasks in no way prevented them from doing it "theirs" as well — and it was this identification in them with their task that mobilized in them the energy necessary for their accomplishment. ; just as identification with this same task had mobilized in me the energy that had caused it to arise and take shape, and continued to mobilize the energy that I continued to invest in the subject. This energy was essential so that I could even "function" like the "master", that is to say like the elder who teaches a profession (which is also an art), and which cannot be done without the mobilization of a considerable energy. Never in my past as a teacher have I felt a contradiction in the fact that the same task was deeply "his" for the student who worked with me, while also remaining deeply "mine". I do not believe that this situation is in the least of a conflictual nature, nor that it has ever given the opportunity to conflicting tendencies to cling to it (*). In this situation of simultaneous investment in the same task and identification with it, both the student and myself found (it seems to me) our account, in a working relationship which was perfectly clear, and which through it -even (it still seems to me) did not contain any conflicting element. On a strictly personal level, on the other hand, this relationship remained superficial - which in no way prevented it from being cordial, even friendly and sometimes even affectionate.

The investment in my tasks, and through them in my student-collaborators for these tasks, was (as I said) of an egoistic nature (like any investment, no doubt). Surely the realization of these tasks was above all, for the "me", a means of enlarging itself, by the realization of an overall work of vast proportions that "my arms alone" would not have been able to bring to fruition. . From a certain moment in my life as a mathematician, there was this constant ambiguity of cohabitation, of a close interpenetration between "the child" and his thirst to know and discover, his wonder in things. interviews and in those closely examined, and on the other hand the self, the "boss", rejoicing in his works, eager to enlarge himself and increase his glory by the multiplication of works, or by the continuation stubborn and incessant of an overall construction of grandiose dimensions! In

(*) If, encouraged by a certain context, it happened to one of my students to want to evade a role that had been mine, in a work done with me, the thing was done at a time when for a long time he was no longer a student.

this ambiguity, I see a division which continues to weigh on my life and to leave a deep mark on it, — a division which perhaps will remain as long as I live. Such a division is certainly not unique to me, but perhaps in my life filled with both “best” and “worse”, this division has taken more extreme forms than in others.

I can therefore say that for this invasive “me” eager to expand (who was not alone in the place but who was indeed there!) my students were above all welcome “collaborators”, so as not to say the “instruments” — welcome “arms” for the construction of an imposing work which would speak of “my” glory! (**) This is something, it seems to me, which appeared quite clearly already during my meditation three years ago on my relationship to mathematics (and beyond, to “doing” in general), even if I happened to forget it a little later. This is the thing that was present in my thoughts, these very last few days, to make the connection with this other remarkable fact: that it is precisely by one of my students (with quotation marks, never mind!) of that time, and by the one who was among all the closest to me, and also the only one to “feel” effortlessly and as a whole these great designs in me which seemed to push me relentlessly to realize them — that it is he of all who after my departure (and in his heart, undoubtedly even before...) implemented over the years this Burial on the dimensions of the Work (the capital letters here are not too many!), and who finally “presided over the funeral” (with an extra capital letter, for emphasis!).

What is striking in this situation is the ubiquitous, enormous, irresistible comedy of the thing! I must have felt this comedy vaguely during the last few days, but it has just revealed itself to me in its true nature only in this moment, when I placed the last capital letter on my solemn funeral - in a sudden and irresistible burst laughing ! It is precisely laughter that had been lacking until now in this so-called “ultimate” stage of reflection, where the dominant note was rather the pained air of the “Mr. good” disappointed in his legitimate expectations (or even abominably deceived). , when the pained look gave way to sarcastic and well-spoken comments (we are used to expressing ourselves, or we don't!).

(**) I wrote this sentence with a certain hesitation, and weighing my words knowing well that it could be taken as a sort of cynical admission of the horrible mandarin finally throwing off the mask! But I know very well that I will not prevent anyone who wants to drown a troublesome fish from doing what they want. This will not prevent me from continuing my point of discovering and saying the obvious things, including the humble truth written above, which will only surprise those who have never taken the trouble to look within themselves.

I definitely feel that I am on the right track again, after this long digression (that word reminds me of something...) into sad tones.

And right now the name comes to mind for this “note” (we don't really know what a note is anymore, but it doesn't matter...) that it's time to close. It will be “The Return of Things”. (ÿÿ74)

(74) I finally feel — phew! — that I am reaching the end of this “final stage”, which stretched over twelve days, each of which (as before) presented itself as “the last”. Perhaps the final word was said just a few minutes ago. My (symbolic) burial was a return of things, a harvest of sowing made by my own hands. (And my burial in flesh and blood, if I have this happiness of dying leaving behind me living men and women who can bury me, will also be a return to something that I left at my birth. ..(*).) Everything that remains to be added, it seems to me, will be little more than an epilogue.

The famous “dearest student of all” was not the only one of my dear students to bury me with enthusiasm, and those who did indeed put their hands to work are perhaps not the only ones among them, present at the funeral without displeasing it! But deep down I don't care who this and who that! (Knowing more about this subject, if only that, will teach me nothing more.) I have finally understood this “return of things”, and having understood it I collect the benefit.

However, I have not yet withdrawn all the substance that this benefit has in store for me. I do not yet clearly discern what exactly it was in my person that caused certain ex-students to find their favor at the burial and funeral. Is it only this “greed” of which I spoke, which (it seems to me) does not really distinguish me from the other “bosses”, and which they had put up with without difficulty (and undoubtedly without even noticing it, from least not on a conscious level) when they were starting out with me? It is then the “opportunity” (my departure etc.) which would have “played the thief”, and which would have been the revealer of a

(*) (May 28) This sudden association with my own death presented itself with force. I was tempted to dismiss it, then to delete this unexpected parenthesis, which seems to come there like hair in soup. I refrained from doing so, out of a sort of respect. Strange thing, the next day I learned that on the same evening of April 30 when I was continuing my reflection, in the town where I live, the (seriously ill) sister of a friend died. I saw Denise for the first time, and on her deathbed, that very day. The next day, May 2, I joined my friend and many other living men and women in carrying her to the ground, on a beautiful spring day...

general propensity, in them as in “the student above all”, to bury their “master” or their “Father”, when the circumstances are propitious? Perhaps also that I was more “master” (or more “Father”...) than nature, and that this circumstance played a role in triggering this “burial syndrome” in a beautiful ensemble?! At the moment I don't see it! Perhaps the echoes that I will collect (I hope) will allow me to see more clearly, and to better assimilate the unexpected food before which I find myself seated.

There were no students to quietly participate in the burial and funeral, although no non-ex-student was in a position (as far as I know) to play a prominent role. Obviously many of my old friends found what they were looking for there. The thing doesn't seem too mysterious to me at the moment. As I had the opportunity to say in passing, more than once I was able to observe the deep unease created in my old friends by my untimely departure from the mathematical scene. It is the uneasiness that arouses everything in which we obscurely sense as a provocation to deep questioning, to renewal.

In this particular case, it was natural that this unease among mathematicians was strongest among my friends, among those who had known me, and who could feel the full force of the investment that had been mine in the values that always remain theirs; not to mention that each of these friends has himself made, and continues to make, an investment of comparable strength in these values, and in the substantial “returns” that they offer him.

I had already had ample opportunity to observe such unease among other scientists, from the beginning of the Survivan period. But that did not prevent it from being a surprise each time, when I noticed in one of my friends from yesteryear, to whom I continued to have the same sympathy, the unequivocal signs of distancing myself, and sometimes enmity.

What must have made my “abandonment” particularly intolerable to some was precisely that I was supposed to be one of the “best” among them, surely the last one of whom they would have suspected that he would play such a trick on them! (And I did think I sometimes felt a tone of resentment in one of my friends from yesteryear in the mathematical world.) It is very natural therefore that they find their account in a fashion which decrees that all these “grothendieckeries” after all, it was a lot of paper for not much etc etc. A single person, however prestigious they may be, is not enough to create a trend - the fashion we want to launch must still respond to an expectation, a secret desire, among many others, before becoming a consensus and to make the law (*).

(*) (May 28) See to the same effect the note of May 14, “The Gravedigger — or the entire Congregation”,

I have had a tendency perhaps, throughout these fourteen years since my departure, to underestimate the uneasiness that it has created in the "big world" - whereas for me this departure in June 1970 It was done in such a natural way that there was not even a "decision" to be made: new tasks had taken over from one day to the next, the old ones, which had suddenly receded and been absorbed as if by a distant past! (It is also true that I have not been confronted with such unease among my colleagues at the University of Montpellier, who form a completely different environment from the one I left.) Perhaps I also underestimate just as much the role that such unease may have also played among my ex-students "before 1970", many of whom are part of this same environment, and "go all out" in their mathematical investment. It is possible that this unease played a role no less strong in them than in the other friends I thought I had in this same environment. In any case, each situation (between one of my former friends or students, and me) is a unique case and different from all the others, and the general speculations that I can make have only a very limited and provisional scope.

Returning again to the more solid ground of the present cases, I am struck by the fact that the two ex-students whose active participation I was able to observe at the burial of the dear master, are also the very ones who were first brought to my attention by attitudes of contempt, by a desire to discourage: towards younger mathematicians who were "students after 1970", or in whom the influence of my ideas and of my approach to mathematics was clearly visible. This coincidence is certainly not surprising (which of course did not prevent the events at each point from surprising me!). Another interesting coincidence is that both were among those with whom the personal relationship was the most friendly and even affectionate (and for one, this relationship continued, and in this tone, until today). This is in line with this general observation that it is the closest relationships which have the greatest power to attract and fix the forces of conflict.

Yet another coincidence struck me. Among all the students I have had for almost twenty-five years, there are two who for me stand out from all the others both by exceptional "means" and by an investment in mathematics commensurate with these means. (An investment of comparable strength to that which I myself made for twenty-five years of my life.) For both, moreover, I was scrupulous about

n⁹ 97.

count them among my students, although it is nevertheless true that they both learned from my contact things that were useful to them (*). It was in the nature of things that both of them discovered their own tasks, without me having to offer them those that I had (or have) in reserve - and the thesis work of one as the other was accomplished independently of my person(**). These are many points in common! As a point of dissimilarity, I will say that the younger (unless I am mistaken) of the two is today "at the height of honors" (of which I will spare the reader, and the known modesty of the person concerned, the detailed enumeration) , and that he is one of the most influential mathematicians, that is also to say, one of the most powerful; the other is currently a delegated assistant, in a position that the incumbent will take over next year. There are other points of dissimilarity, which explain to a certain extent this difference in fortunes - just as there are also other points of resemblance on which it is useless to dwell here. If it is not this one again, that among all the students I have had, it is with both of them that the personal relationship has also been the closest and the most friendly, while a common passion had immediately created a strong bond between each of them and me. The coincidence now that I want to talk about is that as far as I know, these are also the only students (with quotation marks it's a given!), who vis-à-vis the "big world" have done everything do their best to minimize or erase, as far as possible, this very simple and obvious link to me.

It's a really very striking coincidence, the meaning of which still escapes me at the time of writing these lines. For both of them I could cite economic reasons, different from one to the other. 'other. And it is quite possible and even probable that in both of them,

(*) (May 28) This is an understatement, as I later found out reluctantly!

On this subject, see yesterday's note "Being Apart", n° 67

(**) (May 28) This is not entirely correct. Both of them used tools that I had developed and which they learned through my contact in an essential way in their work. Beyond this role, Hodge—Deligne's theory in the work which constitutes his thesis (Publications Mathématiques 40, 1972, p. 5–57) comes directly from the ~~theory of motives~~ ^{theory of motives} that he took from me — the ^{n°} "structures of Hodge mixed" being the "obvious" answer to the question (also "obvious" from the perspective of motives) of "translating" in terms of "Hodge structures" ("in a suitable sense") the notion of motive not necessarily semi-simple on the body of complexes. Beyond a brilliantly carried out "translation exercise", there are of course original and profound ideas in this work which are "independent of me". But it is also clear that the Hodge—Deligne theory would not exist today (nor probably almost all of the work of Deligne or one of my other students) if they had not had access to the ideas and tools that I introduced into mathematics and of which they had the first exposure through my contact.

at a certain level which is probably no longer that of fully conscious intentions, such a reason (of conceit in one, of prudence in the other) has come into play. However, I doubt that the ready-made explanation provides an understanding of the thing, in one case or the other. Surely, even more profoundly, other forces must have been at play, the real ones, behind the familiar appearances of conceit or pusillanimity. Surely, these acts which express them have something important to say to both of them. But surely also, the appearance of the same acts in two people so different, as if they had given each other the word (something certainly unthinkable, given the difference in fortunes!), also has something important to say to me, and on none other than myself. Would it still be nothing more, nothing less than the reproduction of the eternal rejection of the Father? However, he is spoiled for choice among the avenues open to him to express himself! Or is it because this very sure instinct of the unconscious, which makes it hit "right" in the most sensitive or vulnerable places (when it comes to "touch") has made one and the Did anyone else come across the same place? I would actually be inclined to think so. But this is something deduced, not something seen, whereas for lack of eyes having the gift of seeing clearly and deeply, I feel a little like a blind person who is groping as best he can in the dark, trying as best he can. how bad it is to "see" with your hands or your ears or your skin, which are not really made to see...

In order not to end, however, on this note of perplexity (detrimental to my reputation), but on a rejoicing note for a benevolent and hypothetical reader, I will only say the conclusive name, which appeared earlier, which seems to me to express well the common content of the various considerations. from this epilogue (to a reflection on a funeral), namely:

Unanimous Agreement!

C. THE BEAUTIFUL WORLD

VII. The Colloquy — or bundles of Mebkhout and Perversity

(75) (May 2) I definitely haven't finished learning! I have just become aware of two texts, which shed an unexpected light (for me at least) on the “slewing” (of Mebkhout's work) which has already been discussed (“The unknown man on duty and the theorem of the good Lord”, note (48)). This is the role played by the two illustrious colleagues and ex-students whose disdainful indifference towards Zoghman Mebkhout I noted, without however doubting their professional good faith. The two texts are part of the Proceedings of the Luminy Conference (July 6 to 11, 1981) entitled: Analysis and topology on singular spaces, published in *Astérisque* n° 100 (1982).

The first of these texts is the introduction to the Colloquium, signed by B. Teissier and JL Verdier (the same one who served as Z. Mebkhout's official thesis director). This text, a page and a half long, begins with explanations about a certain “so-called Riemann—Hilbert correspondence”, which is clearly called upon to play a very prominent role in the Conference (and which is not other than the “God theorem” aka Mebkhout). In this correspondence (and this is what gives its charm and depth, and requires the introduction of derived categories) to a regular holonomic module (ie a regular holonomic complex reduced to degree zero) is associated a complex constructible of $\mathbb{C}$ -vector sheaves, which can be characterized (it is said) by purely topological properties which retain meaning for constructible complexes of sheaves spread over a manifold not necessarily smooth, defined on any body. This, it is explained, is the starting point for the “main theme” of the Conference, the theme “perversity, intersection complex, purity” — the (complexes of) so-called “perverse” bundles (*) n being other than those which, “morally”, correspond (“to the Mebkhout”) to the simplest complexes of regular holonomic differential operators, expressed using a single $\mathbb{C}$ -module.

The second text is part(**) of the long article by AA Beilinson, J. Bernstein and P. Deligne on perverse beams, to which he is referred in the introduction as the central work of the Colloquium. As evidenced by the table of contents and the other pages of which I

(*) (May 4) See note n° 76, “Perversity”, regarding this strange application.

(**) (May 4) I have since received the entire article, which confirms what the part I had had already shown me.

disposes, this article marks the sudden re-entry of derived and triangulated categories into the public arena, in the wake of the obscure work of Mebkhout and the famous “Riemann—Hilbert” theorem.

Incredible and yet true thing, in both texts the name of Z. Mebkhout is absent, as it is also absent from the bibliography. I specify that not only JL Verdier was perfectly aware of Mebkhout's work (and for good reason!), but Deligne was just as aware (and it would be difficult to even imagine that it could be otherwise, for someone so well informed about the mathematical news, and when it comes to the subject that touches it closest(***)).

I do not know what is going on with B. Teissier(****) and the other participants at the Luminy Conference, in particular the two co-signatories with Deligne of the cited article(*****). It seems that none of the participants was so curious to know the authorship of the ideas and the key theorem which had the virtue of mobilizing them. I presume that it was self-evident, a little (a lot) like in the volume of Lecture Notes LN 900 which the following year would mark the return of patterns to this same “public square”(*****), that the authorship belonged to the most brilliant among the brilliant mathematicians who had taken the initiative of the Colloquium and had animated it. What was certain in any case for everyone was that it was neither Riemann nor Hilbert, otherwise the brilliant Colloquium would have taken place in 1900 and not in 1981, two

(***) I recall in particular that the work of Mebkhout and his “theorem of the good God” constitute a decisive progress compared to previous works of Deligne (from 1969), which he refrained from publishing.

See on this subject note n° 48 already cited.

(****) (June 12) B. Teissier had been interested in Mebkhout's work for a long time, and was therefore one of the very few to have an encouraging attitude towards him. He was therefore perfectly aware of the fraud, to which he lent his assistance with full knowledge of the facts. He justified himself to Mebkhout by assuring him that in any case, he “couldn't have changed anything”.

(*****)(May 28) I have since learned that AA Beilinson and J. Bernstein were informed of

Mebkhout's results by P. Deligne (in October 1980) and by Mebkhout (in a very detailed manner in November 1980, during a conference in Moscow). These two authors made essential use of the God theorem in their demonstration of a famous conjecture known as Kazhdan—Lusztig even before the Luminy Colloquium of June 1981. Compare the quote from Zoghman Mebkhout's letter in the note “A feeling of injustice and powerlessness” (note n° 44).

(June 3) For further details on the subject of the solidarity of all the participants of the Colloquium, see the following note “The Colloquium”, n° 75 (*****). See on this subject the notes n° s 51, 52, 59.

years after the thesis defense of Jean-Louis Verdier's Unknown Student.

The type of operation that I was able to observe here is perhaps commonplace today (*) and perfectly accepted, as long as it is carried out by mathematicians who have the upper hand, and that the one who made the expenses appears as a vague stranger (whom we were nevertheless kind enough to invite to please him). That one of these men who practice it appears, by his means as well as by his works, as a great mathematician (which immediately places him above all suspicion), changes nothing in the nature of the thing. Surely I am old fashioned - in my time this type of operation was called a scam - and this appears to me to be a disgrace for the generation of mathematicians who tolerate it.

The brilliance of genius takes nothing away from such disgrace. It adds a new dimension, perhaps unique in the history of our science(**). It can provide a glimpse, behind the apparent absurdity and gratuitousness of the act (done by someone whom fate has fulfilled beyond all measure, and who nevertheless takes pleasure in despoiling...), the action other forces perhaps than the sole desire to shine, or the gratuitous desire to humiliate or despair those who feel defenseless and voiceless.

As here I am definitely in the middle of a "picture of morals", I point out (almost as a matter of course) that my name is equally absent from the texts cited. However, I was able to note with pleasure that there is not a page of the cited article (among those in my possession (*)) which is not deeply rooted in my work and does not bear its mark. , and this even in the notations that I had introduced, and in the names used for the notions which intervene at each step - which are the names that I had given them when I made their acquaintance before they are named. There are certainly adjustments of rigor - thus the theorem of biduality which I had identified in the fifties (**) is renamed for the circumstance "Verdier duality", always the same Verdier, there is no

(*) I am thinking of two other "operations" which go in the same direction, and which resulted in the publication of LN 900 (see previous p. note) and SGA 41/2 five years before (see on this subject notes n° s 67, 67, 68, 68).

(May 9) For a third such operation closely linked to the previous ones, see the note "the good ones references" (n° 82) on another "memorable article", this time from the pen of JL Verdier.

(**) I have also never heard of such a thing in the history of any other science or another art than mathematics.

(*) (May 4) And the others too, of which I have since learned.

(**) Same thing for the theory of equal duality, which becomes "Verdier duality" under the pen of his

error...(**). However, it was not possible for my name not to appear there at least implicitly, through occasional references to still irreplaceable texts (despite SGA 41/2, which is not entirely sufficient for its purpose), namely EGA and SGA. (In the explanation of the acronym SGA = Séminaire de Géométrie Algébrique du Bois Marie, my name of course does not appear, but in EGA, we are honest or we are not, the full designation is given, with the name of the authors including mine...) Another detail which struck me, and which testifies to the obsessive force of the burial syndrome (in someone who nevertheless has no "profile" of being obsessed): the two references that I have seen in SGA make it a point each time to clearly explain, above all, "Mr. Artin's theorem in SGA 4...", lest the misguided reader have the idea that the said theorem could be due to the carefully unnamed person, while it is quite obvious that the presentation was indeed made, thank God, by a nameable author! (77)

All this, one must believe, is good war in the "beau monde" today. Without making me happy (and it is not made for that...) this guéguère does not really harm the anticipated deceased, whose symbolic remains are thus left to the chances of this rat race, which I discover with wonder for barely two weeks. It does not consume my life with the feeling of iniquity suffered in powerlessness. It has not broken the joy and the momentum which brings me to encounter mathematical things and those of the surrounding world, it has not burned in me the delicate beauty of these things. I can consider myself happy, and I am...

And I am also happy with my unexpected "return", the meaning of which escaped me. If he were to teach me only what I have learned in these past days, this return will not have been in vain, which has already satisfied me. (76)

(75) (June 3) I got some details about the other participants in the conference, which dispels all doubts. While no presentation by Mebkhout had been planned in the official program of the Conference, Verdier was obliged to ask him on the spot and at the last minute to give a presentation, to fill in the gaps in one of the official presentations (which had been entrusted to Brylinski,

generous friend Deligne!

(**) (May 5) Compare with notes n° 48 . 63. Throughout this long Burial which has continued for almost fifteen years, and also throughout the discovery that has just been made, during the past month, by the main "anticipated deceased", JL Verdier definitely appears inseparable from his prestigious friend, who lavishes on him without counting the wreaths of flowers required on this funereal occasion.

little aware of the theory of $\mathcal{D}$ -modules). Mebkhout was thus able to present his ideas and results, and in particular the God theorem, in such a way as to leave no doubt about the authorship of this theorem, and of the philosophy that goes with it, which had enabled the restart spectacular of the cohomology of algebraic varieties, materialized in particular by this conference. Thus, all participants of the conference were made aware of this authorship, through this presentation. I also assume that everyone without exception has since become aware of the Proceedings of the Conference, and in particular of the Introduction and the cited article by Beilinson, Bernstein and Deligne. Not a single one, apparently, found that there was anything unusual — or if they did, they didn't let on. Zoghman Mebkhout received no response in this direction. Thus, all the participants of the Conference can rightly be considered to be in solidarity with the mystification that took place during this conference.

This collective mystification was already clear from the moment of the Colloquium, since no one found anything abnormal in the fact that in Deligne's oral presentation on the so-called “perverse” fascisms, the name of Mebkhout was not mentioned. is not pronounced. The speaker limited himself to stating God's theorem, saying that he was not going to demonstrate it in his presentation.

He also clearly pointed out (with his customary modesty) that there “was no merit” in guessing the extraordinary and a priori unpredictable properties of the beams that he calls “perverse”, suggested by evident way by the “Riemann-Hilbert correspondence” of which he had just spoken (*). Everyone found it normal that he refrained from naming the person who had the “merit” of discovering this providential correspondence, and that he gave the appearance that the author was none other than himself. even, even though they had just learned, or were going to learn in the following days, that this was not the case. We had to consider that it was through a sort of unacceptable mistake that a vague figure appearing at the Conference happened to be the author of such a remarkable theorem, and everyone did their part to rectify the situation and establish a consensus which attributed the paternity to the one who, visibly, was ideally suited for it — the one who should have been the author(**).

(*) Compare with pages 10 and 11 of the cited article.

(June 7) For details on the art of sleight of hand, see the following note “The Conjurer”, n° 75

(**) (June 5) Besides, everything fits together! The reflection which continued in the procession “L'Elève” (following the procession “Le Colloque”), and a certain tone too (notably again in a recent and brief exchange of letters with Deligne, see first footnote page in the note “Les obsèques”, n° 70), show me that for Deligne and my other cohomologist students, it has been clear for a long time that it is also Deligne who should have been the author of the discovery of the flat cohomology, and its control; and at a certain level (that

Characteristic detail, Mebkhout's presentation does not appear in the Proceedings of the Conference. Verdier had asked Mebkhout not to write his presentation, saying that the Colloquium was intended to present new results, while those of Mebkhout had already been published for more than two years.

When we do not allow ourselves to be imprisoned in a technical discourse, and when we look at what really happened during this brilliant Conference, in terms of the forces and appetites which animated everyone, we believe we are witnessing to a film about the reign of the mafia in the underbelly of some distant Megapolis. However, it is a very local painting, and the actors are among the noblest jewels of French and international science. The Great Chief who regulates operations with his finger and eye, is none other than the one who previously appeared, to me, as a modest and smiling spiritual son, or at least as a legitimate heir (no less modest and smiling). As for the drudgery and workable, the "soft" in a world of "tough" people who give no quarter, by a strange "chance" whose meaning I do not yet fully understand, it is also closely linked to my person. . He is my "student" like the Great Chief (and like him "student" with quotation marks...) — the one who came to my school when for years already I had been declared dead and buried. ..

(175) (June 7) We will admire in the "memorable article" (which is discussed in the two previous notes) the consummate art of casual sleight of hand. The equivalence of categories which was the essential motivation of all the work is introduced for the first time in a sentence on the fourth page of the Introduction (page 10, lines 9 to 15), without giving it a name. , to immediately continue with the host of consequences for the notion of the so-called "perverse" beam (pages 10 and 11). There is no further mention of it until the end of page 16, where we read (*):

"Let us point out that on the following points, which would have found their place in these notes, we failed in the task.

— The relationship between perverse beams and holonomic modules. As indicated

who controls behavior and attitudes) they are imbued with the conviction that deep down it is indeed him, alongside whom I would appear as a kind of messy and clumsy auxiliary, who would harm rather than anything else the harmonious development of a theory (leading to the Deligne-theorem-formerly-Weil-conjectures) and a distribution of roles satisfactory for all concerned...

(*) The emphasis is mine in the following quote.

in this introduction, it played an important heuristic role. The essential statement is 4.1.9 (not demonstrated here)..."

(To continue with other "points which would have found their place...")

I hasten to look, what is this "essential statement" that the authors have not found the leisure to include in their work, or at least, not the demonstration. Let's look for § 4.1.9... I come across a "Remark 4.1.9" it must not be that, I am looking for an "essential statement", a theorem in form or scholia, with a reference where the authors have it demonstrated or will demonstrate it, since they do not prove it here... But no matter how much I search, there is no trace of a "theorem 4.1.9" — there is only one passage which answers number 4.1.9. So I start reading the "remark" at random (without conviction — there must be a numbering error...), I read that "the analog of 4.1.1 in complex cohomology is true...", unfortunately, will I have to go back to 4.1.1 to try to see what it is? I move on and read the text that follows - and there it is, I no longer believed it, eleven lines later, a sentence and which ends with "induces an equivalence of the category which begins with "We know that... .. with that of the perverse beams".

Phew — so that was it, finally! But no matter how much I looked further, not the slightest hint to clarify this cryptic "We know that...". The reader who did not already "know" this must feel like an idiot, not at all up to the situation. What is clear to him in any case (apart from the fact that he is not up to the task), is that this result "which would have found its place in his notes", which we "recall" here in detour of a technical remark as something that the reader should nevertheless know — it is that it is visibly due to the authors of the "notes" in question, or to one of them; the most prestigious perhaps and who wrote the article (there is a "house style" which does not deceive...), the one also who made the oral presentation, and whose well-known modesty prevents it sure to say "it's me!" — but everyone understood without having to say it...

It immediately brings back memories of my thoughts over the last few weeks. The very first is Deligne's first work in 1968, which I finally took the trouble (sixteen years later) to look a little more closely in the note "The Eviction" (n° 63) of April 22 (three days after the discovery of the LN 900 pot-aux-roses). I find the same style here, with variations undoubtedly due to the intermediate "breaking in" of thirteen years. In the 1968 article, the main inspiration of which came from me, he names me in passing and in a manner

sybilline towards the end of the article, just to be “in order”. Here, he no longer takes such care - experience has shown him for a long time that it is absolutely no longer necessary! On the other hand, in the article from his young age, since he felt obliged to name me, he compensated by completely evading the initial motivation for his work (and the yoga of weights with it, to release it under authorship replacement six years later, while waiting for the exhumation of the reasons eight years later again...). In any case, even by hiding (and keeping for its sole benefit...) the essential arithmetic motivation of the article, it “held together”, this article was perfectly understandable, living up to the reputation of the author of doing things perfectly. Here, the theory he develops would be incomprehensible without heuristic motivation. He therefore indicates this, referring to it by the qualifier “the essential statement”, while treating it underhandedly – without honoring it with a name, nor with a formal statement called theorem or proposition, he there is not even a “correspondence” (called Riemann-Hilbert) – he left this task to his friends Verdier and Teissier. He does not have to give it a name (given the few ^(*) - surely he would demonstrate it in five minutes!) nor name anyone - others will take care of it in his place and to his complete satisfaction. There is visibly a yoga, a philosophy, which the author handles with perfect mastery and authority, without having to name anything - this “little” that he pretends to disdain (“which would have found its place in these notes”), he knows well that he will have it in addition, as long as he knows how to keep quiet about it and wait. The first time he played this game successfully, this “bit” was “considerations of weight” to which he alluded in a cryptic remark (while waiting to bring out the philosophy of weights with great fanfare, six years later). The second time to my knowledge was when I left in 1970 — the “little” was the “dream of motives” which did not deserve to be honored with a word for twelve years (think about it — a dream, and the dream of a deceased person again, and not published at that!), while waiting to discover the real motives this time (and what we can do with them) and to wear them, always as modestly, uncontested paternity^(**).

^(*) (June 14) To situate this “bit”, I recall that Deligne had devoted a seminar at IHES to try to develop a translation of discrete coefficients constructible in terms of continuous coefficients, without arriving at a satisfactory result. See on this subject the note “The unknown service and the theorem of the good Lord”,

^(**) For other comments on this technique of “appropriation through contempt”, see the note from the next day, n^o 59

(76) (May 4) I remember well, the first time I heard this name “perverse bundles”, it must have been two or three years ago, that it struck me unpleasantly, it aroused in me a feeling of uneasiness. This feeling reappeared the two or three times I heard this unusual name again. There was a sort of inner “recoil”, which remained on the surface of consciousness and would no doubt have been expressed (if I had stopped to examine it then) by something like: what is the idea of giving such a name to a mathematical thing! Or even to any other thing or living being, except strictly a person — because it is obvious that of all the “things” in the universe, we humans are the only ones to whom this term can sometimes be applied. ..

It seems to me (without being entirely sure) that it was none other than Deligne himself who first spoke to me about the so-called “perverse” beams, when he came to my house after the Luminy Conference. (*). It must have even been one of the last mathematical conversations between us — there were no others after his visit to my house. It was precisely during this passage that this “sign” manifested itself, which led me a few weeks or months later (while this sign was reconfirmed in the exchange of mathematical letters which followed this meeting) to end a communication on a mathematical level(**).

(See for this episode the note “Two turning points”, n° 66.)

Coming back to the so-called (wrongly!) “perverse” beams, it is obvious that “normally”, these beams should be called “Mebkhout beams”, which would only have been fair.

(More than once it happened to me to give to mathematical notions that I had identified and studied the name of predecessors or colleagues who were linked to them much less closely than

(*) If this is indeed so (as I am now convinced) we must give honor to the modesty of my friend, because I did not suspect (at the conscious level at least) that it was none other than he who had introduced and named them. I had to read the “memorable article” to realize it.

(May 28) To tell the truth, the thing is no more said in the article in question than it is said that Deligne is the father of the Riemann-Hilbert correspondence. However, I had no doubt about his authorship of the name “perverse bundles”, and this was indeed confirmed to me subsequently.

(**) On a purely personal level this relationship continued in the same tone of affectionate friendship as in the past, without apparent change. My friend used to come about every other year to visit me, usually during some hike. I had his visit again last summer, which was a welcome opportunity to also get to know his wife Léna and their daughter Natacha, who was still very young. I believe it was the return of yet another Luminy Conference, and about which I had little echo (except for a few morose and vague allusions from Mebkhout, to whom the honor of the invite and who had found nothing better to do than to enter this game again...). They stayed at my house for two or three days, and the contact was excellent throughout.

Mebkhout to this beautiful notion - which moreover seems to me more in “sublime” than perverse tones!) The dispositions in which Deligne found himself at the time when he discovered and named this notion resulting from the work of Mebkhout, preparing to to despoil him when he himself was already “fulfilled beyond measure” — these provisions can rightly be called “perverse”. Surely my friend himself must have felt it deep down, at a certain level where we are not fooled by the facades we like to display. In the attribution of this name (which seems aberrant at first sight) I sense an act of bravado, a sort of intoxication in such total power, that he can even allow himself to display (symbolically, by display of a provocative name of which no one will allow themselves to read the true meaning, however dazzling!) its true nature of “perverse” despoliation of others.

It seems to me in no way impossible that at some deep level, I perceived the tone of these dispositions in my friend, and that this contributed to the uneasiness of which I spoke (*). This discomfort was expressed in particular by an inattention to the explanations that he had to give me, while I do not believe that there was an occasion before this meeting, where I did not follow with sustained attention what that he told me, and especially when it came to mathematics. There was a sort of blockage in me regarding this notion called (God knows why) “perverse” — I didn't really want to hear about it, even though it was very closely linked. close to questions to which I have been (and remain to a certain extent) very close.

To be honest, this entire article by Deligne et al. they were typical and spit-out “grothendieckerries”, which could just as easily have been from my pen (with the sole exception of the name of the main concept)! This is somewhat what I already expressed in the second part of the previous note (n^y (75)), and what I also already felt from the moment I read the cited article - but without this diffuse feeling still being embodied in this striking observation that I have just made. This makes me sensitive again, in a striking way, to this profound contradiction of someone who cannot help (in a certain sense) reproducing and assimilating himself to the very person in question. to deny, to surrender to disdain - the one who must be buried, and who is also at the same time the one we want to be and who (in

(*) I would even be inclined to think that this is indeed the case. More than once I have been able to see in myself to what extent the deep perception of things is of a finesse and acuity incommensurate with what touches on the conscious level or on the surface of consciousness. The fully “awakened” man is undoubtedly the one in whom these perceptions are constantly integrated into conscious vision and conscious experience – therefore the one who lives fully according to his true means, and not only on a derisory portion of these means.

a certain sense) we are.

The day before yesterday, while writing the previous note ("Iniquity — or the meaning of a return"), I had already been struck by this coincidence, that this turning point in the relationship between my friend and me, suddenly impoverished of a communion into a common passion, which had been its reason for being and its most powerful spring, took place on the very return of my friend from this memorable Colloquium, the meaning of which had just been revealed to me. What surprised me during our meeting in July 81, which on a certain level was as friendly and affectionate as on the other occasions when we met, was this "sign", discreet in tone and by the air, and yet brutally obvious, of a deliberate statement of disdain. It was like a kind of assessment that my friend took, this time at the level of the personal relationship, on the implicit disdain and just as "discreet" (and just as "brutal obvious") that he came to the Luminy conference to express publicly towards me, as a public figure, in the context of a brilliant display of technical virtuosity between stars of the day. It was also the same "disdain" that had just been expressed (but this time with yet another "perverse" brutality) towards the one who had dared (ever so slightly) to claim to be my own, and who by this had condemned himself to no longer being for my friend Pierre (at a certain level at least) than "another Grothendieck" (*) who now had to be crushed at all costs.. .

(77) (May 5) Another detail struck me while reading this memorable article(**) which dominated (so they say) this no less memorable Luminy Conference of June 1981. The last chapter, under the suggestive name "From F to C", describes in detail a remarkable principle that I had introduced into algebraic geometry twenty years ago — this must have been before the birth of notion of motive (which gives the most profound illustrations, via the ex-conjectures of Weil). This principle ensures that for certain types of statements concerning schemas of finite type on a field, it suffices to prove them on a finite base body (therefore in a situation "of an arithmetic nature") to deduce their validity on any body, and in particular on the body of complexes - in which case sometimes the algebraic-geometric result envisaged can be reformulated by a transcendent route (e.g. in terms of integer or rational cohomology, or in terms of Hodge structures etc) (*). My

(*) In our personal relationship, my friend calls me by the affectionate diminutive (of Russian origin) of my first name Alexandre, the one also by which my relatives and closest friends have called me since my childhood.

(**) See note n° 75 regarding the "memorable article".

friend learned it from none other than me and from my mouth, on numerous examples over the years(**). The authorship of this principle (which in an elementary form is even explained in EGA IV - don't ask me what paragraph and what number...) is also notorious(***). To the point that when the Fields medal was awarded to my brilliant friend, at the Helsinki Congress in 1978, N. Katz could not help but mention it in passing in his speech in honor of P. Deligne, thus rectifying (casually) a somewhat embarrassing systematic “forgetting” by its illustrious laureate. I read this speech just a few days ago, along with the “memorable article” itself.

Still, in this article, the philosophy of the transition from “arithmetic” to “geometric” is presented in such terms that there can be no doubt to an uninformed reader that the brilliant main author (excuse the 'odd...') has just discovered this wonderful principle of such great significance.

It is true that I did not patent the method, and that my brilliant friend nowhere says that he is the brilliant inventor; no more than he clearly claims that he is the father of this famous “correspondence” (admire the term, which smacks of its nineteenth century!) modestly attributed to Riemann and Hilbert (men worthy of sponsoring the children of such a prestigious successor) — any more than he specifies in the “memorable volume” (LN 900) that it was indeed he who invented the motifs, the motivic Galois groups and a whole philosophy which goes with it (and of which he has only released a piece yet). Nothing to say either

(*) (May 6) It seems to me that the first example of use of such a principle is found in Lazard's theorem on the nilpotence of algebraic group laws on affine space (on any body). His demonstration struck me a lot, and I took inspiration from it for a number of other statements, and to make it a “philosophy” which dominated my thinking on the theory of motives.

(**) See the note “Eviction” (n° 63) for one of these examples.

(***) (June 5) It is perhaps abusive that I claim to be the “father” of a principle whose first application known to me is due to Lazard (see previous note ??(*)). My role, as on other occasions, was to sense the generality of another's idea, and to systematize it to the point of making it a “reflex” or “second nature”. In the context of the yoga of weights and patterns, it is probable that the first to use this principle was Serre (and not me), with his idea of virtual Betti numbers, which put me on the path precisely to a general yoga of weights and patterns. (See note n° 469 for Serre's idea in question.) It is also true that it is common practice to attribute the authorship of a “principle” of reasoning that has become common, not to the author where we find the first trace of it, but to the one who for the first time perceived its general scope, who systematized and popularized it. In this sense, we can say that the correction of N. Katz (referred to in the following sentence), attributing to me the authorship of this principle, is justified.

for this famous SGA 41/2, where I was even given the honor of being included as a “collaborator” of this volume, which so brilliantly develops ab ovo the equated cohomology, deigning to appeal (despite their regrettable gangue superfluous details etc) to the two satellite volumes SGA 4 and SGA 5, doomed to oblivion but to which we generously recognize the merit of providing some additions and technical digressions (some of which are even “very interesting”) (*).

In all these cases, and in many other micro-cases as well that I have observed over the last five or six years, without the idea ever occurring to me of identifying my discomfort and giving a name to what I was a witness or co-actor(**) — in all these cases, I recognize the same style. My friend is always and totally “thumb” — he can help himself at ease, with the complete good conscience that comes from the admiration (all that is well-founded) of his peers and his odd ones, guarantor of total impunity.

⁷⁷ (May 7) Of course, those who see my friend Deligne doing it and who are somewhat “in the know” for the ins and outs, I mean those who do not arrive and have only just learned math “which are made” in the publications of the person concerned himself, or of other brilliant stars (without always being golden) of his generation — these colleagues (and they are not yet so rare after all!) are well aware, at a certain level, of what is happening. They must have felt in the “slightly large” cases, this particular little discomfort that I myself felt more than once in front of these “micro-cases” a hundred times smaller than these. But what they felt was so enormous, so incredible that it must never have surfaced — as it finally began to surface in my work, which was expressed through these two texts. around a micro-case discussed in note b. from p. former. In fact, I have not heard that the thing had its equal

(*) For details on “operation SGA 41/2, see the four notes “The clean slate”, “Being apart”, “The Green Light”, “The reversal” (notes n^os 67, 67, 68, 68).

(**) The first step to precisely “understand my discomfort” in a specific case was taken in Récoltes et Semailles less than three months ago, in the reflection (which had proven to be very laborious — and for good reason !) “The note, or the new ethics” (section 33). This reflection is taken up in a note to this reflection, “The snobbery of young people, or the defenders of purity” (note n^o 27), then again less than two weeks ago (under the impact of the discovery (the day before) of the “memorable volume” (LN 900)) with note n^o 59: “The new ethics (2) — or the free-for-all”. While writing this, there remained in me a hint of hesitation to use this rather harsh term “free-for-all”. The discoveries that have followed one another since have shown me that there was no need for hesitation.

in the history of our science or any other. Instead of “surfacing”, for some “it” must have rather become a school, or at least be considered normal – as long as a visibly brilliant man, admired by all, practiced it with the greatest naturalness in the world, in full view of everyone and without the thing ever (as far as I know) giving rise to the slightest comment.

During the last few days, I could not help but think many times of the tale “The Robe of the Emperor of China”, where the said emperor, deceived by unscrupulous crooks and by his own vanity, announces that he will appear in solemn procession with the most sumptuous clothes the world has ever known, which have just been prepared for him at great expense by so-called tailoring artists. And when he appears in procession, surrounded in great pomp by his Court in finery, by the “artists” bowing and the entire imperial family, no one either in the procession or in the people gathered to contemplate the seventh wonder, dare not believe the testimony of his eyes, and everyone makes it their duty to admire and add to the unsurpassed splendor of these clothes with which he is adorned. Until a little child who had gotten lost in the crowd cried out: “But the emperor is completely naked!” — and then suddenly everyone shouts with one voice, with this little child “but the emperor is naked!”.

And I feel like the little child who believes the testimony of his eyes, even then that what he sees is quite unheard of, never seen before and ignored and denied by everyone.

As for whether the child's voice will be enough to bring some people back to the humble testimony of their healthy faculties, that's another story. A tale is a tale, it tells us something about reality — but it is not reality (*).

(78) (May 6) It's only been five days since I was entitled, at the end of the day, to this generous

(*) (June 14) After writing this note, the name “The Robe of the Emperor of China” appeared to me as a natural subtitle for the Burial, expressing a particularly striking aspect of it. Subsequently, the reflection having moved towards all of my students, or even “the entire Congregation” of the Mathematical Establishment, this subtitle seemed less obvious. However, I ended up realizing that the parable which first came to me while thinking of my friend Deligne, also applies to all the aspects and adventures of the Burial, which with each step reach to the ludicrous in the incredible (which everyone makes a point of modesty ignoring) which nevertheless is true. For reflections along these lines, see more particularly the notes “We can't stop progress!”, “The Colloquium”, “The Victim - or the two silences”, “The joke - or the complex weights”, “Mystification”, “The Gravedigger - or the entire Congregation” (refers to, 78, 95, none of which particularly concerns my friend

packets of documents from my friend Zoghman Mebkhou, including above all the two texts already examined from the “memorable Colloquium” — this Colloquium built around a monumental mystification! The note “Iniquity — or the meaning of a return”, where I strive to assimilate the rather incredible meaning of this new “event”, was written the very day (day after May 1) when I received these documents, still in the emotion of the discovery(**).

Since April 19, when I finally became aware of the “memorable volume” of the Reading Notes (LN 900 — see notes (51)(52)), this made the third great discovery on the subject of the solemnities of the great Burial, it is also the one which seems to me to have the greatest significance, both by the light it provides on the actions of people with whom I have been closely linked, and by its implications as a “picture of morals” of ‘an era, apparently unique (but it is true that I am ignorant of history...).

The second discovery had closely followed the first — that of the exhumation of the “patterns”, buried for twelve years. After the “memorable volume”, I was treated to the “memorable seminar” — this “seminar” which never took place, given a bogus name (both SGA and number 41/2), and enriched with “State 0” of a ghost thesis, not to mention a central presentation of the (real) SGA 5 seminar (which appears later, although it is twelve years earlier); ex-posed “borrowed” for the purposes of the operation without further ado. This brilliant operation, and the role it played in the strange vicissitudes which struck this poor SGA 5 seminar (dismantled from head, tail and middle!) were gradually revealed during a reflection which continued between April 24 and 30. (See on this subject the five notes “Le compère”, “La slate rase”, “L’Etre à part”, “Le signal”, “Le reversement”, s 63, 67, 67, 68, 68.)

n⁹

Barely had this discovery been digested, alongside my retrospective reflection “My friend Pierre” drawing to a close, and at the moment when I had just proudly put the final and definitive point on April 30 (there it was for sure — this time I was finally there!) under this interminable Burial, with the “final note” with the doubly euphoric name “Epilogue — or the Unanimous Agreement” — that I receive this package of misfortune, which calls into question final point, epilogue, implementations page and numbering... A quick glance at the documentation and annotations and

(**) Along with the section “The note — or the new ethics (1)”, this note is the only note or section that I was forced to rewrite several times, because what “came out” in the first version (and even in the next) remained weighed down by all the inertia of a vision of things that was customary to me, and which remained far below the reality that it was a question of examining.

The letters that accompanied it clearly showed that my final point was ruined, and the beautiful arrangements of a first-class funeral of which I was preparing to finalize the last details - I was good to return to the master's harness ceremony...

God knows, however, that my friend Zoghman had time to inform me of the situation! It must have lasted for ten years in larval form, and three years at least in “acute form” (and again that is a euphemism) — since the Conference in question, where he must have felt the wind without having to wait for the publication the following year of highly official “Proceedings” under the sponsorship of his illustrious ex-boss and protector.

A few months after the defense of his thesis (in February 1979), he came to bring me a copy to the village where I had lived for six years. Bad luck, I had just left (never to return, except in passing...) a few days before, to retire into solitude. He only met my daughter, who later gave me the thesis. It was the year after, I think, that we finally got to know each other, at the University of Montpellier, where we must have chatted for an hour or two. I was hardly into maths at that time and could no longer remember much of a thesis that I had to leaf through in a few minutes, nor of the name of its author. This did not prevent the contact from being warm.

I well remember an immediate flow of mutual sympathy. We didn't talk so much about math (not that I remember), but mainly about more or less personal things.

Zoghman told me afterwards (something I had forgotten) that he was still able to explain to me a little about the “philosophy” of the -modules, and that he was happy with the meeting, to tell me to have felt “vibrate” however little by learning new things from him, and yet also (in a certain way) “expected”. What I remember most of all is the impression his person made on me — an impression of stubborn and calm strength, that of a “go-getter”.

At that moment, much more than during our meeting last year or during the correspondence that followed, I had the impression of a strong affinity of temperaments — in this “go-getter” side. notably. But the two or three years that passed between the two meetings seem to have taken a toll on him...

I do not remember that during our first, brief meeting, Zoghman spoke to me of the isolation in which he had worked, of the lack of any encouragement from the “luminaries” who had been my students. If he implied it, he shouldn't have insisted. At that moment already the thing had nothing to surprise me (*). I can't say if it was before

or after the Luminy Conference in June 1981 (**). If it had been afterwards, he would still have had hot things on his stomach — and he really didn't give the impression of it. Rather that of a man who knows what he wants to do and what he wants, and who follows his path quietly, not looking for trouble and without anyone looking for trouble for him.

We didn't continue writing to each other then. But I remembered him well, and at the beginning of last year I wrote him a note, just by chance, to ask him if he was perhaps available to tackle a magnificent work of foundations for a “moderate topology” which (it seemed to me) was only waiting for someone of his caliber to tackle it. Without Zoghman first telling me clearly, it turned out that he wasn't really interested in the prospect - on the other hand he seemed happy to seize this opportunity of a new meeting. I was then too out of the loop to fully realize the situation, I imagined that the theory of ∞ -modules was now a done deal and closed, as is let's say the theory of coherent duality (781), and that Mebkhout was perhaps short of “big tasks”. It was only with our meeting last summer that I realized that in the very theory he had started, there is no shortage of “major tasks” — and some have not even been started, for lack of have only been seen!

Still, this was a perfect opportunity for a second meeting, and this time not in a rush like the first. Zoghman must have stayed at my house for maybe a week last summer, June I think. On a mathematical level, our meeting served above all to bring me up to speed as best I could about the yoga of ∞ -modules. I was slow to “unfreeze”, having lost a little contact with my former cohomological loves, and being especially embroiled in the writing of “Pursuit of the Fields”, which is placed in quite different registers. Zoghman was not discouraged to see me listening with a somewhat distracted ear, he returned to the charge without tiring, with touching patience. I ended up triggering myself, I think, when I understood that these famous ∞ -modules were nothing other than what I had a long time ago called module crystals, and that as such it kept

(*) (May 30) This is not entirely true — I am projecting more recent disillusioned dispositions onto the past. I remember, during the meeting with Zoghman last summer, being surprised that none of my cohomologist students (more particularly Deligne, Verdier, Berthelot, Illusie) had supported Zoghman in his work. This surprise was renewed when Deligne came to my house, around ten days later (I must have had a word with him about Zoghman, without getting any response) and subsequently, by a telephone conversation with Illusie. (See on this subject the note “Mystification”, n° 85.) (**) (June 3) It was before — in February 1980, a year after the defense of his thesis.

a meaning on singular spaces. Suddenly, I saw rising from forgotten depths a whole network of intuitions from my crystalline-differential past, and the somewhat rusty reflexes of my “six operations” past were reactivated...

It was Zoghman who was suddenly let down a little perhaps, or was it rather after the fact that he decided that he would not risk his fingers in that gear (any more than my friend Pierre n he wanted to put his people there - even though he had been all fire, all flames as long as I was around...). (ŷŷ78)

(781) There are, however, a certain number of “fine” results of coherent duality, in particular on the structure of “modules of dualizing differentials”, their relation to modules of “naive” differentials, and the trace and residue applications in the non-smooth flat case, which I developed towards the end of the fifties and which have never been published to my knowledge. This does not prevent that, essentially, the theory of coherent duality (in the schematic framework at least), just like that of equal duality (and its variant for the discrete co-homology of locally compact spaces, developed by Verdier on the flat model), or even linear algebra or general topology, appear as essentially completed theories (*), in the nature of tools perfectly developed and ready for use, and not of a somewhat unknown substance that needs to be penetrated and assimilated.

(⁷⁸) Our meeting took place in an atmosphere of friendly trust and affection.

This atmosphere, however, did not keep its promises. I realize now that from that moment my friend's trust was far from complete. It was two years after the famous Conference, and one year after the publication of the “Proceedings” in Asterisk(**) — at a time when he found himself paying the price for a scandalous spoliation. But he only kindly informed me about it four days ago! When he came last year, he was returning from another Luminy(***) conference (this time squarely on the theme of $\mathcal{A}$ -modules), where

(*) (June 12) This is not entirely true for equal duality, as long as the purity conjectures and the “theorem of biduality” will not be proven in all generality.

(**) (October 9) Zoghman informs me that these “Acts” did not actually appear until the beginning of the year 1984.

(***) (May 7) There is a slight confusion of memory here - I rather think that he was preparing to go to the conference. From that moment of course, there was no shortage of reasons for these “bitter terms” (and vague) that I remembered. But this bitterness was further revived by his visit to Luminy after his stay with me. I heard about it from a phone call he gave me upon his return from Luminy. From that moment I had the feeling

he had again been generously invited and he was quick to come. He spoke of it in terms that were both bitter and vague, suggesting that now that he had pulled the chestnuts out of the fire, it was “the others who had done everything”. I could imagine the picture in fact - especially Verdier suddenly remembering the authorship of the triangulated categories (and derived too, for that matter!) which he had left behind for ten or fifteen years, barely tolerating that his “student” Mebkhout uses them in his work... (81).

Without wanting to explain it clearly, Zoghman apparently had a lot on his mind about Verdier, something quite understandable given the unencouraging behavior of his ex-boss. However, my other cohomologist students, Deligne, Berthelot, Illusie, had not deigned to take an interest in what he was doing and support him more or less. But one would almost say that for Zoghman this could only go without saying, having never (it would have been said) experienced any other attitude than that among his elders. If he had a grudge against anyone among my ex-students, it was solely and exclusively against Verdier.

From Zoghman's allusions (which he obviously did not want to specify), I understood that “we” were systematically minimizing the scope of what he had done — full stop and that's it. It is, after all, the most common thing in the world. The assessment of the importance of something being to a large extent subjective, it is common and almost universal to attribute more merit and importance to one's own work, to that of one's friends and allies. , than those of others, and especially of those we want to minimize for one reason or another. (And the “reason” in this case did not really present a mystery to me!) Nothing could lead me to suspect that well beyond such common attitudes, there was here a pure and simple fraud operation, where he was in no way a question of “minimizing”, but of simply ignoring Mebkhout's authorship of the ideas and results which gave new life where there had been stagnation...

However, if there was one person in the world to whom it was natural for my friend to open up, it was me whose work had inspired him during these years of stubborn work, in bitterness sometimes, going against the fashion of the day - I who received him affectionately in my house, becoming a bit of his student in my turn by learning as best I could

very clearly that he had rushed to Luminy for the pleasure of being mishandled by “the people” (without really asking me which ones) who had generously invited him, for the pleasure of being able to treat him in negligible quantities. I had to tell him or let him understand, which must not have improved my friend's disposition towards me.

what he took pleasure in teaching me (*).

After my friend's passage into an atmosphere of warm affection, there was an immediate "backlash". I had the impression that he had decided to transfer onto me the distrust and bitterness that had accumulated within him over the past eight or ten years, under the sting of the indifference and disdain that he had met in some of those who were my students. In the months that followed, the correspondence between us never left the sour register — it ended ultimately on a New Year's greeting card, which never received a response.

It was only at the end of March that I contacted Zoghman again, to send him "The Weight of a Past" and the notes that I had then added to this section (nos. 45, 46, 47, 50). It was to ask him if he agreed that I included him as I had done, in the short reflection on my work (in the note "My orphans", n^o 46), while he would be clear to everyone that I was using information he had given me, and which he could judge to be confidential. I was in no way sure that my friend would not prefer (like others before him) "to be crushed rather than to displease". It would have saddened me if that had been the case.

I found it a long time to receive his response, received only ten days later. I kind of expected that she would be half-flesh, half-fish again — but this time she was downright warm. He gave me his unreserved agreement, even moved, with the terms in which I spoke of him.

It is on page 6 of his long letter (of eight pages) that he mentions, as if in passing and

(*) No more than about his own funeral, Zoghman didn't talk to me about mine, even though it had been almost ten years since he was really in the front row to follow its progress! To be honest, his "protectors" (a little reluctant on the edges) even wanted him to carry in his hands a small corner of the coffin carrying my remains - but they did not forgive him for being the only one among the guests who sometimes allow themselves to pronounce this name that all the others keep silent!

Thus, my friend must have felt at odds in his relationship with me, and he was unable to find within himself the simplicity to accept a past loaded (as mine was) with ambiguities, and speak to me directly and clearly. To talk about his burial was also to talk about mine and the role that he himself had played in it... Still, if I ended up discovering this famous Burial in all its splendor, it was at the against a sort of "conspiracy of silence" which included my friend Zoghman as much as my friend Pierre — and also undoubtedly most of the friends I had in the "big world" of mathematics. (June 3) For further details, see note n^o 178 which follows.

about the “impressive number” of applications of his theorem (“both in the framework of equal topology and in the transcendent framework”) that it always appears in the literature under the name of “Riemann—Hilbert correspondence ” (*). He said it in such an almost incidental way, and with that handwriting illegible as if at pleasure, that it almost passed entirely by the ace! I still remembered it, it was a really strange thing.

So strange even that it seemed barely believable, and then perhaps my friend was exaggerating, obviously he was angry with everyone, including me who only wanted the best for him, it was still quite clear. So I added a note (damn Zoghman, I thought I had finished it though!) called “The Unknown on Duty and the Theorem of God”, in addition to two others “Instinct and Fashion — or the law of the strongest” (I also thought a lot about him, among others, while writing it) and “Canned weight and twelve years of secret”. This note on “The unknown man on duty”, I initially wrote without total conviction; Zoghman seemed so knotted and full of contradictions that I wondered what I was getting myself into by simply echoing him, without really knowing the facts for myself. The thought had not occurred to me that there could be a scam, and even less that Verdier or Deligne themselves were involved. Nothing Zoghman had told me could suggest that...

Yet both were so closely linked to this theorem of the good Lord that its authorship could hardly be concealed without at least their tacit agreement. It must have worked on me in the days that followed. I remembered that Deligne had thought about it extensively, about this problem solved (ten years later) by Zoghman — and then Verdier after all, he acted as research director; even if he did not exert himself much for his student and would rather have beaten him cold and discouraged than anything else, he must at least have known what the two main theorems were in this work - Zoghman surely told him explained, during these famous “interviews” that Verdier was kind enough to grant him! I therefore enriched the note with a commentary on the relationship of Mebkhout's work with an attempt previous Deligne, and a grade of b. from p. on the role of Verdier. At the same time, it was also a probe into my friend Zoghman...

One might think that suddenly, Zoghman will jump at the opportunity to finally, finally, reveal his batteries, hidden for three years, which will finally bring to light the clear truth and make the cause of the oppressed triumph! But not at all ! Fifteen days of silence, followed by

(*) See quote from his letter in the note “A feeling of injustice and powerlessness”, n° 44

letter in which it is a question of everything (in maths) except the theorem of the good Lord - or rather, he limits himself to his subject to give me the precise reference in his thesis, which I had asked him. (I still wanted to know where this famous theorem to which I was so firmly committed was proven!).

In my response to this letter, I had to say a few words to him about “the vast fraud against my work” that I had just discovered (with the “memorable volume” LN 900, and moreover “promising me a lot of pleasure” in the coming days in getting to know SGA 41/2 at the Fac library) — so that after another silence of ten days, my friend finally fires !

This time finally he “put the package together” — a large package, for once, of judiciously chosen documents, allowing me (for me who hardly haunts libraries, nor even the piles of separate prints which pile up in my office at the University...) to give me a balanced idea of an “atmosphere”, in which many still remain who are not involved in my long and solemn Funeral (*). Alongside the main “evidence” (the two articles from the famous Colloquium, revealing the incredible mystification), and another “memorable article” (this time from the pen of Verdier(**)), he there was the speech by N. Katz on the “Fields Laureate” Deligne, in addition to a presentation by Langlands and another by Manin at the same Congress in Helsinki 1978; then “Theory of Hodge I” by Deligne at the Nice Congress 1970 (where there is further allusion in line 3 to a “conjectural theory of Grothendieck motifs” (78 1)), and “Weight in the Cohomology of Algebraic Varieties ” from the same Deligne, Vancouver Congress 1974 (where my name is not pronounced (78 2)); plus finally a correspondence with A. Borel (another old friend, of whom I learned at the same time that he is back in Zurich...), and two notes to the CRAS of Mebkhout, one of which from 1980 is a summary of Chap. V of his thesis (passed the previous year), highlighting the God theorem a little more (*). Not to mention another document, shhh! communicated under the seal of secrecy, and of which I will not say another word here...

(*) (June 12) Still, Katz, Manin, Langlands do not seem to be part of it...

(March 1985) For another story regarding Katz, however, see the note “Dot the i’s”, n^o 164 (II5), and “The maneuvers” (n^o 169), “Episode 2”.

(April 1985) Likewise for Langlands, see the note “The pre-exhumation (2)”, n^o 175 (**).

See the note “The good references”, n^o 82 regarding this article .

(*) For a precise reference for this note, Mebkhout's thesis and the theorem of the good Lord, see the note “The pavement and the beautiful world — or bladders and lanterns”, n^o 80.

Two letters accompany this substantial sending (letters of April 27 and 29), one very long and both substantial. Now that he has finally spilled the beans (the real one, this time!), Zoghman continues to urge me to be extremely careful, as he had been doing since I contacted him again. If I listened to him, I would be careful not to make public my notes of reflection, which would remain the subject of an absolute secret between him and me - not the part at least which implicates anyone, given that "they" have "all the powers" and "everyone is with them"(**)! However, I had warned Zoghman that these notes, of which I sent him the extracts which concern him, are intended to be made public, and as soon as possible.

All the elements finally seem to have come together to make the just cause of the oppressed triumph, but the "victim" still seems to be doing everything possible to continue to muddy the waters as if at pleasure – as if out of a secret regret (one would have said) of having sold this famous "wick" of which Zoghman must have been (until the fateful May 2) the one and only holder. This ambiguity shines through in every line (I'm hardly exaggerating) even in the last letters that I have just received - including the very last where he sends me with an air of somber triumph the "memorable article" in full (while with the "big package" sent first, he had only managed to part with the first twenty pages of this key piece of evidence(***)).

As for the friend Pierre, I mean Deligne (who is not Pierre nor a "friend" for everyone...), he just doesn't sing his emotional praises - one would say suddenly it is no longer him, Zoghman, who is the "victim" but no, but Deligne, the poor man, who has been influenced in such a harmful way by those around him - the only villain, and who so badly surrounded, it's Verdier (and again... follow my gaze...): definitely I "had to do something" to Verdier for him to be stupid like that as if for the sole pleasure of harm, not to mention that it was I too who was his boss and I also who awarded him the title of doctor and the glory and the rest — the means in short of "absolute power"! (*)

(**) (May 30) Carried away by my enthusiasm, I exaggerate a little here. At no time did Zoghman suggest that I refrain from publishing this or that part of my notes. Lately, he even insists that these notes should indeed appear in book form, for the benefit of "posterity", while a limited edition like preprint seems to him a bit "a stab in the face".

'water". (***) (October 9) Zoghman clarified to me that in fact, he did not initially have in his possession a Xerox of the complete article, which he only printed later.

(*) This is not the first time that I hear this sound of "absolute power", by which we would like

Obviously, if my friend is angry with anyone, it's not really his illustrious ex-boss, whom he only had the honor of meeting for an "interview" three times in ten years in total. and for everything (I understood well what he wrote to me very recently) - a dizzyingly distant man, entirely out of reach - but he is the one he can come and see whenever he pleases, and share both his bread and his shelter...(**).

Each time when Zoghman has taken a new step to disclose some new element, making me a little more aware of a situation of dispossession in which he appears as a victim (and being able to help somewhat to resolve it), I feel that it is like a tearing away, the culmination of an exhausting internal struggle. There is a role with which he seems to have identified body and soul, clinging to it as his most precious possession - this role of victim which he can only maintain by remaining around this role and the situation which justifies it, the most absolute secret (*). And he may indeed be torn and angry with me more than ever, at this moment when, with his reluctant collaboration (torn away, so to speak, by the logic of a situation created by none other than me, with these unfortunate reflections on a A burial without fuss...), this secret will come to an end, and with it perhaps also this role in which he has been pleased to maintain himself, I cannot say since when.

This "burial" of my friend Zoghman was carried out through the combined care of two silences, each responding to the other and provoking it in turn, in a flawless round where the role of one closely matches the role of the other. the other — the despoilers and the despoiled. If more than once I was struck by seeing that "the buryer" was at the same time and more profoundly his

convince yourself of your own powerlessness and justify it. If anyone has invested anyone with "absolute power" over their own person, Zoghman, it is none other than Zoghman himself!

(**) (May 8) It is certainly not a coincidence that the unequivocal signs of conflict, in my friend's relationship with me, appeared in the very aftermath of this stay where he "shared my bread and my lodging" in an atmosphere of unreserved affection, abolishing a feeling of "distance" that our first brief meeting undoubtedly could not entirely erase. Here I encounter a situation that has been familiar to me for a long time, about which I express myself (in relatively general terms) in the two notes "The Enemy Father (1), (2)" (sections n°s 29, 30). I did not suspect, in writing them as a commentary on the reflections which had preceded, to what extent the archetypal situation that I described there would constantly find itself at the center of a long reflection still to come, while I believed myself

close to reach the end of this journey! (*) (May 30) Since these lines were written (May 6), my friend's attitude has evolved drastically, and I have recently no longer perceived signs of attachment to a role of victim. It is of course understood that the lines which follow (like those which preceded) concern certain episodes in the life of my friend, and in no way claim to identify a temperament or describe a permanent bias.

my own “buried”, I was struck as much by seeing in the person of another friend a “buried” who is at the same time, and more profoundly, his own “burier” — in close collusion with the very people whose he delights in being the willing victim.

And I see clearly that the first person responsible for his own dispossession is none other than my friend Zoghman himself, who for three years has acquiesced by his silence to his humiliation by those who take it easy with him. He had everything in his hands to fight - and he chose for three years to forget that he even had hands, and to be defeated without having fought(**).

(⁷⁸ 1) I had never held this short preliminary communication in my hands, but only the more detailed publications “Hodge Theory II, III” published in Publications Mathématiques. This is why I was under the impression that Deligne had not considered it useful to ever allude to a role played by the theory of motives in the genesis of his ideas on Hodge's theory. I told myself that if he had wanted to mention a role that I could have played with him (*), he would undoubtedly have done so with “Theory of Hodge II” which constitutes his thesis work, this which was the occasion or never to mention this kind of thing(**). I have just seen that he has once and for all fulfilled the formality of mentioning me, with this pithy line(***) alluding to “Grothendieck's conjectural theory of motives”, with even a reference to the key (to Demazure's presentation at the Bourbaki seminar).

(**) (May 30) This is certainly a subjective vision for someone who has the temperament of a fighter, someone in whom this fiber could seem absent. It would seem that since these lines were written, the fighting spirit has awakened in my friend, and that he is determined to fight against an inequity for which he has paid the price.

(*) (May 30) I systematically minimized this role until a few weeks ago. of May 27, where I realized for the first time this See on this subject the note “Being apart” n° 67 .
attitude at home and perceive its meaning.

(**) (May 30) I also don't remember being contacted to be part of the thesis jury.
The funeral was already going well...

(***) Serre also appears implicitly in the same line by the reference sign [3] - the curious reader will find his name in the bibliography at Hodge I. This expeditious witness line is surely the only one between 1968 and today where there is an allusion (however sybilline it may be) to the “sources” that she mentions in one breath: Serre (alias [3]), motifs, Grothendieck... (May 28) However, I have

since come across a another such allusion, very interesting given the very particular occasion. See on this subject the note “The Funeral Eulogy (1) — or the compliments” n° 104, and the end of the note which precedes it (“The Gravedigger — or the entire Congregation” n° 97), situating this “special occasion”.

Nothing to say, once again! It did not occur to him to specify that he had learned this theory (all conjectural, let us not forget!) from another source than this meager text by Demazure, which cannot give any image of a theory of 'a great wealth (all conjectural!), which is found in filigree throughout all of Deligne's subsequent work around the yoga of weights - while awaiting the escalation of the "pirate volume" LN 900 where (fifteen years later) the motivic Galois groups (this time without even a laconic reference line containing the name of the deceased...).

On reflection, in this laconic quote, I recognize the same "thumb!" style. — a purely formal quotation, to be fair, with a reference which is in no way likely to enlighten the reader (in this case, on obvious and deep relationships with ideas which it is precisely a question of hiding (*) — and which remained hidden for the twelve years that followed), but likely to deceive him.

⁷⁸ (2) I did not have to hold this text(**) in my hands (which I learned of its existence just a few weeks ago) to know that my name was not on it. Neither does that of Serre, who was the first to glimpse a "philosophy of weights", which I then identified in great detail.

(178) (June 3) Zoghman explained to me that he only gradually became aware, and in a confused way at first, of the "scam" that was going on around my work. The manuscript that Verdier had given him in 1975 (see "Good references" note n° 82) had been providential for him, in particular for introducing him to the notion of constructibility and its essential properties, as well as to the theorem of biduality , from which he was inspired for the theorem of biduality (or "local duality") in the context of $\mathcal{D}$ -modules. It was only years later, when reading SGA 5 (massacre edition certainly, but not massacred enough to fool an attentive reader like him) that he began to realize something. For a long time, he was filled with admiration and gratitude for

(*) In writing these lines, the association emerged with a first revealing incident around "weights", which took place two years earlier, which was discussed at the beginning of the note "Canned weight and twelve years of secrecy" (n° 49), and in a more detailed manner at the beginning of the note "Eviction" (n° 63). For the "thumb style!" in general, see the reflection of the note "Thumb!" (n° 76). It's a style that's starting to become very familiar to me!

(**) "Weight in the Cohomology of Algebraic Varieties", by P. Deligne, Vancouver Congress 1974, Proceedings, pp. 78–85.

his distant elder, convinced that the ideas from which he drew abundant inspiration were his own. It even seems that for years, he was indeed convinced that the so-called “Verdier” theory of duality was indeed due to Verdier, or at least to “Serre—Verdier”, and just as the idea of the duality he calls “de Poincaré—Verdier” is indeed due to Verdier.

It was only around 1979 (the year of his defense) that he began to realize that there was something wrong - but I presume that he must have been careful not to let it appear to anyone. towards his prestigious “boss”, no more than towards me, during our meetings, in February 1980 and June 1983. It was only with the Colloque Pervers, in June 1981, that he began to feel the evasion that was taking place in his own work, which he also began to realize more clearly in which world he had lost himself (*)! Surely, for him I had to be part of this world, where my former students (or at least some of them) had the upper hand and plundered the posthumous student with the same casualness as the deceased master. The only difference, if anything, was that I was dead and they were all that was alive and proved it conclusively...

I can imagine that even after the Perverse Colloquy, Zoghman still had difficulty believing the testimony of his healthy faculties, although he was told quite clearly what had happened. He only had in his hands the famous Introduction to the Proceedings of the Conference, signed by B. Teissier and his “patron-sic” Verdier, in January 1984. After having challenged the evidence for almost three years, the shock was all the more severe, I thought I understood.

It was two months later that I contacted him again, sending him the notes “My orphe-lins” and “Refusal of an inheritance — or the price of a contradiction” at the end of March — and it was a month later It's still late that he finally decides to “spill the wick” to me and inform me of the “Mystification of the Pervers Colloquy”.

(79) And here I am, preparing to finish and make public this reflection which will put an end to the secrecy that Zoghman himself has maintained around the spoliation for which he is paying the price, and from which he is also reaping the obscure profits (**). Perhaps it will be unwelcome to him, just as it will perhaps be unwelcome to my friend Pierre, to whom I will deliver it in person as soon as

(*) Zoghman then ended up having such a poor opinion of his ex-boss that he was convinced that everything Verdier had done in the sixties (which I review in a note by b. de p. in note 81 “Thesis on credit and all-risk insurance”) had been more or less dictated to him or at least suggested by me. (**) (May 30) I recall that this reflection is inspired by dispositions in my friend which seem to presently outdated. (Compare two b. de p. notes from May 30 to note n° 78.)

that it will be completed and the text cleaned up and printed(***). The best I have to offer to my friend Zoghman and to my friend Pierre, perhaps both will receive it as the worst: as a calamity, or as an outrage. All the worse, as my testimony is public - just as the silences of both were public acts, and which bind one as they commit the other.

Whether they reject or accept my testimony is their choice, and it is the same for Jean-Louis, who I counted among my friends just like today Zoghman and Pierre. These choices affect me closely, and they are not mine. I have no temptation to predict what they will be. I will soon find out, and I await what the coming weeks and months will bring me with intense interest, suspense - and without the shadow of anxiety. My only concern and my only responsibility is that what I offer is the best I have to offer — that is, to be true.

There are perhaps some who will be surprised that I speak bluntly of people whom I call by the name of friend, and who will see in this name a clause of style, or even an intonation of irony which is absent. When I refer to Zoghman Mebkhout or Pierre Deligne as “friends”, it is a reminder of the feelings of sympathy, affection and respect that are in me at the time of writing. Respect tells me that I do not have to “spare” a friend, any more than I have to “spare” myself — like me, he is worthy of encountering the humble truth, and no more than me, he does not need any care.

If I do not refer to Jean-Louis Verdier as a “friend”, it is in no way because I consider him less “good”, or less “deserving”, than my friends Zoghman and Pierre, or that I- same, but because it turns out that life has distanced us from each other. The feelings of sympathy and affection that linked me to him, fifteen years and more ago, have been more or less erased by time and have not had the opportunity to come back to life through even a little personal contact. . The few attempts I have made to reestablish such contact have met with no response, and I do not know if reading these reflections will revive a relationship that had frozen. But even though at present he is not a “friend” to me, I do not think I am disrespecting him by not treating him more than myself or my friends.

(***) However, I did not believe that I would still have the opportunity, in the years that remain before me, to return for a few days to the capital. But my friend Pierre traveled often enough, for more than ten years, to come and meet me in the depths of remote countryside, so that on this exceptional occasion I came, following at the same time an invitation often repeated and never still taken advantage of.

friends, and I know very well that by doing the opposite, I would not be doing him or anyone a favor.

Not to mention that both he and my friend Pierre, if indeed they want to “defend” themselves (or attack) rather than taking the risk of looking at themselves, do not lack the means nor supports. And without taking into account also that where they had the possibility of discouraging or crushing, more than once both of them did so, without care and without pity.

(80) (May 9) It would also be time for me to finally give a reference for this famous theorem of Riemann—Hilbert —(Deligne who does not say his name)—Adam and Eve—good God—(and especially not Mebkhout), which everyone cites extensively (including myself), and for which apparently no one has yet thought to ask the question where it is demonstrated. Having understood from my friend Zoghman that the “memorable theorem” was in his thesis, I indeed found it in the table of contents of this one, under the name (admittedly down-to-earth and worthy of 'a cad) “An equivalence of categories”, Chap. III, para. 3, p. 75. To make matters worse, it is not even entitled to the name “theorem” but is called “Proposition 3.3” (and what is worse, my name appears, and underlined again, on the same page). I even admit, failing to have read the previous 75 pages to recognize myself, that I was not entirely sure if that was it — Zoghman confirmed to me that yes and I trust him. The demonstration (it would seem) is the subject of Chap V of the same thesis - which was passed at the University of Paris VII on February 15, 1979 before the Jury made up of D. Bertrand, R. Godement, G. Houzel , Le Dung Trang, JL Verdier. Interested persons who have not yet received a copy from the author (who sent his thesis to all those whom he rightly or wrongly suspected might be interested) only have to ask him, and he will be happy... He of course sent a copy to each of my former cohomologist students, none of whom gave any sign of life. They must have changed the subject in the meantime, bad luck...

It must be said that Zoghman definitely doesn't have the knack for selling his merchandise, for presenting it in a clear and attractive way - these are things that have to be learned, and he didn't have the luck that my ex-students to learn the skill with a virtuoso of the trade and who did not skimp on his time. But he can't complain, he's had his “three interviews”, and perhaps one of the “luminaries” will one day have the idea of even acknowledging receipt of his indigestible piece. He must have realized himself that the pavement was going badly (even if it was not lost for Riemann or for Hilbert...): he made a note to the CRAS, it is

even shorter, to draw attention to his famous theorem, I give you the title: “On the problem of Hilbert—Riemann”! I knew well that my friend Pierre Deligne was no better at history than me, he just had to re-establish the chronological order, and contribute the pretty folkloric designation “correspondence” and that was it, Zoghman did it. will have really searched... This Note is from 3.3.1980, Series A, p. 415–417.

Verdier must have learned of the theorem in one of the “three interviews” that he gave to his student (or during the defense), but he must not have noticed anything if that is true. . Deligne ended up realizing something I can't say when, but what is certain is that he was aware of it in October 1980, and Bernstein and Beilinson too according to what 'he says it himself. Mebkhout himself went to Moscow to explain his results (and at length) to Beilinson and Bernstein (in case they had difficulty reading it). I don't know if they or Deligne read the said thesis or the note to the CRAS which followed, but we must believe that they ended up understanding what was in it, since the “memorable Colloquium” of Luminy of the next The year turned out precisely on this, by the greatest of coincidences.

To summarize, and taking into account the very latest information that my intelligence service was kind enough to communicate to me, there were at least five people perfectly aware of the situation, who participated in the so-called “Perverse Colloquy” mystification. , namely (in alphabetical order of actors) AA Beilinson, J. Bernstein, P. Deligne, JL Verdier and Z. Mebkhout — plus a whole conference of keen people, certainly brilliant mathematicians in addition, who apparently asked for nothing better than be mystified and take bladders for lanterns (*). Which proves once again that we mathematicians, from the illustrious Medalist to the obscure unknown student, are not a bit smarter or wiser than Mr. Everyman.

VIII. The Student — aka the Boss

(81) (May 8) It seems to me time to express myself in more detail on the matter of this “phantom thesis”, which I had spoken of only “in the process” in two previous notes (notes (48) and (63)). An inattentive or ill-disposed reader might say that I am reproaching

(*) (June 3) In fact, it appears that all the participants of the Conference without exception had been put on site aware of the situation. See on this subject the note “The Colloquium”, n° 75 . written today.

simultaneously to my ex-student JL Verdier of two contradictory things - of having “buried” the derived categories, and of having “published” them (in SGA 41/2) and of claiming his authorship; just as this same reader would say that I criticize P. Deligne both for having “buried” the motifs, and for having exhumed them (in LN 900). So it is perhaps not superfluous to give a retrospective of the situation, from 1960 to today.

Around 1960 or 1961 I proposed to Verdier, as possible thesis work, the development of new foundations of homological algebra, based on the formalism of derived categories that I had identified and used during previous years for the needs of a coherent duality formalism in the context of schemas. It was understood that in the program that I proposed to him, there were no serious technical difficulties in perspective, but above all conceptual work whose starting point was acquired, and which would probably require considerable developments, of dimensions comparable to those of the book of foundations of Cartan—Eilenberg. Verdier accepts the proposed subject. His work on the foundations continued satisfactorily, materializing in 1963 with a “State 0” on derived and triangulated categories, multigraphed by the IHES. It is a 50-page text, reproduced in the Appendix to SGA 41/2 in 1977 (as stated in note (63)) (*).

If the defense did not take place in 1963, but in 1967, it was because it was unthinkable that this 50-page text, the embryo of foundational work still to come, could constitute a doctoral thesis of state — and the question of course did not even arise. For this same

(*) This single text may seem a somewhat meager result for two or three years of work by a gifted young researcher. But the greatest part of Verdier's energy was then devoted to acquiring the essential bases of homological algebra and algebraic geometry, in particular by following my seminars, and by working one-on-one. His contributions to the formalism of duality (see below) occur later, once with Artin I had developed in detail the formalism of duality in SGA (1963/64), when I suggested to him (in margin of his work on the foundations of derived categories) to develop this same formalism in the context of “ordinary” topological spaces and the readable morphisms of such spaces. It was around the time when I began with SGA 1 the series of my “Algebraic Geometry Seminars” (in 1960) that I was contacted by Verdier, at the same time as by Jean Giraud and Michel Demazure, asking me if I had work for them — and they were knocking on the right door! Coincidence that struck me, from the moment I wrote the note “My Orphans” (n^o 46) when the three of them contacted me, they had just formed a small seminary called “Séminaire des orphans” (on the theme of automorphic functions, zeta-based calculation approach), given that their boss (or sponsor at the CNRS?) had just left for a year without warning, leaving them hungry and a little in the void . This void was quickly filled...

reason, during the thesis defense on June 14, 1967 (in front of a Jury including C. Chevalley, R. Godement and myself who chaired), there was no question of presenting this work as a thesis. The text submitted to the jury, 17 pages long (+ bibliography), presents itself as the introduction to a major work currently being written. It outlines the main ideas underlying this work, placing them in the context of their many uses. Pages 10, 11 give a detailed description of the chapters and paragraphs planned for this foundational work.

If the title of doctor of science was awarded to JL Verdier on the basis of this 17-page text, outlining ideas which he himself says are not due to him (*), it was clearly there a contract of good faith between the jury and him: that he undertook to complete and make available to the public this work of which he presented a brilliant introduction. This contract was not kept by the candidate (*): the text he announced, a text on the foundations of homological algebra according to a new point of view which had proven itself, was never published.

It is clear that if Verdier's work between 1961 and 1967 had been limited to writing the skeletal

(*) We read at the beginning of the thesis:

"This thesis was carried out under the supervision of A. Grothendieck. The essential ideas it contains are due to him. Without his initial inspiration, his constant help, his fruitful criticism, I would not have been able to bring it to fruition. May he find here the expression of my deep gratitude.

I thank Claude Chevalley for kindly chairing my thesis jury and for having the patience to read this text.

I thank R. Godement and N. Bourbaki for introducing me to mathematics."

The term "this thesis" can only refer to the entire foundational work undertaken, of which the submitted text constitutes the introduction — work which was therefore not, strictly speaking, "completed" at the time of the defense.

(May 30) This inconsistency clearly reflects the ambiguity of a situation for which I was primarily responsible, as thesis director and (if the cover of the copy in my possession of this thesis is to be believed) as president of the Jury. There was in me, with regard to a brilliant student, a lack of "rigor", a complacency which goes in the same direction as that which I had shown towards Deligne (see the note "Being apart", n° 67), and who contributed his part to bring the same fruits.

(*) It is all the more remarkable that JL Verdier refused my proposal to be part of the Contou-Carrère thesis jury in December 1983, with J. Giraud, and myself acting as research director, believing that the thesis (entirely written however and read carefully by J. Giraud) and the jury would not offer sufficient guarantees of seriousness, without referring to the control of a Thesis Commission of the Parisian Universities (sic).

“State 0” of 1963, the jury would not have thought of accepting this “credit thesis”. The writing of his work must then have been sufficiently advanced to anticipate completion in a year or even two, and for practical reasons it seemed appropriate that Verdier could have the title without waiting for the work on which it was to be based to be completed.

It should be added that between 1964 and 1967, Verdier had made some interesting contributions to the formalism of duality (811), which, together with the foundational work that he was supposed to pursue, could justify the credit given to him. All of his contributions to duality could in themselves, if necessary, have constituted a reasonable doctoral thesis. Such a thesis, however, would in no way have been in the style of the works that I am accustomed to proposing, which all consist of the systematic and complete development of a theory for which I feel the need and urgency (812). I do not remember that Verdier thought of raising the question of presenting such a “thesis on titles”, and I doubt that I would have accepted, when such a thesis would not have corresponded in any way to the “contract” which was passed between him and me, when I entrusted him with the beautiful subject of derived categories, it was up to him to develop vast-scale foundations.

I admit my full responsibility, as JL Verdier's thesis director and president of the jury, for my carelessness in having awarded him (jointly with C. Chevalley and R. Godement trusting the guarantee that I gave) the title of doctor on work that was not yet done(**). I have no reason to complain if today I see certain fruits of my levity. But that does not prevent me from making the observation publicly, and from the actions of my ex-student JL Verdier engaging his sole responsibility, and that of no one other.

Not keeping the contract made with me and with the Jury who had trusted him, was a way of burying the point of view of the derived categories that I had introduced and which he was responsible for founding through extensive work. This work may have been done, but was never made available to the user. This was a way of “making a cross” on a

(**) To this responsibility, I should also add that of not having ensured, during the two years which followed (before my departure from the mathematical scene) that Verdier indeed kept the contract which he had passed. It must be said that my energy was so committed to continuing the foundational work that I myself had taken on, without counting the motivic and other reflections, that I did not have to think too much about the unpleasant task of reminding others of the obligations incumbent on him. I had to learn of Verdier's decision to abandon the publication of the planned work at the beginning of the 1970s, at a time when I was absolutely no longer interested in mathematics, and where the idea would not have occurred to me to “react”.

set of ideas that he himself had helped to develop.

The resumption of the notion of category derived by the work of Mebkhout met with no encouragement from Verdier (nor from any of my other students who were cohomological “luminaries”). The de facto boycott on derived categories seems to me to have been total until around 1981 (*), when they made their comeback in force in the “memorable Colloquium” of Luminy (see note (75)), under the sudden surge of needs.

However, State 0 of Verdier’s “thesis” already appeared four years earlier, in 1977, as an appendix to volume SGA 41/2 (see note n^y 63) — therefore ten years after the defense of his thesis, and at a moment when (to my knowledge(*)) Mebkhout is the only one to use derived categories in his work, going against the fashion of the seven years which had preceded. Unless I’m mistaken(*), he remained the only one, until the moment of the big “rush” around the famous “Riemann—Hilbert correspondence” at the already named Colloquium, where Deligne alias Riemann—Hilbert appeared as the father of this “correspondence”-sic, and Verdier (with his providential State 0 abundantly cited by his generous friend) appears as the father of derived categories and 2000-style homological algebra, without mention of my modest person and even less of Mebkhout(* *).

In the light of these events, I believe I understand the reason for the unexpected publication of this State 0 which (it is said in the introduction to SGA 41/2 by always the same friend) “had become untraceable”, and that no one did not then care about “finding”, except at most (perhaps) Zoghman Mebkhout (*). So there was just this unfortunate man who, in his corner and against all odds, persisted in using these notions of a bygone age, without anyone knowing exactly what he was getting at - so stubborn finally a doubt began to arise if sometimes this individual was not going to come out one fine day with things that would make the weight, we never knew... After all, the one to whom he imprudently happened to refer as one of

(*) (May 30) These somewhat dubious forms of style are in fact not appropriate. As Zoghman Mebkhout (who paid to find out) confirmed to me, what I doubtfully put forward about the status of “Grothendieck style” homological algebra corresponds well to reality.

(**) Compare with the comments in the notes “The Compère” and “Iniquity — or the meaning of a return” (n^ys 63 and 75).

(*) Still, it was while browsing the bibliography of a work by Z. Mebkhout that I had just received, towards the end of April, that I learned of the publications of this “State 0”, while I had even forgotten the existence of this text from another age...

his sources of inspiration (alongside the works of the Master), he had over time proven or found things with all that, things that we could not pretend to forget all even if we forgot their author - and Had not the Master himself, Jean-Louis Verdier himself, made his departure towards fame with this formula of “Lefschetz—Verdier” which he would have been hard-pressed to even write and even less to prove? , without all these notions good for the trash...

While my influential ex-student for almost ten years (since he got rid of a certain boring formality...) bet against the derived categories and was still going to bet against until hour Conference), he must have judged it prudent (we never knew...) to take the lead on events that could occur, an “all-risk insurance” in short, by publishing (not certainly the large-scale work which was supposed to one day constitute a thesis, but) a “witness text”, a sort of piece of evidence “in case...”; a text which would attest to his claims of paternity over an orphan whom he had taken a dislike to, and whom he continued, while awaiting events, to deny(**).

(811) The contributions in question are: 1) Foundations of a duality formalism in the context of locally compact spaces and 2) that of Galois modules (in collaboration with J. Tate); 3) the fixed points formula known as Lefschetz—Verdier; 4) duality in locally compact spaces.

Contributions 2) and 3) constitute an “unexpected” compared to what was known. The most important contribution seems to me 3). Its demonstration easily results from the duality formalism (both for “discrete” and “continuous” coefficients), which nevertheless constitutes an important ingredient in the arsenal of “all-purpose” formulas available to us in cohomology. . The existence of this formula was discovered by Verdier, and was a (pleasant!) surprise for me.

The duality formalism in the context of locally compact spaces is for

(**) If JL Verdier had really had the desire to make known the yoga of derived categories, buried for seven years, it is the introductory text which constitutes his thesis that he would have chosen to publish, rather than a technical text that no one cared about and which only gained interest in the context of yoga and its many uses. But we understand that he had no desire to attach to the 50-page test text the 17 pages of his thesis, containing now embarrassing assertions about the role of the one who should definitely not be number...

essentially the “necessary” adaptation of what I had done in the context of the spread cohomology of the schemas (and without the difficulties inherent in this situation where everything was still to be done). However, he brings an interesting new idea, that of the direct construction of the existence functor f . This process was taken up by Deligne in equal (without prior smoothing of f) as a adjoint to the right of Rf , with a theorem cohomology, allowing him to define $f!$ in this framework, without any smoothing hypothesis.

These comments make clear, I think, that by 1967 Verdier had demonstrated his ability for original mathematical work, which, of course, was the determining factor in the credit given to him.

(812) As another example, I point out the detailed development of the duality formalism in the context of locally compact spaces, in the spirit of the “all-purpose” formalism of the six operations and derived categories, including Verdier's presentation in Bourbaki Seminar would constitute an embryo. Even in the context of topological varieties alone, there still does not exist, to my knowledge, a satisfactory reference text for the formalism of Poincaré duality.

(June 5) There are two other directions where I note with regret that Verdier did not consider it useful to complete a work that he had begun in a sufficiently strong manner to receive credit for it (I mean, by the start of a duality formalism in the context of discrete coefficients and locally compact topological spaces), while the essential ideas are not due to it and it does not care (any more than for the derived categories) to become the servant of a task and make a complete formalism available to the user (as I endeavored to do in the three seminars SGA 4, SGA 5, SGA 7).

The duality program that I planned and that I suggested to him to develop was placed in the framework of general topological spaces (not necessarily locally compact) and applications between such which are “separated” and which locally are “readable” (ie local -ment the source is immersed in a $Y \times \mathbb{R}^n$ the obvious analogy with the framework of cohomology spreads out any . where Y is the goal space). This was what suggested to schemes. Verdier was able to see, in the framework of locally compact spaces, that the hypothesis of local lissifiability applications was useless (something that came as a surprise). This does not prevent the fact that the context of locally compact spaces (thus excluding “parameter spaces” which would not be locally compact) is visibly short at the edges.

satisfactory would be the one which would cover both the one chosen by Verdier, and the one that I anticipated, namely the one where the topological spaces (or even topos?) are (more or less?) arbitrary, and where the applications $f: X \rightarrow Y$ are subject to the restriction of being 1) separated and 2) “locally compactifiable”, ie X is locally embedded in a compact $Y \times K$, K .

In this context, the fibers of an “admitted” application would be any locally compact spaces. Another step would be where we admit that X and Y , instead of being topological spaces, are “topological multiplicities” (ie topos which are “locally like a topological space”), or even any topos, in re-restricting the applications in a suitable way (to be explained), so as to find fibers which are locally compact multiplicities, subject if necessary to additional conditions (perhaps close to the point of view of Satake's G -manifolds), for example (and at the last rigor!) to be locally of the form (X, G) , where “ G ” has not been developed in the case of smooth compact topological multiplicities (smooth: which are locally like a topological manifold). The case of a classifying space of a finite group seems to show that we can hardly hope to have a (absolute global) duality theorem that modulo torsion, more precisely, by working with a ring of coefficients which is a $\mathbb{Q}$ -algebra. With this restriction, I would not be surprised if Poincaré duality (“six operations” style) works as is in this context. It is not surprising that no one has ever looked at it (except unrepentant differential geometers, pretending to look at the cohomology of the “leaf space” of a foliation), given the general boycott on the notion even multiplicity, established by my cohomologist students, Deligne and Verdier in the lead.

To put it bluntly, what is missing is a reflection of foundations of the following type: describing (if possible) in the context of any topos and bundles of “discrete” coefficients above, notions of “cleanliness”, “smoothness”, “local cleanliness”, of “separation” for a topos morphism, making it possible to identify a notion of “admissible morphism” of topos f : to obtain the usual properties of the formalism of the six operations. Here the topos $\mathcal{T}$ have a meaning (one added are considered as non-ringed, or perhaps as provided with Rings (which are assumed to be constant or locally constant if necessary), assuming (at least initially) that the morphisms of ringed topos $f: (X, \mathcal{O}_X) \rightarrow (Y, \mathcal{O}_Y)$ are such that f^*

⁹¹ $(\mathcal{O}_Y) \rightarrow (\mathcal{O}_X)$ or an isomorphism (813). The foregoing considerations suggest that

when we limit ourselves to Rings of coefficients of zero characteristic (ie which are $\mathbb{Q}$ -Algebras), we can be clearly broader for the notion of “admissible morphism”, so as to encompass “fibers” which are p. ex. multiplicities (topological or schematic), rather than ordinary “spaces” (topological or schematic).

A first start in this direction (apart from the cases treated by me, then by Verdier on the same model) is due to Tate and Verdier, in the context of discrete or profinite groups. The memory of this beginning encouraged me to pursue reflection in this direction last year, in the context of small categories (generalizing discrete groups) serving as homotopic models. Without going very far, this reflection was nevertheless enough to convince me that there must exist a complete formalism of the six operations in the Cat context of the category of small categories. (See on this subject the “Pursuit of Fields”, Chap. VII, par. 136, 137.) The development of such a theory in Cat, even in ProCat, just like a theory of this type in the context of spaces and topological or schematic multiplicities, would for me have the main interest of being a step towards a better understanding of “discrete duality” in the context of general topos.

Illusie made me understand last year that he had struggled with perplexities of duality in the case of semi-implicial spaces (or schemas). It seemed to me to always be the same tobacco - managing to detect the existence of a formalism six operations in a specific case, and understanding it. But it would seem that the mere prospect of a reflection on foundations has the gift of chilling each and every one of my former students — at least among my cohomologist students. If I took pains with them, it was with the conviction that they were not going to stop exactly (from the point of view of conceptual work) at the precise place where they had gone in my company, and remaining wringing their hands every time a new situation showed that the work they and their friends had done with me was insufficient. The conceptual work that we do is always insufficient in the long run, and it is by taking it up and going beyond it, and not otherwise, that mathematics progresses. Between 1955 and 1970, each year again I noticed that what I had done in previous years was not sufficient to meet the needs, and I returned to the work just as dryly, at least when someone no one else (eg Mike Artin, with the point of view of “algebraic varieties” in his sense) had already started there. But it seems that my students have also buried the example that I gave them, at the same time as my person and my work.

(813) I seem to remember that in the formalism of six variances in equal cohomology (let's say), the hypothesis that the sheaves of rings serving as coefficients are locally constant is useless - the essential hypothesis is that they are first torsion beams with residual characteristics, and that $f^* \gamma^1$ is an isomorphism. When we abandon this last hypothesis, we must enter into a theory (never explained yet, to my knowledge) which "mixes" the "discrete spatial" duality, and the "coherent" duality (relating to Rings of coefficients and their homomorphisms). As a result, we plan to replace, on the diagrams (or more general topos) X, Y , the Rings of coefficients, by relative schemes (not necessarily affine) $Y \text{ sur } X$, Y , the morphisms of ringed topos $(X, \quad \text{and }) \gamma^1 (Y,)$ by commutative diagrams of the type

$$\begin{array}{ccc} X & \xrightarrow{\quad} & X \\ \downarrow & & \downarrow \\ Y & \xrightarrow{\quad} & Y \end{array}$$

with a "six operations" formalism in a context of this type. When X, Y , etc... are the punctual topos, we should find the usual coherent duality.

(82) (May 8) This is the article by JL Verdier "Homology class associated with a cycle", published in Asterisk n° 36 (SMF), p. 101–151 in 1976. In a way, this rather incredible article (yet nothing should surprise me anymore...) is a counterpart to the "perverse article" by Deligne et al. With one reservation, it practically consists of copying over fifty pages, in a slightly different context, notions, constructions and reasoning that I had developed at length ten or fifteen years previously, — terminology, notations all together. is textually! I would have thought I was returning to a session of the SGA 5 seminar which took place in 1965/66, where these things were explained (apparently to the participants' satisfaction (*)) for an entire year. After this seminar at least, all these things

(*) See for comments in this direction, notes n°s 68, 68 "The signal" and "The reversal", where I examine the strange vicissitudes of the writing of this seminar, and the relationship between them and Deligne's "Operation SGA 41/2". The reflection which follows reveals to me another unforeseen aspect of these vicissitudes and the dismemberment of the mother seminary by the combined care of Verdier and Deligne. The publications of both which establish this dismemberment are from 1976 and 1977 — they constitute the "green light" given to Illusie to prepare (eleven years later...) the publication of SGA 5 (which, Deligne says in SGA 41/2, "can be considered as a series of digressions, some of which are very interesting").

were part of the domain of the “well known” for people somewhat in the know(**).

Verdier had attended of course, as had Deligne (the only one who was never dropped, even though it was the first time he set foot in my seminar (*) — he had to do it...). It is true, well, well, that in 1976 it had been ten years since the “drafting-sic” of this famous seminar by “volunteers-sic” who had had their fill dragged on — I see now that one of these “volunteers” still took charge of the “editing” in their own way, even before the publication of SGA 5 in 1977! It must be believed that the vicissitudes of this unfortunate seminary did not help Deligne alone, taking advantage of a situation of disarray in his own way. But at that time, Deligne still took care, while dismantling SGA 5 of one of his key presentations to attach them to his SGA 41/2 as a due thing, to still mention in his writing (on the class of cohomology associated with a cycle) “according to a presentation by Grothendieck”. (It is true that he found the compensation of being able to take advantage of it to present me as his “collaborator”! — see the note “The reversal”, n° 68.)

To return to the homology class (not to be confused!) associated with a cycle (which according to the title constitutes the subject of Verdier's article), I had developed this formalism with a wealth of details, on several presentations, during the oral seminar, in front of an audience who begged for mercy (except always the only Deligne, always dashing and fresh...). It was one of the innumerable “long exercises” that I developed that year on the formalism of duality in the flat framework, feeling the need to achieve complete mastery of all the points which seemed to me to be understood in detail. bottom. The interest here was to have a valid formalism on an ambient diagram that is not necessarily regular — the transition to the cohomology class in the regular case, and the link with my old construction using support cohomology

(**) For a reflection where I return to this “hasty” impression, see the note “The silence” (n° 84).

(*) The year of this seminar was the one (I think) in which I met Deligne, who must have been nineteen years old at the time. He “got into the game” very quickly, and even took charge of writing my presentations on flat duality from the previous year (which he must have known from my explanations and my notes), and also the presentation on the class of cohomology associated with a cycle, which was discussed in the cited note n° 68 (“The reversal”), and which will be further discussed in this one. The fact that with the means that were his, and a complete mastery of the subject, he waited eleven years to write it, to then include it in his SGA 41/2 without informing me, shows me now, retrospectively, that from the year 1966 (and not only from 1968 as I was able to suppose - see note n° 63, “The eviction”) - therefore from the first year of our meeting, there was a profound ambiguity in my friend's relationship with me, expressing himself from that moment in a perfectly clear way, of which I have refrained from taking note until this day!

and immediately giving compatibility with cups-products, being immediate. I also noticed that this part of the seminar is part of what was not included in the published version - undoubtedly Illusie (on whom all the work of preparing a sortable edition (ahem) ended up fall back) must have been very happy that Verdier took care of it, *mutatis mutandis* (that is to say here: without changing anything!).

Following the now established formula, "it hardly needs to be said" that my name does not appear in the text or in the bibliography (except implicitly by the eternal reference SGA 4, which we would still have to find a replacement for. ..). No allusion to a "Seminar of Algebraic Geometry" corresponding to the acronym SGA 5, of which the author could have heard of - although I seem to remember having seen it, busy carefully taking notes (like everyone else, except Deligne of course...).

I also exaggerated just a bit by saying that my name is absent from the text — it makes a single appearance, mysterious and concise, on page 38, section 3.5, "Fundamental cohomology class, intersection" (we get there, at the crux of the question!). The reference consists of a cryptic sentence whose meaning escapes me, I admit: "The idea of systematically using complex weights (??? those damn weights again!) is due to Grothendieck and was put into shape by Deligne" — without any further explanation on these mysterious "weight complexes" which I had the idea of and which I am hearing about here for the first time. There will be no further mention of it in the rest (and it was not mentioned in the 37 pages before). Understand who can! As for the content of said section, it is copied without more from the SGA 5 seminar which took place ten years before (and at that time this construction was already five or six years old, see note n° 68), seminar that he takes care not to cite. The reference to Deligne (who would have "developed" an idea that was already there when my friend was still in high school!) is a "flower", the idea of which undoubtedly came to the author because the young and newcomer Deligne had indeed taken it upon himself to write my presentation on this subject (and abstained from doing so for eleven years, for the benefits we know, see cited note). This "flower" is part of the exchange of good practices between inseparable friends.

There is, however, a (no doubt) new and very interesting result in the article (th. 3.3.1., page 9), on the stability of discrete beams analytically constructible by superior direct images by an analytical and proper morphism. Verdier had learned the notions of constructibility in all directions from me about fifteen years previously, as well as the conjecture of stability, which I had asked myself (and had spoken about it to anyone who would listen).

towards the end of the fifties, before having had the pleasure of meeting him. Reading the article, the idea would not occur to an uninformed reader (but these are starting to become rare... I'm repeating myself again, I'm afraid) that the author is not in serving hot notions and statements that he has only just discovered. He doesn't have to say it's him — since that goes without saying. This is the famous “thumb” style which has obviously caught on.

Except for this detail (which, I have the impression, conforms to the new canons of the profession), it must still be around ten pages (out of fifty), around this interesting result, which present personal work of the author. All things considered, what strikes me most about Verdier, as with Deligne, is that he is perfectly capable of doing beautiful mathematics. Even in this sad article there is a sign of this with the theorem cited. But by maintaining (like his friend) a pit-silker's disposition, he functions, just like his prestigious friend, on a paltry part of his means.

A sign (which amazed me) of apparent mediocrity, in a mathematician who nevertheless gave proof of cunning and flair, was the total lack of instinct to sense the scope of the work of his “student- sic” Mebkhout, whom he took pleasure in treating from the height of his greatness, without ever having known how to create work of comparable depth and originality (*). It's not that he isn't capable of it just as much as Mebkhout or me. But he never gave himself any chance of doing great things, that is to say, of letting go of the reins to a passion - rather than making mathematics and its gifts instruments to dazzle, to dominate or to crush. Until now, he has been content to take up already ready-made fertile notions and points of view as they are. Indeed, he seems to have completely lost the sense of what a mathematical creation is.

However, I seem to remember that when he worked with me, this sense was still present. Nothing external to him prevents this meaning from resurfacing. Just like in his friend, in whom I often felt this same eclipse of a delicate and lively thing, blocked by the same conceit.

This incredible 50-page article, published in a prestigious magazine, throws for me a

(*) The same astonishing lack of flair was manifested on this same occasion by Deligne, who only “felt the wind” (the importance of Mebkhout's ideas) until 1980 it seems, while Mebkhout had been working in this direction since 1974. I had more than once occasion to observe in my friend the blocking of his natural flair by self-importance, especially since the year 1977 (or 78) — which seems to have constituted a first “turning point” (see on this subject the notes “Two turning points” and “The funerals”, nos . 66, 70).

new light on the incident “The note — or the new ethics” (s. 33), where a note to the CRAS of a few pages, summarizing a solid and original work, on an important subject (in my humble opinion), fruit of two years of work by a highly gifted young mathematician, was rejected by two eminences as “lacking interest”(*). One of these eminences was none other than Pierre Deligne — the same Deligne who did not disdain to copy in toto and in person the humble doctoral thesis of one of my students (which he moreover a duty to cite). (This duplicate, enhanced by a prestigious signature, is the largest item in the “memorable volume” LN 900 of a no less prestigious collection! See end of notes (52), (67) on this subject.)

Clearly, the “picture of morals” is growing day by day, without me having to come out of retirement and hit the streets to mingle with the “big world”. A few hours here and there spent leafing through a few well-chosen “great texts” were enough to edify me...

(83) (May 8–9) I thought again about this “weight complex” discussed in the “inch reference” in Verdier’s memorable article(**) — a reference that sounds like a crazy query , pure and simple nonsense. The very moment I saw this absurd reference, an association came to me, which continued to run through my head. This is not the first time, far from it, that I find myself faced with something apparently absurd, which seems to defy any rational explanation - even though the meaning is clear and clear and it is clearly perceived, but at another level than that of conventional logic.

This was the only one on which almost all my life I had functioned at the conscious level - with the result that I was constantly overwhelmed by "silly", incomprehensible events - distressing in their irreducible absurdity! My life changed a lot from the moment (less than ten years ago) when I began to live on a broader register of my faculties. I understood well that all absurdity, all so-called “nonsense” has a meaning — and the mere fact of knowing it, and therefore being curious about the meaning behind the nonsense, often opens me up to the obvious meaning of it.

In this nonsense of “weight complexes” I think I sense an act of bravado of the same nature as in the appellation “perverse bundles” (*) — the pleasure in this case of proving to oneself that one

(*) For details on this subject, see the note “Coffin 4 — or the topos without flowers or wreaths”, n° 96.

(**) See previous note “Good references”.

(*) See the note “Perversity”, n° 76.

can allow itself, in a high-quality review and in a text that aims to be a standard reference text(**), to say something absurd, and no one will think to ask just one question! And I am convinced that the bet contained in this bravado, in the eight years since the article appeared - that this bet has been won even today: that I was the first today to ask the naive question to the author.

Of course, the moment (or place) where an absurdity appears, in this case at the precise moment of the one and only reference to my person, is in no way a coincidence; no more than the form it takes, here by allusion to a type of notion, "weight", entirely foreign to the theme of the entire article, and by the improvisation of a composite notion "complex weight" which never existed! The association that immediately presented itself to me could well provide the key to the more precise meaning of absurdity, beyond bravado, of the demonstration of power. It is the association with an allusion just as cryptic and just as purely formal (but without yet having the additional dimension of absurdity!) in the article by Deligne cited at the beginning of the note (49)(***). It was precisely an obscure allusion, in an article where the word "weight" was strictly absent and where no one except Serre or me would have been able to see them, to "considerations of weight" which had led me to conjecture (in a less general form, it is clearly specified) the main result of the work. As I explain in the more detailed note "The Eviction" (n^o 63), behind this purely formal allusion, there appears the intention to hide both my role, as well as the ideas (concerning the "weights" and their relations to cohomology in general, and that of Hodge in particular) of which he intended to reserve the sole benefit. This intention must have been all the better perceived by Verdier since he himself "operates" on the same pitch (in his relationship with me, at least, which seems to me to be the main glue between the two inseparable friends). In either case, an honest presentation would have been to begin the article by clearly indicating the source(s) for the main ideas, or for the question(s) that motivated the article.

Having remembered this, here is the meaning that I perceive behind the symbolic language of the nonsense ap-

(**) And it seems that this text is indeed a standard reference today - in any case for years it was one of Zoghman's bedside texts (who sent it to me recently). It was there that he learned in particular the notion of constructibility (which plays an essential role in his theorem), and for a long time he was convinced that Verdier was the brilliant inventor of this crucial notion for him.

(***) This is the note "Canned weight — and twelve years of secrecy". For a more detailed examination of this article by Deligne from the point of view that interests us here, see "Eviction", note n^o 63, cited below.

parent: I can allow myself, without embarrassment in the least, to display in front of everyone a patent nonsense, and at the same time express through this nonsense my true intention, with this absurd allusion-reference to the “weight complex”: it is because I no more intend to let anything appear about the role of Gr. in this work, than Deligne had such an intention with his bogus allusion to “weighty considerations” — which allusion then had no more meaning for the reader than now that of the imaginary “weight complexes” that I have just invented just now, for the needs of the cause and for my own pleasure!

I have just copied this note, written yesterday - I was interrupted earlier by a phone call from Verdier, whom I had tried to reach during the day, to ask him precisely the question. I explained to him that I was late in life trying to learn a little about cohomology, something I had never understood anything about, he knew that well, and that Mebkhout had passed me an old article of his for my instruction. , Verdier, a work which had long served as his bedside text. I was now trying as best I could to read it, but there was this cryptic reference – it was nice of him to quote me of course – but I absolutely didn't understand what he was talking about there.

He was very happy, even a little flattered, but yes, with a broad smile that peeked out from behind an air of paternal joviality, that I ended up like that in my old age learning cohomology on this old paper of his. I didn't expect that the idea would occur to him to contradict me, when I said that he knew very well that I had never understood anything about cohomology - obviously this was something that had been understood for a long time ... As for these famous “weight complexes”, I felt his broad smile again on the other end of the line (you'll say I'm making it up!), delighted that someone (and the recipient himself moreover) ended up raising something that had been in the spotlight for so long. At the same time there was also a hint of embarrassment - more that (I think) of not having been able to hide a pleasure (like the pleasure one would take in a slightly salacious story...), than not knowing what to answer. Dumped like I was, he really didn't have to worry about that!

Without hesitation, he branched out to Deligne (whose name I had not mentioned) who had made a demonstration in one of his articles and where he cited me moreover, he no longer very well remembered where - in any case he There was a question of weight but yes, he had forgotten a little of course - but not the arithmetic weights in fact, there I was absolutely right it wasn't the same...

The tone was jovial and unanswerable, and he made me feel that he had already given me quite a bit of his time - somewhat hurried tunes, without departing from this good-natured, somewhat

protective. I apologized for disturbing him like that, for a rather stupid question, and thanked him for his explanations. My apologies were sincere and so were my thanks — he had indeed taught me everything I wanted to know (*).

IX. My students

(84) (May 9) I was perhaps a little sharp yesterday, writing that in “the good reference” (see note (82)) what the author and ex-student shamelessly copied “was part of the domain of the “well known” for people who are somewhat in the know.” I tried to explain for my own information who these “people who were somewhat in the know” were – with the conclusion that they were neither more nor less than the dear listeners of this SGA 5 seminar in 1965/66 - listeners, moreover, as I had occasion to say, often more or less abandoned - and judging by the vicissitudes of the writing of this seminar in the hands of volunteers whose influence I did not want to feel. lack of conviction, it was often rather “more” than “less” (always with the exception of the same Deligne, of course). There was in fact no risk of other people being “in the know” as long as SGA 5 was not written and published, precisely to allow people to “get in the know” by reading it! This seminar was in fact published (as chance would have it) after the two “memorable publications” of two of my dearest students and comrades in arms, namely the article in question by Verdier in 1976 (in which he does not breathe word of the origin of the ideas that he develops, published there under his pen and for the first time), on the other hand Deligne with SGA 41/2 which has already been discussed extensively (*). After that, we cordially invite Illusie to take care of publishing the rest!

I no longer remember in great detail who the participants in this seminar were — for example whether Artin was there or not. I believe that more or less all my students from the first period must have been there in any case — with the exception of Ms. Sinh and Saavedra (whom I had not yet met at that time) and perhaps by Mrs. Hakim.

(*) Even with my dropped airs, I didn't really have the feeling of playing a comedy (I don't have the gifts for it), it was perfectly natural - in truth, I'm a bit dropped in all these stuff that I haven't handled for almost fifteen years! But I believe that even when I am spoiled and ripe for the hearse, I will still feel the difference between an empty nut and a full nut...

(*) See in particular notes n^os 67, 67, 68, 68

There was also Bucur (since deceased), Houzel, Ferrand - I don't count Serre, who never had the taste for big cohomological tricks, and who came to set foot here and there and cautiously. While no one except Deligne perhaps had a very clear idea of where all this was going to lead, it seems to me that there must still have been ten or twelve listeners (not very participating) who followed at least enough to be able to be considered as "in the know".

The thought that has been running through my head since yesterday is that among all these people "in the know", therefore representing cohomological competence (if not all "luminaries" like Illusie and Berthelot, with their "cohomological" theses " who definitely made up for it), and even apart from Verdier and Deligne — there must still be quite a few who had this article by Verdier in their hands! A certain air in Verdier makes me convinced that no one has ever suggested to him that something might be wrong. And I also know that no one has ever brought this to my attention — I learned of the existence of this article on May 2, exactly a week ago today, thanks to Mebkhout, who was of course has been aware of the scam for years.

This gives a very concrete meaning to the euphoric observation of the "Unanimous Agreement" (to bury my modest self) made ten days ago (note (74))! This agreement includes many (if not all) of my "pre-1970" students — that is, many of those who set the tone in the mathematical world today; and it includes (or has included) my friend Zoghman himself, treated as a Cinderella of the good world and clinging against all odds to a sort of "fidelity to my work" (to use his own expression (*)), which he had the temerity and obstinacy to sometimes claim, with the consequences that we know. Go figure something out!

In short, I was wrong to suggest that such a prestigious magazine was publishing a sort of bogus article, which was limited to copying "well-known" material. What the author copied in full view (if not of all, but) of numerous witnesses was neither published nor "well known" (except the class of cohomology of a cycle in the coherent framework, where I had published since beautiful

(*) (June 7) Reading all the notes on The Burial during a recent visit, Zoghman pointed out to me that this expression he had used of "fidelity to my work" did not really capture his thoughts. Rather, he had in mind a confidence in his own judgment and mathematical instinct, which told him that my work provided him with some of the ideas he needed. This is therefore a loyalty to oneself, which is indeed essential for truly innovative work.

lurette); and these were more ideas that I would have had grace to minimize, since I did not consider wasting my time by spending a year developing these ideas and others in a seminar, in front of a large audience. Probably Verdier's article is a useful and well-done "digest" of a small part of the ideas and techniques that I had developed, precisely so that they pass into the domain of the "well known", of the daily bread of those which uses cohomology (or homology) for objects which more or less deserve the name "varieties". From this point of view therefore, Verdier did what was useful to do (*), and ultimately I have no reason to be dissatisfied. However, from what I felt from my ex-student and friend even today, on the phone, and from many other things that I was able to sense from him (and of which the "biggest", or at least the most "spectacular", is the mystification of the Colloquy Pervers) — I feel that there is something wrong. This memorable Colloquium was surely very brilliant, mathematically speaking, in many respects. What is "wrong" is on a completely different level than that. I could try to put it into words, but I feel that it doesn't make much sense. He who does not sense what is wrong in this Conference and in many other conferences surely also, without mystification or anything - he will not feel it a bit more, when I have made this attempt to "understand" and I I even got there to my complete satisfaction...

The question that remains open for me is whether this "sign" represented by this undoubtedly relatively banal news item today (of an author, presenting as his own the unpublished ideas of others) — if this sign is that of a general degradation of morals, so if it is only a typical sign of a "spirit of the times" in the mathematical world today, or if it rather has to teach me about my particular person — on who I was and who now comes back to me, through the attitudes towards me of those who were my students.

The two possible meanings are in no way mutually exclusive. The relationship between my ex-students and me could not have found this way to express itself, if a certain state of morals did not encourage them to do so. I have also seen before this "sign" many others which seem more eloquent to me

(*) He did it, it is true, at the expense of the "dismantling" of the original SGA 5 seminar, a dismantling of which Along with Deligae, he was the main actor and

"beneficiary". (June 7) The reflection of May 12, three days later (see the note "The massacre", n° 87) revealed that Illusie was associated in an even more direct way than Verdier with what appears more like a "massacre" in fact than a dismantling — even if he was not a "beneficiary" of it and he acted on behalf of others.

still at the level of a “table of morals”. What struck me about this sign is this particularity which distinguishes it from all the others: it seems to involve most of my former students at the same time.

Such a circumstance cannot be fortuitous. To simply put it down to a “degradation of morals” (all that is real) would be a way of evading its more personal meaning, which involves me as it involves each of my ex- students. If I say “each”, which seems to go beyond the real amplitude of this sign, it is by weighing my words. Because this sign conveniently reminds me that it is hardly conceivable that one of my students from yesteryear would not have at least been confronted with situations of this kind. For years I have felt a certain “wind” concerning myself, which is blowing in the world of mathematicians that I have left (a wind whose origin and reasons I now clearly see, it seems to me). It is not possible that one of them has never felt the breath of that wind, whether during an “incident” like the publication of this gravedigger article, or through any other occasion.

Whether the person concerned wanted it or not, such a meeting inevitably posed (or re-established) the question of his relationship to me, who had taught him his profession. And the sign that I notice, beyond the one who has just brought me there, is that I have not heard anything about this from any of those who were my students (*). This is a “coincidence” whose meaning still escapes me — but which cannot not have meaning (841).

The day is beginning to dawn — I feel it is time to stop. I am not sure that this is the time and place, in Récoltes et Semailles, to pursue the meaning of this striking coincidence further. It is a harvest perhaps reserved for other tomorrows, as long as my reflection of this night finds an echo in one or other of those who were my students. (ÿÿ85)

(841) (May 16) This perfect agreement between my former students, in this complete silence towards me, goes in the same direction as other signs. One is also the complete silence which greeted the episode “The Strangers” (see section 24) – silence about which I have already questioned myself somewhat in note nÿ 23v. On the other hand, with the exception of Berthelot who told me

(*) (May 31) Interestingly, the one and only person who ever hinted to me about the existence of a funeral was an African friend who did a 3rd cycle thesis with me about ten years ago. of years (therefore “post-1970 student”, and of modest status), with whom I remained on friendly terms. The letter in which he suggested this must have been from two or three years ago, at a time when this had nothing to surprise me. I did not then ask for details about his impressions, to which he only recently returned.

sent numerous separate prints, and from Deligne who sent me four (out of around fifty publications) and one from Illusie, I did not receive separate prints from any of my former students. This says a lot about the ambivalence in their relationship to me. Sending separate prints, even though it was doubtful whether I would ever use them in my work (*), would have been the most obvious way of letting the person who had taught them their profession know that this profession is among their hands did not remain inert, that it was alive and active. But it is also true that for at least some of them, their publications also testify to their participation in a tacit burial of which it was better not to inform the anticipated deceased, profession or not... I on the other hand received numerous separate drawings from several authors working in crystalline cohomology(**), and even a good number of separate drawings from fellow analysts whom I barely know except by name, when their work takes up (and sometimes resolves) questions that I asked thirty or more years ago, when it was obvious that I would not return to the subject I had left and that from a "utilitarian" point of view, they were wasted reprints. But these colleagues must have smelled something that my students didn't want to smell. — Of course, in the sixties, my students were the first to be served for all my publications, both my articles and the major EGA and SGA series, and each of them (except Ms. Sinh and perhaps Saavedra) must be in possession of my complete work published between 1955 and 1970 (in ten thousand pages I presume).

It is true that my ex-students are in good company: none of my former close friends in the "big world" of mathematics, including those whose work is closely linked to mine or who played a role in the development of my work program in the sixties, did not consider it useful to continue to send me separate prints after

(*) (May 31) This could even seem excluded until 1976, when at the beginning of the 1970s I had said quite clearly that I did not think I would ever resume a mathematical activity. The conference given in 1976 at IHES, on De Rham complexes with divided powers, showed quite clearly that I continued to be interested in mathematics.

(**) (May 31) These are young authors whom I do not know personally, and I presume that they followed the example of Berthelot, who for them must seem like an elder. The slightly strange thing here is that at least for two years (since the Luminy Colloquium of September 6–10, 1982), Berthelot has been actively working to bury me (see b's note on this subject). . from p. of May 22 to the note "the co-heirs...", n° 91) — could this be a recent turning point in his relationship to me? I don't remember receiving the separate edition of the survey article on crystal cohomology and others, where he leaves my name silent - he must have been careful not to send it to me!

my departure from the common environment(***). Recently again, among the fifteen or twenty friends from yesteryear (including a few students) to whom I sent the Outline of a Program (which, among other things, announced to them the resumption of an intense research activity, after an interruption of fourteen years and on research themes closely linked to those that we pursued together in the past), only two (Malgrange and Demazure) took the trouble to send me a few lines of thanks. The few somewhat more detailed (and moreover, warm) echoes that I have received come from young mathematicians whom I have known recently, and from my old friend Nico Kuiper, who is however in no way connected to the genre. of things I do. He learned of the text through intermediaries, and was very happy with my unexpected "return" (*).

(85) (May 11) This story of the unfortunate SGA 5 seminar continues to run through my mind. The "good reference"(**) definitely sheds new light on this story, and therefore also gives a new meaning to the brilliant "operation SGA 41/2".

The more I think about it, the bigger the story of SGA 5 seems to me. My first impression, when I "arrived" just a few weeks ago (see notes n^os 68, 68), was

(***) (May 31) Of course, the psychological reasons which could incite them to send me some were much less strong than in the case of my students - but, one might naively think, much stronger than in the case of my fellow analysts, or even among the numerous algebraic geometers from whom I have received separate drawings, and whom I know little or nothing personally. Obviously, after my departure from the common environment, the fact of having been friends created or reinforced, among my former friends in the mathematical world, the automatic rejection that I had the opportunity to observe. (See on the subject of these attitudes, to which reference is made in passing here and there in *Récoltes et Semailles*, the note "The — or the entire Congregation" of May 24, n^o 97.)

(*) (May 31) This is almost the only echo, coming from one of my old friends (or one of my former students), in the sense of acquiescence to my "return". This is certainly not surprising, as the appearance of the deceased disrupts the normal course of a funeral ceremony in an unseemly manner...

(June 17) However, I recently had the pleasure of receiving a warm letter from Mumford, who says he is "thrilled" and "very excited" by the ideas outlined in the Outline, and who confirms to me that the key result technique that I needed for my combinatorial description of the Teichmüller tower is well and truly proven.

This is the first time since 1978 that one of my old friends has been attached to my "Anabelian" ideas, whose exceptional scope (comparable to that of the yoga of patterns) has been obvious to me since the beginning. .

(March 28, 1985) Since these lines were written, I have also received a very warm letter from IM Gelfand (dated September 3, 1984), in response to the Sketch.

(**) See note n^o 82.

that a situation of disarray among the poor ex-auditors of this seminar in 65/66 had been taken advantage of in his own way by my friend Pierre, for his famous operation, and that in this no one else was involved. was for nothing. And for the misfortunes of SGA 5, it was neither him nor anyone else, but rather no one other than me, who had unfortunately not known how to enthuse my volunteer auditor-editors, nor to do for them the work they wanted. persisted in not doing it while saying that they would get to it quickly. Then it was revealed in recent days that there was one, all the same, whose enthusiasm was reawakened ten years later, to publish (without referring to the seminar) what he pleased to take it, thus creating a good reference for his own account, at a time when the other “volunteers” had still not yet decided to take action.

What has become more and more clear to me since yesterday is that it is not only two “villains”, but each of my “cohomologist” students who are directly involved in the scam that took place in this seminar. Unless I am mistaken, each of them attended this seminar — namely (in chronological order of appearance of my “cohomologist” students): Verdier, Berthelot, Illusie, Deligne, Jouanolou. (I am not counting Jean Giraud, who operated on quite different registers from those mainly in question in SGA 5 or in its predecessor SGA 4.)

This seminar, which I did for the benefit of my students first and foremost, and even though sometimes they asked for mercy — I consider that it was not bullshit. Each of them, during that year, learned a good deal about their job as “mathematician using cohomology”! The things that I did to them, by taking up in the flat framework and in a much more detailed manner ideas that I had first developed in the coherent framework - these things, they could not find them anywhere else than in this only seminar done for their benefit, since no one before me had ever taken the trouble to do them - and no one apart from me even knew what had to be done, and why. (Except always Deligne, who learned it over the months in this very seminar, having the understanding faster than the others.) It is to have followed this seminar (and the previous one) and to have worked on it at them as best they could, and nothing else, which meant that they were now “in the game” for the duality formalism — and they were the only ones to be. This privilege, it seems to me, created an obligation for them: to ensure that this privilege did not remain in their hands alone, and that what they had learned from my mouth, and which was essential baggage in all their subsequent work until today, be made available to all, and this in the

reasonable and customary deadlines - of the order of a year at most, or even two at most.

It will be said, not without some reason, that it was up to me above all others to ensure this. But if I accepted in good faith when students and other listeners offered their assistance in writing (writing which, for those who had taken it seriously, could only do them the greatest good) — it is not for the benefit of being able to twiddle my thumbs while they do a job that was my responsibility. I continued, with the help of Dieudonné and others (including Berthelot and Illusie in 1966/67) to develop foundational texts which also seemed urgent to me, and which no one else would have then. done in my place or without my assistance (*). These texts have themselves become essential references, including for my “cohomologist students” who are very happy like everyone else to find them ready when they need them.

With the mastery of cohomological ideas and techniques that they acquired through their work with me and through my seminars that they followed or in which they participated, the writing of this seminar through their joint efforts represented a task of paltry dimensions, if we compare it to the service that was rendered to the famous “mathematical community”, or perhaps also, later, to an obligation of loyalty that they could feel towards me. I have already said that for me (who has the knack), it must have been a task of around a few months to write the entire seminar. By sharing the work between five people and with the writing experience that they each acquired over these years, and having my detailed handwritten notes, the investment to be made for each was of the order of one month or two to break everything. They were much better equipped to do it than other editors, such as Bucur, who would have asked nothing better than to entrust a task, which was clearly beyond him, to younger and more directly motivated hands.

As long as I was around (i.e. in the three years that followed), I understand that a reflex to rely on me could have come into play - it was I who was supposed to coordinate everything and manage with the “volunteers”. It is likely that if I had asked each of them to make two or three presentations in a short period of time, with me doing the same, to finally finish, they would not have recused themselves. It was from the moment I withdrew from the mathematical world that the situation changed completely. They got

(*) Between the 1960s and 1970s, I had to operate at an average rate of a thousand pages per year of texts (EGA, SGA, articles), all or almost all of which would become current references (something which was clear to me by writing them, or by encouraging such a collaborator to do so with my assistance).

then found to be the sole custodians of a certain inheritance, both implicit (lack of will) and very concrete. It is true that from a practical point of view, my departure amounted to a disappearance — I was indeed “deceased”, in the sense that there was no one outside of them to have knowledge of the inheritance, to be able to use it and to be concerned (for better or for worse...) about its fate.

If during the seven years following my departure, this heritage remained hidden (apart from “the good reference” in 1976!), it is because my students did not want it to become public during all this time. All things considered, the situation does not seem very different to me from that of “yoga of patterns”, which yoga was thoroughly known by Deligne alone (apart from me), and which he saw fit to keep in reserve for his sole benefit. If there is a difference at first sight, it is that in this case there is only one “beneficiary” instead of five, and that there is no common measure between the depth of what was concealed by one, and of what was concealed jointly by the five.

I certainly do not know the deep motivations of each person - even in the case of Deligne I have an apprehension which remains vague and will no doubt remain so. But at the “practical” level, Deligne’s game (with operation SGA 41/2 — and everything else) is very clear. And what is also clear is that these operations could not be carried out without the solidarity of all. It seems to me that Jouanolou, however, is not too involved - he does not seem to me to be a “luminary”, I have the impression that he has long since left the cohomological quagmires (851).

But I can't imagine that Illusie and Berthelot didn't have SGA 41/2 in their hands as well as “the good reference”, and they know how to read like me and are no more stupid than me.

If Illusie suddenly took care of the publication of SGA 5, at the precise moment when Verdier used himself, when Deligne used himself and when Deligne needed a logistical base for its famous SGA 41/2 (including debunking as was appropriate the two seminars from which this text and all his work came), while Illusie had ten years to do so, this is surely not a coincidence. If the closing presentation on open problems and conjectures that I had made in 1966 “was unfortunately not written, nor moreover [sic] than his very beautiful introductory presentation, which reviewed the formulas of Euler—Poincaré and Lefschetz in various contexts (topological, complex analytic, algebraic)”, it is surely not a coincidence either — but it is a burial where I do not know anything about it. And it is no coincidence either that it seemed as natural to Illusie as to Deligne (and just worthy of being mentioned in passing among the “changes of detail”) to cut the seminar by a of his key presentations,

which passes into SGA 41/2 without further ado (*).

I don't know what the intentions (conscious and unconscious) were of Luc Illusie, whom I have affection for like Pierre Deligne, and who (like him) has always been very kind to me(**). But I note that he made himself, alongside Deligne, the co-actor of a shameless mystification: the one which makes the mother seminar SGA 5 of 1965/66 (the very one where Deligne heard about the first time of diagrams, of stale cohomology, of duality and other "digressions") like a sort of shapeless, vaguely ridiculous appendix, to a collection of texts with the trompe-oeil name SGA 41/2 written eight years later, which pretends to present itself as earlier (both by the number which appears in its title, as well as by the publication number in the Lectures Notes, and finally by the unusual comment by the author "Its existence (of SGA 41/2) will soon allow SGA 5 to be published as is" – my emphasis) – and which, moreover, affects to treat with undisguised disdain the works from which this meager collection is entirely based.

Without these works treated with this beautiful casualness, none of Deligne's great works, which are the basis of his well-deserved prestige, would be written today, nor if in a hundred years (and the same undoubtedly for Illusie and my other cohomologist students). There is in the spirit of this "SGA 41/2 operation" an impudence, of which Illusie endorses (without even realizing it no doubt) and which could only be displayed in this way with the tacit approval of a consensus. The first involved in this consensus, apart from Deligne himself, are the very ones who were my students and the main beneficiaries of a certain heritage, delivered before their eyes to the chances of the free-for-all and to disdain .

And these airs of peremptory self-importance, these paternal and protective airs that I was able to appreciate in my ex-student only the day before yesterday in our telephone conversation (*), and also

(*) (May 16) In fact, as I ended up discovering the very next day (see note n° 87), there was a real "massacre" of the mother (or father!) SGA 5 seminary, at the hands of Verdier, Deligne and Illusie.

(**) Even after my departure in 1970, Illusie showed me delicate attentions - so for a long time he still sent me very beautiful greeting cards on the occasion of the end of year celebrations. I fear that I must not have responded very often to thank him and give a sign of life - these signs of a faithful friendship came to me like messengers from a past which seemed infinitely distant, and with which I had lost contact.

(May 16) On the other hand, there was no inclination at Illusie to continue or resume contact on a mathematical level, and again last year (when I contacted him for mathematical questions) I felt his reluctance. I have received, in these fourteen years since my departure, a single and unique print from him, dated 1979.

these more discreet airs of condescension that I was able to appreciate in my friend Pierre from the aftermath of the brilliant double operation “SGA 4 1/2 - SGA 5” (from which I was far away then and for another seven years). have the slightest suspicion) — these tunes are not the products of solitude, but rather the signs of a consensus which has never been called into question. These tunes tell me something not only about Verdier and Deligne, but also about all those who were my students, and above all others, about those who were (by their work themes and the tools they handled each day) the first concerned.

The term “mystification” which came to me without having looked for it, conveniently reminds me of this other mystification, where the same cynicism is displayed — that of the so-called “Pervers” Colloquium. The two now appear to me to be intimately, indissolubly linked — it is the same spirit that made both possible. With the possible exception of Jouanolou who is no longer so involved in the “big world”, I consider these same former cohomologist students co-responsible and united in this disgrace. For Berthelot and Illusie, nothing allows me to prejudge malice or bad faith (which cannot be the subject of any doubt in the case of Verdier as in that of Deligne). But I notice at the very least a blindness, a blockage in the use of healthy faculties, the deeper reason of which of course escapes me. If there was not in them a deliberate expression of indifference and disdain, surely Zoghman Mebkhout, as the only person in the 70s who openly claimed my work, and on subjects which closely affected them both of them (without them deigning to notice it), would have had the benefit of the minimum “favorable prejudice” so that they become at least a little aware of what he is doing, and from then on realize the interest of the direction in which he was embarking in 1974, an interest which was obvious! Neither of them deigned to notice anything, coming from a vague stranger who still pretends to come out of Grothendieck. They received the thesis of the vague unknown from him, I don't know if they opened it, or if they looked through the shorter and more digestible texts which explain what it is about - the fact remains that They did not even deign to acknowledge receipt (any more than Deligne, who visibly sets the tone). This certainly did not prevent them, along with the other participants of the memorable Colloquium (*), from learning with interest the remarkable “Riemann—Hilbert correspondence”,

(*) See for this conversation the note “The joke — or the “weight complexes”” (n° 83). (*) (June 12) I have learned in the meantime that neither of them participated in this Conference (from Luminy, June 1981).

However, see the note “Mystification”, n° 85

without thinking of asking the slightest question about the origin or authorship or at least (as solid mathematicians) about the place where (85) was demonstrated. But here I trust Deligne that he was happy to elegantly explain this demonstration to them, surely everything that is obvious to people like them - precisely the kind of demonstration, with resolution singularities like Hironaka, which they learned a long time ago and from none other than me (852). Riemann—Hilbert, Hironaka abracadabra—voilà!

Obviously, just like Verdier and like Deligne, they have completely forgotten what a mathematical creation is: a vision which is gradually clarified over the months and years, bringing to light the “obvious” thing that no one had not been able to see, taking shape in an “obvious” statement that no one had thought of (although in this case Deligne had tried in vain for an entire year...) — and that the first come can then demonstrate in five minutes, using the ready-made techniques that he had the advantage of learning sitting on the benches of a distant seminary that he does not deign to (or has not kept) remembering ...

If I spoke bluntly about Berthelot and Illusie, it is not because I particularly wanted to heap opprobrium on them (after an initial settling of scores with their two friends). I know that they are not “worse” or more stupid than most of their dear colleagues or than me, and that the lack of flair and sound judgment that I see in them in this case (and sometimes also, that of the necessary respect for others...) is in no way inveterate, but the effect of a choice. No doubt this choice offered them returns that pleased them — and perhaps this other “return” that comes to them with my reflection will be unwelcome to one or the other. If this were so, it would simply be that he still reproduces the same choice, which is also that of operating on a tiny part of his faculties, even if it means taking bladders for lanterns and vice versa, and hopelessly confusing nuts. empty (from the boyfriend) and full nuts (from a vague stranger). Everyone has to know what they want! (86, 87)

(851) Jouanolou is the only one of my students, with Verdier, who was not keen to publish his thesis. This appears to me to be a sign of disaffection with the foundational work that he had developed, namely that of p -adic cohomology from the point of view of derived categories. As his work on this theme took place largely after my departure, therefore at a time when my students, Deligne and Verdier in the lead, had given the signal of a general disaffection with the ideas that I had introduced in homological algebra. , and especially

from that of a derived category, the context hardly encouraged Jouanolou to identify with his work and to do him the (well-deserved) honor of publishing it. Like these same Deligne and Verdier, in the wake of the work of Zoghman Mebkhout (aka Unknown Student (of Verdier) alias posthumous student (of Grothendieck)), ended up discovering (with great fanfare and mutual publicity) the importance of derived categories (see notes n^os 75, 77, 81), Jouanolou's disdained thesis has regained its full relevance since the Pervers Colloquium; a topicality that it would never have ceased to have, if the development of the cohomological theory of schemas had continued normally after my departure in 1970. Striking detail which illustrates a certain drastic "turn" in Deligne's options after my departure: it was Deligne himself (who had understood very well the importance of developing the formalism of ℓ -adic cohomology within the framework of triangulated categories) who provided Jouanolou with a key technical idea for a formal definition of the triangulated ℓ -adic categories that had to be studied, an idea which is developed in the thesis. (See on this subject my "Report" of 1969 on the work of Deligne, par. 8.)

(May 30) See also, regarding Jouanolou's work, the note "the coheirs...", n^o 91.

(852) Significant "coincidence", it is precisely in this same SGA 5 seminar that everyone learned this principle of demonstration, used as well to demonstrate the theorem of biduality in equal cohomology (in cases where we have the resolution of singularities), that the finiteness theorems for the $Ri f$ $\tilde{y}$ without cleanliness hypothesis on f , and the same for the R . (These finiteness theorems were also removed from the published version of SGA 5, to be attached to SGA 41/2, without Illusie even deeming it useful to point out it in his introduction - I only realize it while writing these lines!) Zoghman, who did not have the advantage of attending the seminar (he got "the right reference" instead) learned the process elsewhere where I had used it (for De Rham's theorem for smooth schemes on C).

He could also learn it in "the good reference", where my demonstrations are copied into the analytical framework, to establish what my students and listeners of SGA 5 have since then liked to call "Verdier's duality" (who was known to me before I had the pleasure of meeting her). Clearly everything fits together! The same demonstration (copied from me at the same time as the statement) serves Verdier as a title of authorship for a duality that he learned nowhere else than in this SGA 5 seminar, dislocated and delivered

in contempt — and it is used against Mebkhout, becoming (by its very “obviousness”) a (tacit) pre-text and means to shamelessly rob him of the credit for an important discovery. (May 30) It seems to me that the first time I used

Hironaka-style singularity resolution, and understood the extraordinary power of resolution as a demonstration tool, was for a “three-shot” demonstration. of pot spoon” of the Grauert—Remmert theorem, describing a complex analytical structure on certain finite coverings of a complex analytical space, and the analogous statement in the case of finite type schemes on $\mathbb{C}$. (It is not impossible that the principle was suggested to me, on this very occasion, by Serre.) This last result is the main ingredient of the demonstration of the theorem of comparison of equal cohomology and ordinary cohomology (the rest being reduced to unscrewing , thanks to the formalism of $Rf^!$, plus a little resolution to go from Rf to $Rf^{\vee} \dots$).

(⁸⁵) (June 3) In fact, I learned that they did not have to ask themselves the question of this paternity, given that Berthelot like Illusie learned the theorem of the good Lord from the mouth of Mebkhout, the first in February 1982, the second from 1979 (year of Mebkhout's thesis defense). While neither of them participated in the Conference in question, they are nevertheless supportive of the mystification that took place at this Conference, because it is impossible that they were not aware of the the evasion that took place of the authorship of Mebkhout on the theorem of the good Lord in particular. I can also imagine that with all the participants in the Conference, they were quick to be the first to be fooled by the collective mystification, organized by their friends Verdier and Deligne (mystification of which four among my five cohomologist students appear united). As far as Illusie is concerned at least, I was struck, during a telephone conversation with him after Mebkhout's visit to my house last summer, of the little regard he visibly had for him — he was all surprised (almost saddened on the part of his old master, from whom he would surely have expected better judgment...) to see me giving a leading role to Mebkhout in the restart of the cohomological theory of algebraic varieties. Consensus of considerable strength had decided to place Mebkhout among the vague unknowns, and my friend Illusie lives happily with this triple contradiction, without asking any questions: the leading role of the theorem of the good Lord and of the philosophy which will with; the evasion around the authorship of these things (a evasion in which he himself participates in numerous

company); and the poor esteem he has for the format and the role of Mebkhout (of whom he knows full well that he is the never-named author of these things, who have renewed a field of mathematics in which he himself, Illusie, figures of eminence).

I find here the complete blockage of common sense and sound judgment, even in something apparently as impersonal as judgment on scientific questions, a blockage to which I have already had occasion to allude more than once, and which each time again disconcerts me. And this contradiction that I note here in the relationship of Illusie (and surely of many others) to Mebkhout, my "posthumous student", is surely nothing other than one of the numerous effects of a more crucial contradiction, which is found in his relationship with me. It is this contradiction, in him more particularly and in my other students as well, which appears more and more clearly in the reflection continued in the notes of the present procession to the Funeral, formed by my students of yesteryear. .

(86) (May 11) As often happens, it was with some reluctance that I began this new reflection, on the theme "SGA 5 — SGA 41/2 — Perversity", which might seem to have been examined and re-examined ad nauseam: "It will make a deplorable impression on a reader who must have been upset since he heard about it; It's not at all elegant to go into details again, SGA 5 ci SGA 41/2 that, it's all in the past and doesn't deserve any more...".

Fortunately I didn't let myself be intimidated by this kind of well-known refrain, which would prevent me from getting to the bottom of something (at least as far as I am capable of going at the moment), under the pretext that "it's definitely not worth it", that we just have to let it run... If I happen to discover things that I consider useful and important, it's always in the moments when I knew not to listen to what presents itself as the voice of "reason", even of "decency", and to follow this indecent desire in me to go and see even what is supposed to be "uninteresting" or of poor appearance, or even lame or indecent. I don't remember a single time in my life when I had to regret having looked at something a little closer, against inveterate reflexes which would prevent me from doing so. These inhibition reflexes were even stronger in Récoltes et Semailles than on other occasions, because this reflection is intended to be made public, which immediately imposes certain constraints of discretion (when I imply third parties), and conciseness (for the sake of the reader). I don't have the impression though, final-

ment, that these constraints have at no time prevented me from tackling something that I wanted to tackle, nor from delving into it as far as I felt the desire. In the cases which at one time may have seemed borderline cases, I launched myself forward with the assurance that in case of need, I always had the resource of not including in *Récoltes et Semailles* what would “get out” of my indiscreet reflection. These “borderline cases” occurred exclusively when I was hesitant to involve others, and never when it came to involving myself. But even in the first case, it turns out (and this came as a surprise to me) that I never had to make use of this “resource”: the text of *Récoltes et Semailles* represents the complete version of my reflection — at least of the part of this reflection which found the way to writing to express itself.

I feel that with the short reflection in the previous note (*), the situation has become considerably clarified. I mean that a certain essential aspect of a situation which had been confused at will, and which I have just evoked by the triple name of a “theme” (SGA 5 — SGA 41/2 — Perversity), in it appeared in full light: that of a “solidarity”, of a “connivance” which had only been vaguely perceived until then. This in no way means that I imagine myself having probed and understood all the mechanisms, ins and outs of a complex situation, involving in a direct and particularly obvious way at least seven people: Zoghman Mebkhout (acting in a sense as a “revealer” of a certain situation), my five former cohomologist students, and myself. I do not even flatter myself that I have perceived all the springs and motivations that have been at play in my own person, in relation to the situation “SGA 5 etc...”, for almost twenty years since this “unfortunate seminar” took place. ! But I feel in a much better condition than yesterday (or only this morning), to understand and situate the echoes which, I hope, will reach me on this subject from at least one or the other of the main interested parties.

The main question that arises for me (it seems to me that it has already been present at another stage of reflection, and it reappears now with new vigor) is (it seems to me) this: what happened with this Funeral by my students, (more or less) in its entirety, is it a completely atypical thing, linked to certain particularities of my person and my singular destiny (such as my departure from the mathematical scene almost fifteen years ago, the circumstances surrounding it, etc...)? Or is it, on the contrary, a “completely natural” thing, due to a simple combination of circumstances — following the principle that “opportunity makes the thief”

(*) This is the note “Solidarity” n° 85, of the same day.

? I hesitate to believe it, without discerning at this moment, or even glimpse, what particular aspect in my person had this virtue of creating such perfect and unanimous agreement among my former students, to bury and the “master” , and those who claim to be his or whose work clearly bears his mark (without being “one of them”). Is it this kind of “aura” of Father that surrounds me, and of which I have had occasion to speak? Or is it the indictment that the mere fact of my departure constituted for each of them? At the moment, I would be unable to say it, for lack of eyes that know how to see... Perhaps the coming months will teach me something on this subject (*).

More than once during the last three weeks, I thought about this other strange “coincidence”: that the discovery of the Burial “in all its splendor” (with the four-stroke LN 900 — SGA 41 /2 — SGA 5 — Pervers Conference, then return to SGA 5 and SGA 41/2) — that this discovery was made at the moment of all times when I had just completed an in-depth reflection on my past as a mathematician and on my relationship with my students. It was the moment when I had just “cleared up with myself” about this past, to the best of my faculties, and to the extent that the facts which were then known to me allowed me to do so, such as that they were restored by often foggy memories. Or to put it another way: it was the exact moment when I was finally ready to learn the thing, and to benefit from it.

“Chance” did things so well that there was not even a break in the meditation. The reflection which began with this short retrospective on the fate of the most important notions (according to my feeling) that I had introduced (*) (reflection which remained in a certain vagueness, where only a certain basic tone emerged insistently...) — this reflection continued quite naturally this Thursday, April 19. It is true that it was still under the influence of the emotion aroused by this impression of “impudence” (to use the term from earlier, which also describes well something that I felt at the time), upon reading the “memorable volume” LN 900.

In this new departure from the “same” thinking, the main driving force was “the boss” — I was touched in my self-esteem, in my sense of decency, and in writing

(*) (May 30) For a reflection along these lines, see the note “The Gravedigger — or the entire Congregation”, n° 97.

(*) See the notes “My orphans” and “Refusal of an inheritance — or the price of a contradiction” of March 31 (n°s 46, 47).

I freed myself from my emotion to a certain extent. It was “me”, “the boss” who visibly led the way in the ten days that followed – days marked by the absence of a smile or laughter, by an unfailing seriousness. I probably had to go through this, through this ten-day detour before the reflection returned to the center it had left — to my own person. I still remember the relief that this return was - like coming out of a tunnel when daylight appears again! It was then that I found myself laughing and smiling again, as if we had never left each other. It was April 29. The next day, the 30th, the last day of the month, I was happy to put the final point on this final stage of reflection.

It was also the moment, surely, when I was ready to receive the next “package”, this time sent by my friend Zoghman — the “Conference” package received two days later. Today is the tenth day that I have worked to assimilate the substance of this packet. But in this stage, while I was chomping at the bit to put an end to this rebound that never stopped bouncing again, the smile did not leave me company for a single day. And today, I truly believe (for the umpteenth time, it's true!), is the day of the end point.

Five days ago already I had the same feeling of having reached the end, that all that remained was the work of stewardship: adding a few footnotes here and there, retyping pages too clearly. overloaded with erasures (each time a sign of a thought which had remained somewhat confused, and which requires to be put into place through this apparently mechanical work, but from which the text always emerges with a new face...). .. It was when I had just written what is now the note “My friends” (nÿ 79), which spontaneously segued into “final chords”. However, I ended up separating these chords from the beginning of the note. Indeed, it turned out that this famous stewardship work broke down: the “footnotes”, typed without spacing, became real notes (no footnotes) of good size, which I had to retype with line spacing, and then try as best I could to fit here or there. It took days more before I realized that another procession, after the one called “The Colloquium”, was being formed to join the procession — and that the last of the processions would not be not (as I had decided in my head) the said Colloquy, but would be led by the Student. And just today, when the first procession, reduced to a single note, had just been enriched with a second (“A feeling of injustice and powerlessness”), I also knew who would lead him: it is “The posthumous student”. Thus the procession, opened by a student (posthumous and with minuscule, as befits his humble state) and closed by a student still

(not at all humble this time), finally seems complete to me!

It is also the moment, it seems to me, after a first “false arrival”, to return to the chords of a final De Profundis, coming better today than they did five days ago. Here they are, as I wrote them down then, and which also express my feelings at the present moment. (May 31) Ultimately, it was another “false

arrival” — the “final agreements” were premature this time again! Twenty days passed, during which the “stewardship work” continually broke out into a resumption of reflection on such and such aspects that had been neglected. Six other notes joined the “L’Elève” procession, which was supposed to close the parade. The Funeral Van appeared in the Student’s wake, carrying four coffins accompanied by the Gravedigger. It was clearly lacking to give body and meaning to a funeral procession which did not seem to be transporting anyone.

Having become cautious through experience, I wait for events to come and would not venture for the moment to predict whether the procession is finally in full force, or whether a forgotten procession will still sneak in at the last minute, to don’t miss the final Ceremony (*).

(87) (May 12)(**) For the edification of the somewhat cohomologist reader, and especially for my own, I would like to review the details of this complete pillaging of a splendid seminar, at the hands of two of my ex-cohomologist students and under the benevolent eye of others(***) — from this same seminar where they learned, twelve years before everyone else and from the hand of the worker himself, the basics and the finer points of the profession that made their reputation.

Two of my oral presentations have never been made available to the public in any form. One is the closing presentation on open problems and conjectures, which “unfortunately has not been written”, given how few it is — and the author of the introduction to the massacre edition considered it useless in fact to only mention which open problems and conjectures were involved. And why would he have taken this trouble, when they were only problems (which everyone is free to pose as they wish!) and conjectures (not even

(*) (June 12) Caution was indeed in order, since a new procession “My students” separated from the one first called “The Student”, which became “The Student — alias the Boss”.

(**) This note continues the reflection from the day before “Solidarity” (n° 85).

(***) The rest of the reflection also reveals that one of these “others” lent a hand effectively for this transaction on behalf of others.

demonstrated!) (871). The other is the presentation which opened the seminar, and immediately placed it in a broader context (topological, complex analytical, algebraic) and reviewed the formulas of the Euler—Poincaré, Lefschetz, Nielsen—Wecken type, including some constituted one of the main applications of the seminar. The “... no more than... with which the author of the introduction continues to signal, at the turn of a sentence, the disappearance of this presentation, says a lot about the casual dispositions which This moment was obviously self-evident, even though the author of the seminar had disappeared from circulation for seven years.

There is a whole series of presentations that I had made on the formalism of homology and cohomology classes associated with a cycle (regular ambient diagram in the cohomological case)(****). They were the subject of an equitable sharing: cohomology for Deligne, homology for Verdier — which still extends a little over cohomology, even if it means paying a little bow to Deligne with the famous “weight complexes” (*). (Not to mention that he won the theorem of finitude for Ret and the theorem of biduality, copied by text message from the seminar - in any case, the lion's share will be for Deligne, which was normal...) The author of the introduction does not consider it useful only to mention the discussions on homology. There was no need in fact, since the previous year his friend Verdier had taken responsibility for providing the “good reference” which was missing (without referring to a seminar, or to me).

There were oral presentations on the finiteness theorems for the operations $Ri f \tilde{y} (f$. The not proper), and as a corollary, for Ret Lf operations was demonstrated by key theorem a technique for resolving singularities à la Hironaka (thus valid only in cases where the resolution is available). These arguments that I used have become common use since the seminar (see note (852)). Deligne managed to prove these theorems of finitude, as well as that of biduality, under other more useful hypotheses, already verified in most applications. One might have expected that he would ask to include these refinements in the seminar where he had the privilege of learning about etal cohomology, and the ideas and techniques underlying all his later work. But this circumstance is used as a “reason” to cut the seminary from this part.

As for the biduality theorem, it suddenly becomes under Illusie's pen (and in the context of the diagrams) “Deligne's biduality theorem” (introduction to presentation I). It was only

(****) See note n° 82 “Good references” for details .

(*) See note (83) “The joke — or weight complexes”.

justice, since in the analytical case Verdier had already assumed paternity the previous year (without even having had to go to the expense of finding another demonstration).

There is the paper developing a “generic Künneth formula”, which was written by Illusie. No one before had even thought of drawing out this kind of statement, inspired by the intuition that “generically” ie in the vicinity of the generic point of the base, a relative diagram behaves like a “locally trivial fiber” in the topological context . By an elegant demonstration similar to his demonstration mentioned above, Deligne manages to eliminate the hypothesis of resolution of singularities that I had made. It is awarded - presentation deleted and “replaced” by a reference to a presentation by the same Illusie in the so-called “previous” seminar SGA 41/2.

There is a series of talks on the non-commutative trace formalism, developed as a means of explaining the local terms of the Lefschetz—Verdier formula in cases which had never before been treated. These presentations ended up being written, it seems, by Bucur, whose manuscript “was lost in a providential move” – it turns into vaudeville! (*) In the introduction to SGA 5, written by Illusie, these presentations become “Grothendieck's theory of commutative traces, [brilliantly] generalizing that of Stallings” (which they were non-commutative!). The slip of the tongue(**) can only be due to a poorly (or too well...) inspired secretary, she must have been involved with my friend Ionel Bucur's movers. (The word “brilliantly” is an interpolation from my pen, to better restore the thought infallibly suggested by this equally providential slip of the tongue).

I have no reason to complain, since Illusie took on the task of redoing the work (and even, he tells us, a “more sophisticated” version, since it's put in the beamstic sauce - he tells me seems to remind me however, Illusie, that you have made more “sophisticated” innovations than that in my time...). He must have spent a long time there even, if I remember that I had

(*) It is undoubtedly this circumstance which must have inspired Deligne, unexpectedly, the brilliant criticism of SGA 5 that the local terms of the Lefschetz—Verdier formula (which “remained conjectural” let us remember!!!) were not even calculated there! (See the note “the clean slate”, n° 67, about the absurdity of this criticism, which for an informed reader is close to that of the famous “weight complex” of Verdier the previous year (see note n° 83) . Suddenly it was Verdier who became a school!)

(**) This is the slip attributing to me the authorship of a theory of “commutative” traces (for which I was not expected) instead of “non-commutative”. That it was preserved even in the published edition is all the more remarkable since Illusie was among my students perhaps the one who was the most meticulous in his work, down to the last detail.

spent weeks getting the machine ready; if it turns out my manuscript was also lost in the same providential move, and God knows if one of the dear listeners, overwhelmed by my oral skill, was at least able to take comprehensible notes...

Remarkably, which I had not noted before, he does not insert this presentation in the place of presentation XI where it was planned (which undoubtedly also corresponds to the place he had in the oral seminar), preferring to leave a gaping hole there and make his presentation an apocryphal one, called "Calculations of local terms". The title seems to correspond well to what I think I remember doing in the oral seminar - strange. But from line 1 of his introduction to this presentation, the author hastens to disabuse us: "This presentation, written in January 1977, does not correspond to any oral presentation of the seminar". And to continue with formulas of Lefschetz—Verdier (this name nevertheless means something to me, and I had indeed believed that I was developing at length a theory of non-commutative traces precisely to calculate in certain cases the "local terms"...), then on a Langlands formula and on a demonstration by Artin—Verdier from 1967 (this was, however, a year after the final agreements of the oral seminar, which must not have been without influence these authors, at least one if not both of whom followed him). Finally, towards the end of the page, we learn as if in passing, contrary to what was announced at the beginning, that there is also a "second part of this presentation, of a much more technical nature" (I have already read this language somewhere...) which is (admire the nuance) "inspired by the method used by Grothendieck to establish the Lefschetz formula for certain cohomological correspondences on curves", with a reference to lecture XII of the same seminar and especially the essential SGA 41/2; Obviously, there was no reason, at all, to include this presentation in place of the gaping hole – the "more sophisticated version" from earlier will have done things well. It was even nice of Illusie and Deligne to cite me as a source of "inspiration", even though the example of their friend Verdier the previous year had clearly shown that it was absolutely no longer worth it. have such scruples.

I return to Illusie's introduction to the volume known as SGA 5. We learn again, as Deligne had already announced in his introduction to SGA 41/2, that it is indeed thanks to his friend that the seminar is finally published:

"I thank P. Deligne for having convinced me to write, in a new version of presentation III, a demonstration of the formula of Lefschetz—Verdier, lev-

thus being one of the obstacles to the publication of this seminar”.

Once again we are in the middle of a farce - repeated as is by the docile Illusie in the introduction to SGA 41/2! If the seminar was not published for more than ten years, it was (the whole point was to think about it) because no one (before Deligne saving the situation in 1977) had yet thought that it would perhaps be a good idea to write a demonstration of the formula called (rightly) “of Lefschetz—Verdier”, of which none other than his inseparable friend and my ex-student Verdier himself has proudly borne the authorship since at least 1964 (872), that is to say for at least two years already when my seminar ended, and was only waiting for goodwill to be made available to all!

Finally, as another and last (?) mutilation of the seminar, there is the disappearance of the beautiful presentation that Serre had given on the “module of (Serre–)Swan” — presentation entitled “Introduction to the theory of Brauer”. It is fortunate that Serre, seeing the turn events were taking, had the good sense to include his presentation in his book “Linear representations of finite groups” (Hermann, 1971), and made it available to the public mathematical. (873)

This time, I think, I went around this painting. The picture of the fate of a seminar where I had put the best of myself (88) (*), and which I find twenty years later unrecognizable, massacred by the very people who had been the exclusive beneficiaries — or at least by three of them, and with the assent of all the other participants.

I do not regret having taken the trouble, this time again, to follow through on what had gradually imposed itself on my attention. This “return of things”(**) that I noted, after a long retrospective on my relationship with one of my former students, sensing then that he was not the only one to “m 'bury with enthusiasm' - I have now only just become aware of its breath, its "smell" (to use an expression which then appeared in one of my dreams) - the breath of violence. This breath is hidden and revealed at the same time by the speech(***) (seemingly detached and impassive) presenting a highly technical substance. What is targeted by this violence, through

(*) For the meaning of this expression “from the best of myself”, see the following notes “The remains...”, “... and the body”, n° 88, 89. The first of these This places the SGA 5 seminar, with SGA 4 which is inseparable from it, as the master part of the “fully completed” part of my work.

(**) See the note of this name (n° 73) of April 30.

(***) This mainly concerns the speech in the texts of an introductory nature which accompany SGA 5 (written by Illusie), and SGA 41/2 (written by Deligne).

a “remains” surrendered to mercy, is the very person of the one who was the “master”, the “Father” – at a time, however, when the “students” have long already taken his envied place, without encountering any resistance; and that also for a long time they have elected among themselves the new “Father”, called to replace the old one and to reign over them.

I feel this breath, and yet it remains a foreign, misunderstood thing for me. To “understand” it, it would undoubtedly be necessary for this breath to live in me, or to have lived in me. But four years ago, for the first time I felt and measured the significance of something in my life that I had never thought of, that had always seemed self-evident to me: that my identification with my father, in my childhood, was not marked by conflict - that at no moment in my childhood did I neither fear nor envy my father, while devoting him an unreserved love. This relationship, perhaps the most profound that has marked my life (without me even realizing it before this meditation four years ago), which in my childhood was like the relationship with another myself both strong and caring — this relationship was not marked by division and conflict. If, throughout my often torn life, the knowledge of the strength that rests within me has remained alive; and if, in my life in no way free from fear, I have not known fear either of a person or of an event - it is to this humble circumstance that I owe it, still unknown beyond my reach. fifty years. This circumstance was a priceless privilege, because it is the intimate knowledge of the creative force in one's own person which is also this force, which allows him to express himself freely according to his nature, through creation - through a creative life .

And this privilege, which exempted me from one of the deepest marks of the conflict, is at this moment also like a hindrance, like a “void” in my experience of life. A void difficult to fill, where many others have a rich fabric of emotions, images, associations, offering them the path (if only they are curious to take it) to a deep understanding of others at the same time as themselves, in situations that I manage (through repetition and cross-checking) to understand as best I can, but before which I nevertheless remain like a stranger - with the desire for knowledge in me who remains hungry.

(871) (May 31) This closing presentation, surely one of the most interesting and substantial with the opening presentation, was obviously not lost on everyone, as I see when reading the MacPherson's article “Chern classes for singular al-

gebraic varieties" (Chern classes for singular algebraic varieties
 1974, p. 423–432) (received April 1973). I find there, under the name "Deligne conjecture—
 Grothendieck", one of the main conjectures that I introduced in this presentation in
 the schematic framework. It is taken up by MacPherson in the transcendent framework of algebraic
 varieties on the field of complexes, the Chow ring being replaced by the group
 of homology. Deligne had learned this conjecture (*) in my presentation in 1966, the year
 even then where he had made his appearance in the seminar where he began to familiarize himself
 with the language of diagrams and cohomological techniques (see the note "Being apart"
 n° 67). It's still kind of you to have done me the honor of including me in the name of the
 conjecture - a few years later already this would no longer have been appropriate...

(June 6) I take this opportunity to explain here what was the conjecture that I had
 stated in the seminar in the schematic framework, surely pointing out the obvious variant in the
 complex analytical framework (even, rigid-analytical). I conceived of it as
 a theorem of the "Riemann—Roch" type, but with discrete coefficients instead of
 consistent coefficients. (Zoghman Mebkhout told me moreover that his point of view of the
 modules must make it possible to consider the two Riemann-Roch theorems as contained in the
 same crystalline Riemann-Roch theorem, which would therefore represent in zero characteristic the
 natural synthesis of the two Riemann—Roch theorems that I introduced into mathematics, one in
 1957, the other in 1966.) We fix a ring of coefficients $\tilde{y}$
 (not necessarily commutative, but Noetherian to simplify and more first torsion to the characteristics
 of the schemes considered, for the needs of equate cohomology...).
 For a diagram

$$K_{\bullet}(X, \tilde{y})$$

the Grothendieck group formed with constructible slack sheaves of $\tilde{y}$ -modules. In
 using Rf functors, this group depends functorially on X , for Noetherian X
 and schema morphisms which are separated and of finite type. For regular X , I postulated the
 existence of a canonical group homomorphism, playing the role of the "character of

(*) (June 6) In a slightly different form it is true, see continuation of the note, dated today.

(March 1985) For details, given by Deligne himself, see the note "Dot the i's", n° 164
 (II 1).

Chern" in the consistent RR theorem,

$$(1 \bullet) \quad c_{hX} : K \bullet (X, \tilde{y}) \xrightarrow{\sim} A(X) \otimes_{\mathbb{Z}} K \bullet (\tilde{y}),$$

where $A(X)$ is the Chow ring of X and $K \bullet (A)$ the Grothendieck group formed with the $\tilde{y}$ -modules of finite type. This homomorphism had to be solely determined by the validity of the "discrete Riemann—Roch formula", for a proper morphism f : Todd's "multiplier" replaced by the total relative Chern class:

$$(RR) \quad c_{hY} f(x) = f^* c_{hX}(x) c(f)$$

where $c(f) \in A(X)$

is the total Chern class of f . It is not difficult to see that in a context where we have the resolution of the singularities in the strong Hironaka form, the RR formula determines the c_{hX} in a unique way.

Of course, we assume that we are in a context where the Chow ring is defined.

(I am not aware that anyone has even tried to write a theory of Chow rings, for regular schemes which are not of finite type on a field.) Otherwise, we can also work in the The graduated ring associated with the usual "Grothendieck" ring $K \bullet (X)$ in the coherent context, filtered in the usual way (see SGA 6). We can also replace $A(X)$ by the even -adic cohomology ring, direct sum of $H^{2i}(X, \mathbb{Z}(i))$.

This has the disadvantage of introducing an artificial parameter and giving less fine "purely numerical" formulas, whereas the Chow ring has the charm of having a continuous structure, destroyed by passing to cohomology.

Already in the case where X is a smooth algebraic curve on an algebraically closed field, the calculation of c_{hX} involves delicate local invariants of the Artin—Serre—Swan type. This means that the general conjecture is a deep conjecture, the pursuit of which is linked to an understanding of the higher dimensional analogues of these invariants.

Noticed. Similarly denoting by $K \bullet (X, \tilde{y})$ the "Grothendieck ring" formed with the constructible complexes of $\tilde{y}$ -sheaves of finite dimension (which ring operates on $K \bullet (X, \tilde{y})$ when $\tilde{y}$ is commutative. ..), we must also have a homomorphism

$$(1 \bullet) \quad c_{hX} : K \bullet (X, \tilde{y}) \xrightarrow{\sim} A(X) \otimes_{\mathbb{Z}} K \bullet (\tilde{y}),$$

giving rise again (*mutatis mutandis*) to the same Riemann—Roch (RR) formula.

Let now $\text{Cons}(X)$ be the ring of integer functions constructible on X . We defines in a more or less tautological way canonical homomorphisms

$$(2 \bullet) \quad K \bullet(X, \tilde{y}) \xrightarrow{\sim} \text{Cons}(X) \otimes K \bullet(\tilde{y}),$$

$$(2 \bullet) \quad K \bullet(X, \tilde{y}) \xrightarrow{\sim} \text{Cons}(X) \otimes K \bullet(\tilde{y}).$$

If we now limit ourselves to schemes with zero characteristics, then (by using Euler—Poincaré characteristics with proper supports) we see that the group $\text{Cons}(X)$ is a functor covariant with respect to the finite type morphisms of Noetherian schemes (in addition to being contravariant as a ring functor, which is independent of characteristics), and the previous tautological morphisms are functorial. (This corresponds to the “well-known” fact, but which I believe was not proven in the SGA 5 oral seminar, that in zero characteristic, for a locally constant sheaf of $\tilde{y}$ -modules on an algebraic diagram

$$f_{\tilde{y}} : K \bullet(X, \tilde{y}) \xrightarrow{\sim} K \bullet(e, \tilde{y}) \otimes K \bullet(\tilde{y})$$

is equal to $d \cdot \tilde{y}(X)$, where d is the rank of $e = \text{Spec}(k)$, k the basic body assumed to be algebraically closed...). This immediately suggests that the Chern homomorphisms $(1 \bullet)$ and $(1 \bullet)$ must be able to be deduced from the tautological homomorphisms $(2 \bullet)$, $(2 \bullet)$ by composing with a “universal” Chern homomorphism (independent of any ring of coefficients $\tilde{y}$)

$$(3) \quad c_{hX} : \text{Cons}(X) \xrightarrow{\sim} A(X)$$

so that the two “ $\tilde{y}$ coefficient” versions of the RR formula appear as formally contained in an RR formula at the level of constructible functions, and which is always written in the same form.

When we work with diagrams on a fixed basic body (of any characteristic again), or more generally on a fixed regular basic diagram S (for example $S = \text{Spec}(Z)$), the form of the Riemann—Roch formula most consistent with the usual writing (in the coherent framework familiar since 1957) is obtained by introducing the products

$$(4) \quad c_{hX}(x) c(X/S) = c_{X/S}(x)$$

(where x is in a $K \bullet (X, \tilde{y})$ or $K \bullet (X, \tilde{y})$ indifferently), which we could call the Chern class of x relative to the base S . When x is the unit element of $K \bullet (X, \tilde{y})$ ie the class of the constant sheaf of value $\tilde{y}$ we find the image of the relative total Chern class of $Z \in K \bullet (\tilde{y})$. This established, the RR formula is equivalent to the fact that the formation of these relative Chern classes

$$(5 \bullet) \quad c_X / S \in K \bullet (X, \tilde{y}) \xrightarrow{\sim} A(X) \xrightarrow{\sim} Z \in K \bullet (\tilde{y}),$$

for a regular schema X in zero characteristic, this reduces to the functoriality (for proper morphisms) of the corresponding application

$$(6) \quad c_X / S \in \text{Cons}(X) \xrightarrow{\sim} A(X)$$

It is in this form of the existence and uniqueness of an absolute “Chern class” map (6), in the case where $S = \text{Spec}(C)$, that the conjecture presents itself in the work of MacPherson, the relevant conditions (here as in the general case of zero characteristic) being a) the functoriality of (6) for proper morphisms and b) we have $c_X / S(1) = c(X / S)$ (in this case, the “absolute” total Chern class). Compared to my initial conjecture, the form presented and proven by MacPherson, however, differs in two ways. One is a “minus”, due to the fact that it is placed, not in the Chow ring, but in the entire cohomology ring, or more precisely the entire homology group, defined by transcendental means. . The other is a “plus” — and it is here perhaps that Deligne made a contribution to my initial conjecture (unless this contribution is due to MacPherson himself (*)).

This is because for the existence and uniqueness of an application (6), we do not need to restrict ourselves to regular X diagrams, provided we replace $A(X)$ by the group of entire homology. It is therefore probable that it is the same in the general case, by designating by $A(X)$ (or better by $A \bullet (X)$) the Chow group (which is no longer a ring in general) of the Noetherian schema X . Or to put it another way: while the heuristic definition of the invariants $c_X(x)$ (for x in $K \bullet (X, \tilde{y})$ or $K \bullet (X, \tilde{y})$) essentially uses the hypothesis that the ambient schema is regular, as soon as we multiply it by the “multiplier” $c(X / S)$ (when the

(*) (March 1985) This is indeed so, cf. note n° 164 cited in the previous footnote.

schema

as part of a tensor product

$$A^\bullet(X) \otimes K^\bullet(\tilde{Y}) \text{ or } A^\bullet(X) \otimes K^\bullet(\tilde{Y}),$$

where $A^\bullet(X)$ denotes the Chow group of X . The spirit of MacPherson's demonstration (which does not use the resolution of singularities) would suggest the possibility of an explicit “calculatory” construction of the homomorphism (5), by “dealing with” the singularities of that they are, as well as with the singularities of the bundle of coefficients (whose class is x), to “collect” a cycle on X with coefficients in $K^\bullet(\tilde{Y})$. It would also be in the spirit of the ideas that I had introduced in 1957 with the coherent Riemann—Roch theorem, where I carried out self-intersection calculations in particular, taking care not to “move” the envisaged cycle. A first obvious reduction (obtained by embedding X in a smooth S -scheme) would be to the case where

The idea that it should be possible to develop a singular (coherent) Riemann—Roch theorem was familiar to me, I can't say since when, without me ever trying to seriously test it. It is a bit of this idea (apart from the analogy with the formalism “cohomology, homology, cap-product”) which led me in SGA 6 (in 1966/67) to systematically introduce the $K^\bullet(X)$ and $K^\bullet(X)$ and the $A^\bullet(X)$, $A^\bullet(X)$, instead of just working with the $K^\bullet(X)$. I don't remember whether I also thought of something of this kind in the SGA 5 seminar in 1966, and whether I hinted at it in the oral presentation. As my handwritten notes have disappeared (in a move perhaps?) I will probably

never know... (June 7) While reading MacPherson's article, I was struck by this fact, that the word “Riemann—Roch” is not pronounced there — this is also the reason why I did not immediately recognize the conjecture that I had made in the SGA 5 seminar in 1966, which was for me (and is always) a theorem of the “Riemann—Roch” type. It seems that at the time of writing his article, MacPherson was not even aware of this obvious relationship. I presume that the reason for this is that Deligne, who after my departure put this conjecture into circulation in the form that pleased him, took care as far as possible to “erase” the obvious relationship with Riemann's theorem. I think I sense his motivation to do this. On the one hand, this weakens the link between this conjecture and me, and makes more plausible the name “Deligne conjecture—

Grothendieck" under which it currently circulates. (NB I don't know if it is in circulation in the schematic case, and if so, I would be very curious to know under what name.) But the deeper reason seems to me to be in his obsessive idea of denying and destroying, in all as far as possible, the fundamental unity of my work and my mathematical vision (*). This is a striking example of how, in a mathematician with exceptional means, a fixed idea entirely foreign to any mathematical motivation can obscure (or even completely block) what I have called the "sound" mathematical instinct. This instinct cannot fail to perceive the analogy between the two "continuous" and "discrete" statements of the "same" Riemann—Roch theorem, which I had also of course brought out in the 'oral presentation. As I indicated yesterday, this relationship will undoubtedly be confirmed soon by a formal statement (conjectured by Zoghman Mebkhout), at least in the complex analytical case, making it possible to deduce both from a common statement. .

It is clear that in the "divisive" dispositions in which Deligne found himself with regard to the Riemann—Roch theorem(**), he was not at risk of discovering the unique statement which connects them in the analytical framework. , and even less to ask the question of an analogous statement in the general schematic framework. No more than he knew in such arrangements to bring out the fruitful point of view of $\mathcal{O}_X$ -modules in the cohomological theory of algebraic varieties, arising too naturally from ideas that had to be buried - nor even recognize, for years, the fruitful work of Mebkhout, succeeding where he himself had failed.

(872) (May 31) This is the year of my Bourbaki presentation on the rationality of L functions, where I heuristically use the result (???) of Verdier (and especially the intended form of local terms in the present case), without waiting for Illusie to demonstrate it thirteen years later, at the invitation of Deligne. It seemed to me, moreover, when Verdier showed me his ultra-general formula which came as a surprise, that he demonstrated it with "six operations" formalism in a few lines - that's the kind formulas where (almost) to write it,

(*) Compare with the comment in the note "The remains" (n^o 88) on the deeper meaning of operation SGA 41/2, also aiming to break up the unity into an amorphous set of "technical digressions". depth of my work around the étale cohomology, by the "violent insertion" of the foreign text SGA 41/2 between the two indissoluble parts SGA 4 and SGA 5 which develop this work.

(**) These dispositions, precisely with regard to the Riemann—Roch—Grothendieck theorem, are manifested in a particularly clear way in the "Funeral Eulogy"; see the note "The Funeral Eulogy (1) — or the compliments", n^o 104.

it's to demonstrate it! If there was a "difficulty", it could only be at the level of checking one or two compatibilities (*). Moreover, both Illusie and Deligne know perfectly well that the demonstrations that I had given in the seminar for various explicit trace formulas were complete, they did not depend in any way on Verdier's general formula, which had simply played the role of a "trigger" to encourage the explanation and proof of trace formulas in cases as general as possible.

The bad faith of both is patent here. For Deligne, it was already clear to me when I wrote the note "La slate rase" (n^y 67) — but it was probably not clear for an uninformed reader, nor of course for an informed reader who renounces the use of his healthy faculties.

(June 6) As for Illusie, he enters entirely into his friend's game, trying to muddy the waters to give the appearance of an ultra-technical oral seminar which does not even provide complete demonstrations of all the results, and in particular the trace formulas. However, these were indeed demonstrated there (and for the first time) in 65/66, and it is there where both he and Deligne had the privilege of learning them, and a whole delicate technique which will with(**).

(*) (June 6) It would also seem that, via the biduality theorem (promoted in the meantime "Deligne's theorem"), the initial demonstration of the Lefschetz—Verdier formula depended on a hypothesis of resolution of singularities, which Deligne manages to do without in the case of finite type diagrams on a body. This is a good opportunity to fish in troubled waters and give the impression that SGA 5 would be subordinate to the "sic-seminar" SGA 41/2 which "precedes" it (and which was indeed published before it!).

(**) In the second paragraph of the Introduction to the volume published under the name SGA 5, Illusie presents as the "heart of the seminar" the three presentations III, III B, XII around the Lefschetz formula in equal cohomology, then that we have seen that in the introduction to presentation III B, he takes great care to specify (contrary to reality) that "this presentation does not correspond to any oral presentation of the seminar" and that in the introductions to presentations III and III B, he does his best to give the impression that these are subordinate to SGA 41/2 and that presentation III is presented as "conjectural"!! In fact, the entire SGA 5 seminar was technically independent of Lecture III (Lefschetz—Verdier formula), which played the role of a heuristic motivation, and Lecture III B is none other than the "hole" (exhibition XI) created by the move of Bucur, which was the welcome pretext for this additional dismemberment.

To accredit the version of a seminar of "technical digressions" (proposed by his friend Deligne), Illusie took care to skip the introductory presentation, where I had painted a preliminary picture of the major main themes which were going to be developed in this seminar, a table where the trace formulas only form a small part (taking on particular importance because of their arithmetic implications, in the direction of Weil's conjectures). For an overview of these "major themes", see subnote no. 875 below.

This reminds me that of course, I had taken the trouble to demonstrate the Lefschetz—Verdier formula in the seminar - it was indeed the least of things, and a particularly striking application of the formalism of local and global duality which I intended to develop. The question came to me these days why the hell, when there were about ten presentations whose writing remained in distress by the care of my dear students, so that Deligne and Illusie were really embarrassed of the choice to name their technical “obstacle”-sic to the publication of SGA 5, they chose above all the theorem of their good friend Verdier, who at the same time bore its authorship as his due, just like that of the derived categories and triangulated documents which he had never taken the trouble to write either (or, at least, to make available to the public). There is a kind of challenge in the absurdity (or in a kind of collective cynicism in the group of my ex-cohomologist students, all of whom I consider united in this massacre-operation), which reminds me of that of “weight complexes” brilliantly invented by Verdier the previous year (see the note of this name, n° 83), or (in the iniquitous register) with the “perverse” name given by Deligne to the beams which should be called “fasceaux of Mebkhout” (see the note “Perversity”, § 76). I sense in such inventions so many acts of domination and contempt towards the entire mathematical community - and at the same time a bet, which was visibly won until the moment of the unexpected appearance of the deceased, who appears almost as the only one awake in front of a community of sleeping people...

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(873) (June 5) After this assessment of a massacre, we will appreciate this declaration at its value of Illusie in line 2 of his introduction to the volume named SGA 5:

“Compared to the original version, the only important changes concern presentation II [generic Künneth formulas] which is not reproduced, and presentation III [Lefschetz—Verdier formula], which has been completely rewritten and increased by an appendix numbered III B (*). Apart from a few changes of detail and additions of footnotes, the other presentations have been left as they are” (emphasis mine).

Here again, Illusie complacently echoes another well-delivered joke from his indescribable friend, namely that the existence of SGA 41/2 “will soon make it possible to publish

(*) Which is presented as part of the “heart of the seminar”! (See previous p. note.)

SGA 5 as is" (see note "Clean slate" n° 67) — and Illusie does everything possible during his presentations and introductions to accredit this imposture (that SGA 5, where he and his friend learned their trade, would depend on the pirate volume SGA 41/2, made of odds and ends gleaned or pillaged over the twelve years that followed), with a wealth of references to SGA 41/2 at every turn of the page...

The final word goes (as it should) to Deligne, writing to me a month ago (May 3), in response to a laconic request for information (see on this subject the beginning of the note "Les Funerals", n° 70):

"In summary, if it had been seven years since you had done math[?!] when this SGA 41/2 text appeared, this simply corresponds[?] to the long delay for the edition of SGA 5, which was too incomplete to be usefully published as is.

I hope you like these explanations."

If they have not "approved" me, at least they will have edified me...

(874) (June 6) It would perhaps be time to indicate what were the main themes which were developed in the oral seminar, and of which the published text only allows us to get an idea by cross-checking.

I) Local aspects of the theory of duality, whose essential technical ingredient is (as in the coherent case) the theorem of biduality (completed by a theorem of "cohomological purity"). I have the impression that the geometric meaning of this last theorem, like a local Poincaré duality theorem, which I had explained well in the oral seminar, has since been entirely forgotten by those who were my students (*) .

II) Trace formulas, including more subtle "non-commutative" trace formulas than the usual trace formula (where both members are integers, or more generally elements of the ring of coefficients, such as $\mathbb{Z} / n\mathbb{Z}$ or an ℓ -adic ring $\mathbb{Z}$ or even $\mathbb{Q}$), placing itself in the algebra of a finite group operating on the envisaged diagram, with coefficients in a suitable ring (such as those envisaged in the previous parenthesis). This generalization came very naturally, from the fact that even in the case of Lefschetz formulas of the usual type, but for bundles of "twisted" coefficients, we were led to

(*) Verification made, this geometric interpretation was at least preserved in the editorial staff of Illusie.

replace the initial scheme with a Galois covering (generally branched) used to “untwist” the coefficients, with the Galois group operating on it. This is how formulas of the “Nielsen—Wecken” type are naturally introduced into the schematic context.

III) Euler—Poincaré formulas. There was on the one hand a detailed study of an “absolute” formula for algebraic curves, using Serre—Swan modules (generalizing the case of moderately ramified coefficients, giving rise to the Ogg—Chafarévitch formula—Grothendieck more naive). On the other hand there were new and profound conjectures of the “discreet” Riemann—Roch type, one of which reappeared seven years later, in a hybrid version, under the name of the “Deligne—Grothendieck” conjecture, proven by MacPherson by transcendent way (see note n° 871).

The comments that I could not fail to make on the deep relationships between these two themes (Lefschetz formulas, Euler—Poincaré formulas) have also been lost without leaving a trace. (As was my habit, I left all my handwritten notes with the volunteer-editors-sic, and I no longer have any written trace of the oral seminar, of which I of course had a complete set of handwritten notes, even if some were succinct.)

IV) Detailed formalism of the homology and cohomology classes associated with a cycle, arising naturally from the general formalism of duality and the key idea, consisting of working with “supported” cohomology in the envisaged cycle, in using cohomological purity theorems.

V) Finiteness theorems (including generic finiteness theorems) and theorems of generic Künneth for cohomology with any support.

The seminar also developed a technique for passing from torsion coefficients to p -adic coefficients (presentations V and VI). This was the most technical part of the seminar, which generally worked with torsion coefficients, then had to “go to the limit” to deduce the corresponding p -adic results. This point of view was a provisional stopgap, pending Jouanolou's thesis (still not published at present) providing the necessary formalism directly in the p -adic framework.

I am not counting among the main “themes” the calculations of some classical schemes and the cohomological theory of Chern classes, which Illusie highlights in his introduction as “one of the most interesting” of the seminar. As the program was busy, I did not think it necessary in the oral seminar to dwell on these cal-

culs and on this construction, since it was enough to repeat, practically verbatim, the reasoning that I had given ten years before in the context of the Chow rings, on the occasion of the Riemann—Roch theorem. It was also obvious that it had to be included in the written seminar, to provide a useful reference to the user of étale cohomology. Jouanolou had taken on this work (presentation VIII), which he had to view not as a service that he rendered to the mathematical community while learning basic techniques essential for his own use, but as a chore, since its writing dragged on for years (*). It was no different, one must believe, for his thesis, which still remains a phantom reference just like that of Verdier... The “passage to the limit” part should not be counted as one of the “main themes” of the seminar, in the sense that it is not associated with a particular geometric idea. Rather, it reflects a technical complication particular to the context of étale cohomology (distinguishing it from transcendent contexts), namely that the main theorems on étale cohomology concern firstly the torsion coefficients (first to the residual characteristics), and that to have a theory which corresponds to rings of coefficients of zero characteristic (as is necessary for the Weil conjectures), it is necessary to pass to the limit on rings of coefficients $\mathbb{Z}/n\mathbb{Z}$ to obtain “-adic” results.

All this clarified, the only one of the five main themes of the oral seminar which seems to appear in complete form in the published text, is theme I. Themes IV and V have disappeared purely and simply, absorbed by SGA 4/2, with the benefit of being able to refer to it extensively and give the impression that SGA 5 depends on a text by Deligne presenting itself as earlier. Themes II and III appear in the volume published in mutilated form, and always maintaining the same imposture of dependence on the text SGA 4/2 (which in reality came entirely from the mother seminar SGA 4, SGA 5).

(88) (May 16) The set of two consecutive seminars SGA 4 and SGA 5 (which for me are like a single “seminar”) develops from nothing, both the powerful instrument of synthesis and discovery that represents the language of topos, and the perfectly developed, perfectly effective tool that is étale cohomology — better understood in its essential formal properties, from that moment on, than even cohomological theory was

(*) (June 12) By going through the presentation in question, I was able to convince myself of a perfect complicity de Jouanolou with my other cohomologist students.

ordinary spaces (*). This set represents the deepest and most innovative contribution I have made to mathematics, at the level of a fully completed work. At the same time and without wanting to be so, while at each moment everything unfolds with the naturalness of obvious things, this work represents the most vast technical “tour de force” that I have accomplished in my work as a mathematician (**). These two seminars are for me indissolubly linked. They represent, in their unity, both the vision, and the tool — the topos, and a complete formalism of étale cohomology.

While the vision remains challenged even today, the tool has for nearly twenty years profoundly renewed algebraic geometry in its aspect for me the most fascinating of all — the “arithmetic” aspect, apprehended by an intuition, and by a conceptual and technical background, of a “geometric” nature.

It is surely not only the intention to suggest an anteriority of its cohomological “digest” on the SGA 5 part which motivated Deligne to give it the trompe-l'oeil name SGA 4 1/2 — nothing prevented it after all, let's just call it SGA 3 1/2! In “operation SGA 4 1/2” I feel the intention of presenting the work from which all of his comes (this work from which he cannot detach himself!) — work of an obvious and profound unity that is very apparent in all of the two seminars SGA 4 and (the real) SGA 5, as a divided thing (as he himself is divided...), cut in two by this violent insertion of a foreign and disdainful text; of a text which would like to present itself as the living heart, the quintessence of a thought, of a vision in which it had no part (*), and the two “districts” which surround it as sorts of vaguely grotesque appendices, like a collection of “digressions” and “technical complements” to the work presenting itself as central and essential, from the pen of Deligne and where my humble person is graciously admitted (before burial

(*) Even when restricting ourselves to the spaces closest to “manifolds”, such as triangulable spaces.

(**) Some difficult or unforeseen results were obtained by others (Artin, Verdier, Giraud, Deligne), and certain parts of the work were done in collaboration with others. This does not detract (in my mind at least) from the strength of my assessment of the place of this work in my body of work as a whole. I am also thinking of returning to this point in more detail, in an appendix to the Thematic Outline, and dotting the i's where it has clearly become necessary.

(*) This thought had reached full maturity, both in terms of the main ideas and the essential results, before the young man Deligne appeared on the scene, to learn algebraic geometry and cohomological techniques from my contact, between 1965 and 1969. (May 30) See on this subject the note “Being apart”, n° 67

total) to the number of “collaborators” (**).

“Chance” had done things well. This “remains handed over to the mercy” — this “unfortunate seminar” always left behind by the “editors”, and remained at the time of my departure in the hands and at the discretion of my cohomologist students — it was not there regardless what a part of the master’s work! It was neither SGA 1 and SGA 2 (where I developed in my corner and without yet suspecting it the tools which would be the two essential technical aids for the “take-off” of the main work to come), neither SGA 3 (where my contribution consisted mainly of incessant scales and arpeggios — sometimes arduous — to hone the “all-round” technique of the diagrams), nor SGA 6 (systematically developing my ten-year-old ideas around the theorem of Riemann—Roch and the formalism of intersections), even SGA 7 (which, through the internal logic of a reflection, arises from the possession of the central tool, the mastery of cohomology). This is indeed the key part of my work, the writing of which remained unfinished (and by their care...), which I left, in part at least, in the hands of my cohomologist students. It is this central part of a work that they have chosen to massacre and of which they have appropriated the pieces, forgetting the unity which makes up their meaning and their beauty, and their creative virtue (90).

And it is no coincidence that, equipped with heterogeneous tools and denying the spirit and the vision which had brought them into being from nothing, no one was able to discern the innovative work where it was reborn, against their indifference and disdain. Nor that after six years, when at the end the new tool was finally apprehended by Deligne, they unanimously buried the one who had created it in solitude — Zoghman Mebkhout, the posthumous student of the disowned master! And it is no longer a coincidence that after the decline of Deligne's initial momentum (which in a few years had led him towards the strong start of a new theory of Hodge, and towards the demonstration of Weil's conjectures), and despite its prodigious means and the brilliant means of my cohomologist students, today I note this “gloomy stagnation” in a field of prodigious richness where everything still seems to be done. It is not surprising that for almost fifteen years the main source of inspiration and some of the “big problems”(*), even though they are present and we are confronted with them every time not, remain carefully circumvented and evaded, like the messengers of the one

(**) See the notes “The green light” . “The reversal”, n° s 68, 68

(*) This “main source of inspiration” is of course the “yoga of patterns”. It was active in Deligne alone, who kept it behind itself for its sole “benefit”, and in a narrow form deprived of a

that for fifteen years it was constantly a question of burying.

(89) (May 17) The thought, the vision of things which lived in me and which I believed to communicate, I see it as a living body, healthy and harmonious, animated by the power of renewal of living things , of the power to conceive and generate. And here is this living body which has become remains, shared between one and the other - such a member or quarter duly stuffed serving as a trophy for one, another, dismembered, as a puzzle or as a boomerang for another, and another one, who knows, just as it is for home cooking (we're no longer close to that!) — and everything else is good to rot in the landfill...

This is, in pictorial terms certainly but which seem to me to express a certain reality of things, the picture which ended up revealing itself to me. The puzzle in a pinch, it will certainly fracture a skull here and there(**) - but these scattered pieces, trophy neither puzzle nor family soup, will never have the power however so simple and so obvious of living body: that of the loving embrace which creates a new being... (May 18) This image of the living body, and of the “remains” with its pieces scattered to the four winds, must

have formed in me throughout the past week. The comical form in which it presented itself under my pen-typewriter in no way means that this image is in the least an invention, a tad macabre, a burlesque improvisation in the vein of a speech. The image expresses a reality, felt deeply at the moment when it took material form through a written formulation. I must have already become aware of this reality in bits and pieces here and there, throughout the fourteen years since my “departure”, and perhaps even before. Bits of information recorded first at a superficial level by distracted attention, absorbed elsewhere - but which all went in the same direction, and which must have come together, at a deeper level, into a certain image - an unformulated image that I didn't care to read, even though I had other things to worry about. This image has been considerably enriched and clarified over the course of

much of its strength, challenging some of the essential aspects of this yoga. Among the “big problems” inspired by it, which have been ignored or discreetly discredited, I see now (outside as I am) the standard conjectures, and the development of the formalism of “six operations” for all types of usual coefficients, more or less close to the “motives” themselves (which in their respect play the role of “universal” coefficients — those which give rise to all the others). Compare with the comments on this subject in the note “My orphans”, n° 46.

(**) (May 31) And even it will serve well to prove such a “proverbially difficult” theorem!

of the reflection which has continued since the end of March, for six or seven weeks therefore. More precisely, scattered elements of information, finally examined by the care of a fully present conscious attention, are assembled little by little into another image, at the more superficial level of the thought which examines and which probes, through work which could seem independent of the presence, in deeper layers, of the first. This conscious work culminated six days ago in the sudden vision of the “massacre” that took place — when I felt the “breath”, the “smell” of violence, for the first time I believe in all the reflection (*). This is also the moment when this feeling of a living, harmonious body, which is indeed “massacred” must have appeared, in the layers already close to the surface - and also the moment when the deeper diffuse image has must have begun to surface, perhaps to bring to the forming image a carnal dimension, a “smell” that thought alone is powerless to give.

This “carnal” aspect revealed itself again in a dream last night — it is under the impulse of this dream that I now return to the lines written yesterday. In this dream, I was cut quite deeply in several places on my body. First of all there were cuts on my lips and in my mouth itself, bleeding profusely, while I rinsed my mouth with plenty of water (strongly reddened by blood) in front of a mirror. Then wounds in the stomach, also bleeding profusely, especially one of them from which the blood came out in jerks, as if it were an artery (the Dreamer was not concerned with anatomical realism). The thought even occurred to me that I might well be left on the floor if it continued to bleed like this, I pressed my hand in front of the wound and curled up to stop the blood - it definitely stopped flowing freely, and ended up forming a clot and a very large crust. Later, I carefully lifted this scab, a delicate healing had already started to take place. I was also cut on one finger, and it was surrounded by an impressive dressing doll...

I do not intend to launch into a more delicate and detailed description of this dream, nor to probe it in depth here (or elsewhere). What this dream “as is” already reveals to me with striking force is that this “body” of which I spoke yesterday, and which while writing I saw as detached from myself, like a child perhaps I would have conceived and procreated and who would have left

(*) (June 12) It has happened to me in recent years to sense a violent intention in some of my ex-students towards some of my “co-buried”, but never a violence that is felt as coming from a collective will (here grouping five people) and directed against my person, through my work.

in the world to follow its own path — this body still remains today an intimate part of my person: that it is my body, made of flesh and blood and of a life force which allows it to survive deep wounds and to regenerate. And my body is also the thing in the world, without doubt, to which I am most deeply, most indissolubly linked...

The Dreamer did not follow me in the image of the “massacre” and the sharing of the remains. This image had to restore a reality of intentions, of dispositions in others that I had strongly perceived, and not the way in which I myself experienced this aggression, this mutilation of which I was the object through something to which I remain closely related. To what extent I remain linked to it, the Dreamer has just given me a glimpse. This is similar to what I perceived (admittedly with less force) in the reflection of the note “The return of things — or a foot in the dish” (nř 73), where I try to understand a little the feeling of this “deep connection between the one who designed a thing, and this thing”, which appeared during the reflection that day. Before this reflection of April 30 (barely three weeks ago) and throughout my entire life, I pretended to ignore this link, or at least to minimize it, following the clear slope of the clichés in force. Concerning the fate of such a work which has left our hands, and above all of course worrying whether our name remains attached to it at all, is felt as pettiness, pettiness - even though it seems natural to all that we be deeply touched when a child of flesh that one has raised (and whom one believes to have loved) chooses to repudiate the name he received at birth.

(90) (May 18) I don't know if during the sixties, any student (apart from Deligne) knew how to feel this essential unity, beyond the limited work that he pursued with me. Perhaps some people felt this vaguely, and this perception was lost without return in the years following my departure. What is certain, however, is that from our first contact in 1965, Deligne had foreseen this living unity. It is this fine perception of a unity of purpose in a vast design which was surely the main stimulus for the intense interest in him regarding everything I had to communicate and transmit. This interest was manifested, without ever weakening, throughout the four years of constant mathematical contact, between 1965 and 1969 (*). He gave to the mathematical communication between us this exceptional quality which I have spoken about, and which I have only known with other mathematical friends.

(*) This period includes five years, of which my friend spent one (1966) in Belgium to do his

maticians only in rare moments. It is this perception of the essential, and this passionate interest that it stimulated in him, which allowed him to learn as if by playing everything that I could teach him: as well the technical means (technique of diagrams with a strand of zinc, Riemann—Roch yoga and intersections, cohomological formalism, flat cohomology, language of topos) as the overall vision which makes their unity, and finally the yoga of patterns which was then the main fruit of this vision, and the most powerful source of inspiration that I have yet discovered.

What is clear is that Deligne was the only one of my students until today, who at a certain moment (from the year 1968 it seems to me) had fully assimilated and adopted the entirety of this that I had to transmit, in its essential unity as in the diversity of its means(**). It was this circumstance of course, felt I believe by everyone, which made him appear as the “legitimate heir” of my work. Obviously this heritage neither burdened nor limited him — it was not a burden, but gave him wings; I mean: he nourished with his vigor these “wings” that he had from birth, just as other visions and other legacies (less personal of course...) would nourish it...

This heritage which he nourished during crucial years of growth and development, and the unity which makes it the beauty and the creative virtue and which he had known so well to feel, which had become like a part of him -even — my friend subsequently disowned them (*), striving tirelessly to hide the heritage, and to deny and destroy the creative unity which was its soul. He was the first to set an example among my students to appropriate tools, “pieces”, while striving to dislocate the unity, the living body from which they come. His own momentum

military service.

(**) When I speak of “totality”, I must understand: for everything that was essential, in the vision as well as in the means. This does not mean, of course, that there were not unpublished ideas and results that I never thought to tell him about. On the other hand, I don't think there is any mathematical reflection from the years 1965–69 that I haven't talked about “on the fly” to my friend, always with pleasure and profit.

(*) Strange thing, this division must have been present from the first year of our meeting (already expressed by an ambiguous attitude towards the SGA 5 seminar, which was his first contact with the diagrams, the techniques cohomologies Grothendieck style, and flat cohomology), and at the latest and in an unequivocal form from 1968 (see note “Eviction”, n° 63) — at a time therefore when mathematical communication was perfect, and where the rise of his mathematical thought does not seem to me to have been marked yet by the conflict. He then made (“in passing”) many interesting contributions (which I take great pleasure in highlighting in the Introduction to SGA 4) on themes that he did his best, after my departure, to

bury.

creator found himself slowed down, absorbed and finally dislocated by this deep division within him, pushing him to deny and destroy the very thing which was his strength, which nourished his momentum.

I see this division expressed by three united effects, indissolubly linked. One is the dispersal effect of energy, scattering in the effort to deny, to dislocate, to supplant, to hide. The other is found in the refusal of certain ideas and certain means, nevertheless essential for the “natural” development of the subject which he has chosen as his central theme(**).

The third is the attachment to this theme above all where it is a question of supplanting, of ousting a master present at every step and who must constantly be erased - precisely the theme which is invested most intensely with the fundamental contradiction which dominated his life as a mathematician.

What I know first hand, and an elementary instinct or flair which has never deceived me, make it very clear to me that if Deligne had not been torn by this deep contradiction in his very work, mathematics today today would not resemble what it is (*) - that it would have known, in several of its essential parts, ample renewals like the one of which I myself had been the principal instrument - that one

(**) This refusal was manifested in particular by the burial of derived and triangulated categories (until 1981), of the formalism of the six variances (until today), of the language of topos (itou), and by a sort of “blocking by disdain” of the vast program of foundations of homological and homotopic algebra, of which I am now trying (twenty years later) to give an outline with the Pursuit of the Fields, and of which it He had of course not failed to also feel the need. Finally, even though it was inspired by the yoga of patterns (buried until 1982), this yoga remained mutilated in part of its strength, being detached from the formalism of the six variances which constitutes an essential formal aspect. This aspect was also rigorously banned, it seemed to me, from the Hodge—Deligne theory.

(*) In writing these lines on the subject of “mathematics today”, I was not thinking only of the more or less profound knowledge that we have today of mathematical things. There was also, in the background, the thought of a certain mind in the world of mathematicians, and more particularly in what we could call (without sarcastic or mocking intonation) “the great mathematical world”: the one who “sets the tone” to decide what is “important”, even “lawful”, and what is not, and also who controls the means of information and, to a large extent, careers. Perhaps I am exaggerating the importance that a single person, in a leading position, can have on the “spirit of the times” in a given environment at a given time. That of Deligne seems to me comparable (for better and for worse) to that which Weil seemed to me to have in the environment which had welcomed me twenty years earlier, and with which I had identified for twenty years. (May 31) Compare

with the (complementary) reflections in the note “The Gravedigger — or the Congregation entirely”, n° 97.

even though this same Deligne tried hard to counter and divert(**)

There is also no doubt that he was ideally suited to be the soul of a powerful school of geometry, a continuation of that which had formed around me - a school nourished by the vigor of that from which it came, and by the creative power of the one who took over from me. But this school which had formed around me, this nourishing matrix which had surrounded intense years of training – it disintegrated the very day after my departure. If this was so, it was precisely due to the lack of finding, in the one who was visibly taking over from me(***), the one who would also be the soul of a group brought together by a common adventure, for a task whose dimensions are beyond everyone's means.

I have the impression that after my departure, each of my students found themselves in their own corner, with a mess of work, certainly there is no shortage of work anywhere in math, but without this “corner” fitting in. in a whole and without this “work” being carried by a current, by a larger purpose. Surely, from my departure, if not even before, the eyes of most of my students or ex-students were focused on the designated “successor”, the most brilliant among them and also the closest to me. At this sensitive moment, my friend must have felt, perhaps for the first time in his life, the power over others which suddenly found itself in his hands, through this power of life or death which he had over the fate of a certain school, from which he came, and from which the friends he had known there for four years undoubtedly expected that he would ensure continuity. The situation was entirely in his hands, it was he who was going to set the tone... He set it in fact, by destroying the heritage, and first of all this confidence and this expectation (*) that could fail to bring to him those who, with him, had been students

(**) (June 16) I am convinced that by the simple fact that the main ideas that I introduced in mathematics are developing normally, on the momentum acquired in the sixties (cut off sharply by the “effect- chainsaw” which will be discussed in the following two notes...), mathematics today, fifteen years after my departure, would have been different from what it is, in certain of its essential parts...

(***) This succession of facts was expressed by unequivocal concrete signs: he took over from me at IHES (from which I left the year after his arrival — see note “The eviction”, n° 63), and he took up, with the means that I had developed for this purpose over around fifteen years (from 1955 to 1970), the central theme of the cohomology of algebraic varieties.

(*) (May 26) In the continuation of the reflection, I detected a completely different “expectation” again with regard to my tacit heir, coming this time not from my students alone, but from “the Congregation entire” — see on this subject the end of the note “The Gravedigger — or the entire Congregation” (n° 97). I have little doubt that these two expectations in opposite directions, one linked to a very particular moment, and the other continuing throughout the fourteen years of the Funeral, are both real. other. Even more, I would be inclined to think that at

from the same master...

There are surely many people who are impressed by Deligne's work, and not without reason. But I also know that this work, beyond the impressive initial momentum (ending with the demonstration of Weil's conjectures), is very far from giving "its measure". It certainly demonstrates an unusual technical mastery and ease, placing him among the "best". But it does not have the humble virtue that I saw in him in his younger years — the virtue of renewal. This virtue that he carried within him, this freshness or innocence of the little child, has long been deeply buried, denied. I was going to write that by this "virtue" and by his unusual gifts, as also by the exceptional circumstances from which he benefited for the deployment of his gifts, Deligne was called to "dominate" the mathematics of our time, like a Riemann, or a Hilbert, had each "dominated" the mathematics of their time. Inveterate habits of thought, rooted in everyday language, suggested to me here this image of "domination", which nevertheless gives a distorted apprehension of reality. These great men undoubtedly fully "grasped", "assimilated", "made their own" the mathematics known to their time, which undoubtedly also gave them an exceptional mastery of technical means. But if they rightly seem "great" to us, it is not because of their technical prowess, "extracting" difficult demonstrations from a tough substance. It is through the renewal that each person has brought to several important parts of mathematics, through simple and fruitful "ideas", that is to say: for having focused their gaze on simple and essential things, to which ring before they had deigned to pay attention. This childish capacity to see simple and essential things, however humble they may be and disdained by all - it is in it that resides the power of renewal, the creative power in each one. This power was present to a rare degree in the young man I knew, unknown to everyone, a modest lover and passionate about mathematics. Over the years, this humble "power" seemed to disappear from the person of the admired and feared mathematician, enjoying without hindrance his prestige, and the power (sometimes discretionary) that it gives him over others.

This suffocation in my friend of a very delicate and very lively thing, neglected by all and which

more than one of my students of yesteryear, the two expectations must have been present simultaneously: that of finding in the most brilliant of them the one who would also ensure continuity to a School and to a work where they had their place and their part - and that of seeing erased (if possible) every trace of the one whose departure suddenly called out to them with such force, in the tranquility of the paths all mapped out...

creative power, I have felt it many times since my departure, and more and more in recent years. But it took the discoveries of recent weeks, and the reflection that I have been pursuing since the end of March (in the wake of *Récoltes et Semailles*), to begin to feel in all its extent the devastating effect of this suffocation in the life of my friend, and among many others whom I have known closely. Not only on some of my “later” students (and assimilated students), who were entitled to his malevolence (perhaps unconscious in certain cases), which was exercised against each and weighed heavily on three of them. them; but also, I seem to see it now, among my “before” students, by the destruction of a continuity in the subject, and that of the feeling of a whole, of a unity, giving a deeper meaning and more extensive to their work than that of an accumulation of separate prints bearing their name (91) (*).

More than once in the last seven years, and more than once in the last few weeks and days, I have felt a sadness at what is felt, on some level, as a immense waste - when what is most precious in oneself and in others is squandered or stifled as if at pleasure. However, I also ended up learning that such “waste” is a basic note of the human condition, which in one form or another is found everywhere, in the lives of people, from the most humble to the most illustrious. , as in the life of peoples and nations. This very “mess”, which is none other than the action of conflict, of division in each person’s life, is a substance of a richness, of a depth that I have barely begun to fathom — a food that it is up to me to “eat” and assimilate.

In this way, this waste, and all other waste such as I encounter at every step, and also everything that happens to me at the turn of the road and which is so often unwelcome - this waste and other unwelcome things carry with them a blessing. If meditation has a meaning, if it has the force of renewal, it is to the extent that it allows me to receive the benefit of what (through my inveterate reflexes) presents itself as “evil”, where it allows me to feed on what seems designed to destroy.

(*) (June 16) This second aspect only appeared to me during the reflection on *The Funeral*. If I have seen a prestigious mathematician make use of the “power to discourage”, it is in the very man who once seemed to me to be my designated heir. While writing the section “*The Power to Discourage*,” I had thought about it a lot (before the thought came back to me), but without yet having the slightest suspicion (at least not on a conscious level) of the extent to which this power had found the opportunity to practice among those very people for whom he must have stood out (as for me not long ago) as a model of the perfect mathematician...

Feeding on one's experience, letting oneself be renewed by it instead of constantly avoiding it - that's taking full responsibility for one's life. I have this power within me, free to use it at any moment, or to leave it behind. It is the same for my friend Pierre, and for each of those who were my students - free like me to feed on the "mess" which I am finishing to go around in these last days of a long meditation. And it is also the same for the reader who reads these lines, intended for him.

(91) (May 19) The echoes that have reached me here and there about my students of yesteryear have been more than sparse. Almost none wanted to give me any sign of life after my departure, even if only by sending separate prints (*). However, by putting together the little that has reached me, I can form an idea, a very approximate one it is true. It will perhaps become clearer in the months that follow, if this reflection encourages some of them to come forward.

I have already had the opportunity to note the profound rupture in Deligne's work after my departure, while in certain ways he appears, against his will, as a successor, therefore as part of a certain continuity. And I had the feeling that this rupture must have had profound repercussions in the work of all my other students. It is this impression that I would like to understand a little more closely.

The only one of these students whose work seems to be an obvious extension (at least at first glance) of the work he had done with me seems to be Berthelot(**). He is also the only one who for a long time sent me numerous separate prints — perhaps even all his separate prints. They all relate to the difficult subject of crystal cohomology, the systematic start of which is the subject of his thesis. However, it seems to me that, just as for my other "cohomologist" (commutative) students, his work is marked by the disaffection of some of the main ideas that I had introduced: derived categories (and triangulated categories, identified by Verdier), formalism of the six operations, topos (911).

As Zoghman Mebkhout himself says, his own work, so close in theme to that of Berthelot (912), is in line with these ideas, joined to the ideas of the school of

(*) (May 31) See on this subject note n° 841, following the note "The silence" (n° 84).

(**) According to the theme of duality that Verdier pursued for a few years after my departure, in the context of analytical spaces close to that in which I had developed it, there is an impression of continuity as in the case of Berthelot. But it seems to me that this was a bit of a "routine continuity", whereas the one for which I am mainly looking for signs (or the absence of signs) is a creative continuity, continuing an initial impulse into the unknown...

Sato. If they had not been repudiated by my cohomologist students, Deligne and Verdier in the lead, there is a chance that from the very beginning of the seventies, Mebkhout's crystal theory (which he only began to develop from 1975 and against the disinterest of these same students) would have already reached the full maturity of a formalism of the six operations, which it has still not reached today (*).

I also remember talking to Verdier about the question, which intrigued me, of the link between discrete constructible coefficients and continuous coefficients, without it seeming to catch his attention. This must have subsequently stuck with Deligne, since he dedicated a one-year seminar (in 1969) to establish a dictionary, which was not to satisfy him, since he subsequently abandoned it to profit and loss. (See note "The unknown service and the theorem of the good Lord", n° 48.) Moreover, he was then so "blocked" by his burial syndrome that he did not perceive the importance of Mebkhout's work until October 1980 - and when he finally realized it, he it is in the trenching dispositions that we know (see notes n° s 75 to 76).

As far as I know, Verdier's work since his thesis defense has essentially been limited to redoing in the analytical context (which sometimes presents additional technical difficulties) what I had done in the context coherent schematic, without introducing a new idea. It is even quite extraordinary, with the reflexes that he was supposed to have developed and as well informed as he was, that he himself did not come across Mebkhout's theory, by dint of turning his crank - and that he did not know how to at least recognize that his "student" was doing things that were interesting, and which had escaped him (as they had escaped Deligne).

To tell the truth, while being intrigued by the question of the relationships between discrete coefficients and continuous coefficients, I had not really had any suspicion of Mebkhout's crystal theory, which would emerge in the decade following my departure. On the other hand, there was

(*) (June 7) I had a hesitation in hazarding this assessment, which could be interpreted as undermining the originality of Mebkhout's theory. This would in no way conform to my thinking, and all the less so since I have an excellent opinion of the means of each of my cohomologist students (when these are not blocked by prejudices foreign to mathematical common sense). My friend Zoghman himself dispelled any scruples I might have had, saying he himself was convinced that "normally", it was my students who should have developed his theory from the very beginning of the 1970s. At a certain level, they are also all the first to be convinced of it, surely: it is they, or Deligne, who should have been the author - and the general deterioration of morals helping, it does not take more to behave as if they were (or as if Deligne was) indeed! On this subject, see the notes "The Colloquy" and "Mystification", nos . 75 and 85

a vast theme, arising from my reflections on both commutative and non-commutative cohomology in the 1950s (1955–1960), and which was just beginning (in the “commutative” context, i.e. in terms of additive categories) in the work of Verdier, started at the beginning of the sixties and left behind after his defense (see note n° 81). The non-commutative aspect was initiated later in Giraud's thesis, which developed a geometric language, in terms of 1-fields on a topos, for non-commutative cohomology in dimension ≤ 2 . From the second half of the sixties, the insufficiency of these two beginnings was very obvious: both by the insufficiency of the notion of “triangulated category” (discovered by Verdier) to account for the richness of structure associated with a derived category (notion called to be replaced by the considerably richer notion of derivator), than by the need to develop a geometric language for a non-commutative cohomology in any dimensions, in terms of n -fields and $\tilde{y}$ -fields on a topos. We felt (or I felt) the need for a synthesis of these two approaches, which would serve as a common conceptual foundation for homological algebra and homotopic algebra.

Such work was also in direct continuity with Illusie's thesis work, in which both aspects are represented.

Via the notion of derivative (valid in a non-commutative as well as a commutative framework), the fundamental work of Bousfield–Kan on homotopic limits (Lecture Notes n° 304), published in 1972, was also placed in the thread of this diffuse program, which since at least 1967 only required hands to be developed. In January last year, without yet suspecting that I was going to launch into *La Pursuit des Champs* a month later, I submitted to Illusie some thoughts on the “integration” of homotopy types (which is familiar to homotopists under the name of “homotopic (inductive) limits”), at a time when I was still completely unaware of the existence of the work of Bousfield and Kan, and this type of operation had already been examined by other than me. It appeared that Illusie was equally unaware of him, even though he was supposed to have remained in homotopic waters for the entire time since my “death” in 1970! This shows the extent to which he seems to have lost contact with certain realities which fit quite naturally into a reflection of foundations, in line with that which he himself had pursued in the sixties (*). He must have made his own little hole, from which he hardly ever comes out...

(*) This notion of “integration” of homotopy types imposed itself on me again, in the context of unscrewing stratified structures, which I took up again at the end of

With the disdain that has befallen the very notion of topos and all the “categorical nonsense”, it is not surprising that Giraud now has a total disaffection for what had been his first major working theme. It is true that Deligne, with the exhumation of the patterns two years ago, pretended to suddenly discover the interest of the arsenal of non-commutative cohomology, sheaves, links and the like, as if it came to him -even introduce them, at the same time as the motifs and motivic Galois groups (*). It is doubtful that this kind of circus will reignite a flame that he himself tried so hard to extinguish... I sent Giraud, in February last year, a copy of the letter from 'around twenty pages, which became chapter 1 opening the Pursuit of the Fields. It is a reflection in no way technical, during which I managed to “jump with both feet” above the “purgatory” which had in the time stopped Giraud (and many others) from handling the notion of n-category “non-strict” (which I now call “n-field”), which remained heuristic and yet was visibly fundamental. This was the start of the Pursuit of the Champs. When we met (in mutually friendly arrangements) last December for Contou-Carrere's thesis defense, I learned from Giraud that he had not just had the curiosity to read this letter! I had the impression that he had made a big deal about this sort of thing. The idea that there might be a rich substance, in a direction he had long since abandoned, did not seem to even occur to him. I tried, without success I fear, to make him understand that there is juicy work and vast dimensions that had been waiting for almost twenty years to be done, and to which I ended up tackling on my old days, to at least give a broad outline, under the dictation of the things themselves, of a rich substance that the “deceased” that I am continues to feel with force, while my students have long forgotten.

Jouanolou also abandoned a direction of research that he had only just begun with his thesis. This direction had become the object of disdain for a fashion established by the very man who had provided him with a key technical idea for the theme he had chosen. With the “rush” on the categories triangulated with the Colloquy Pervers three years ago, this same Deligne suddenly pretends (without laughing) to discover the big work of foundations in perspective, the lack of which is suddenly felt by everyone the ends, and whom he had been the first to discourage in ten years. The need for such work was very obvious to me from the year 1963/64 with the beginnings of equate cohomology; and for Deligne just as much,

(*) See “Memory of a dream... — or the birth of motives”, note n° 51.

from the moment he started hearing about ℓ -adic cohomology and triangulated categories, that is to say when he arrived at my seminar the following year. It was, beyond the construction of “constructible triangulated categories” on the ring $\mathbb{Z}$ (above a basic diagram, let's say), and the development of the formalism of “six operations” in this framework (something accomplished, it seems to me, in Jouanolou's thesis), to do an analogous work by replacing the base ring $\mathbb{Z}$ by an arbitrary (more or less?) Noetherian $\mathbb{Z}$ -algebra, for example $\mathbb{Q}$ or an extension (algebraic?) of $\mathbb{Q}$. This is one of the things for which the time has been ripe for twenty years, and which is still waiting to be done, when the wind of contempt which has blown over them has calmed down...

The natural continuation of Ms. Raynaud's work (weak Lefschetz theorems in equal cohomology, in terms of ℓ -fields) would have been placed in a strictly taboo ℓ -field context, let's not talk about it! The same goes for Ms. Sinh's work, begun in 1968 and completed only in 1975 — a natural continuation would have been the notion of

ℓ -Picard category enveloping a so-called “monomial” category, or tri-angulated variants of such a category (*) — let's not think about it! Another was to transpose his work in terms of fields on a topos — what a horror! As for Monique Hakim, she also had the misfortune of doing her thesis on a subject which, in the times since my untimely departure, is a little ridiculous around the edges - relative diagrams on a locally ringed topos, I'm asking you a little! His little book on the subject, published in Grundlehren (Springer) must sell three or four copies per year - it is not surprising that I have a bad press in this house, and that they are not no longer very keen to accept a text that I could recommend to them. For me, it was a first test step for a “relativization” of all the “absolute” notions of “varieties” (algebraic, analytical, etc.) on general “bases”, which the need is for me obvious (913). We would say that we have done very well without it until today. But it is also true that we have done very well without doing math for the two million years that we have been here. Still, Monique Hakim, who did not have the same motivations to write her thesis as I did to propose it to her, surely had no inclination to keep any contact with a theme which (detached from the context of a consensus favorable, or of an obstinate thought pursuing against all odds a tenacious and sure vision) can no longer have the slightest meaning for her.

For Neantro Saavedra Rivano, it seems to have completely disappeared from circulation — I

(*) As an approach towards K invariants of these categories, which I had imagined around 1967...

cannot find a trace of his name even in the world directory (and all that is official) of mathematicians. What is certain is that his somewhat very categorical thesis subject could hardly have had good press with the gentlemen who decide what is serious and what is not. The most natural continuation of this thesis, in my opinion, would have been nothing more and nothing less than this “vast table of motifs”, a theme decidedly a little vast for the more modest aims of this student. However, he ended up having the unexpected honor of seeing his thesis redone ab ovo and in toto by one of these great gentlemen himself, barely two years ago. (See on this subject the notes “The Burial — or the New Father” and “The Clean Slate”, nos . 52 and 67.)

The only ones ultimately among my twelve students “before 1970” for whom it is not too clear to me whether or not there was in their work a more or less drastic or profound break, compared to that which they had continued to my contact, are Michel Demazure and Michel Raynaud (914). All I know is that they continued to do math, and that they are part (as was to be expected, given their brilliant means) of what I earlier called “the great mathematical world.

The short reflection which precedes, based on sometimes very sparse data, is of course largely hypothetical, and very approximate. I hope that those who are mentioned there will be kind enough to forgive me for perhaps gross errors of assessment, which I will be happy to rectify if they are willing to let me know. Here again, I realize that everyone's case is surely different from that of everyone else, and represents a reality much more complex than what a person as distant as me can reasonably comprehend, let alone express in words. some lines. All these reservations made, I nevertheless have the impression that this reflection was not useless, for me at least, in order to define somewhat by a few concrete facts a still diffuse impression which had emerged yesterday (and which was undoubtedly present at an unformulated level for many years): that of a rupture which occurred among many of my students in the aftermath of my departure, and which would reflect at the level of the person the sudden disappearance, from day to day. next day, of a “school” of which they must have felt part during crucial years of training in their profession as mathematicians.

(911) (May 22) I have just read a survey article from the Colloquium “P-adic analysis and its applications” of the CIRM, Luminy (September 6–10, 1982), by P. Berthelot,

entitled “Rigid geometry and cohomology of algebraic varieties of char. p ” (24 pages), which outlines the main ideas for a synthesis of Dwork—Monsky—cohomology Washnitzer and crystal cohomology. The initial ideas (and the very name) of the crystal cohomology (inspired by that of Monsky—Washnitzer), and that of completing these, through the introduction of sites formed of rigid-analytical spaces, ideas that I had introduced in the sixties, have become the daily bread for all those who work in the subject, starting with Berthelot, whose thesis consisted of developing and fleshing out some of these initial ideas. This does not prevent my name from being strictly absent as well, both from the text itself and from the bibliography. Here is a fourth clearly identified student-undertaker. Who's next ?

(June 7) It is a remarkable thing that more than fifteen years after the introduction by me ideas for starting crystal cohomology, and more than ten years after the thesis of Berthelot who established that the theory was indeed “the right one” for clean diagrams and smooth, we still have not reached what I call a situation of “control” of the crystalline cohomology, comparable to that developed for étale cohomology in the SGA 4 and 5 seminar. By “mastery” (at first level) of a cohomological formalism including phenomena of duality, I mean neither more nor less than the full possession of a formalism of the six operations. While I am not “in the know” enough to be able to appreciate the difficulties specific to the crystalline context, I would not be surprised if the reason main reason for this relative stagnation is in the disaffection of Berthelot and others for the very idea of this formalism, which makes them neglect (just as Deligne does for his Hodge theory, which remained in its infancy) the first essential “level” to reach in order to have of a fully “adult” cohomological formalism. These are the same type of provisions surely which made him also misunderstand the interest of Mebkhout's point of view for his own research.

NB When I speak here of “crystalline cohomology” in a context where we abandon hypotheses of cleanliness (as is necessary for a “fully adult”), it is understood that we are working with a crystalline site whose objects are “thickenings” (with divided powers) which are not purely infinitesimal, but are topological al-gebras (with divided powers) “suitable”. The need for such an extension of primitive crystalline site (which for me was only a first approximation for the “good” crystal theory) was clear to me from the start, and Berthelot learned it (with the ideas of

departure) by none other than me. A written allusion to this link is found in *Esquisse Thématique*, 5 e.

(912) It is a rather extraordinary thing that no one except me seems to have realized that the theory of Mebkhout-unnamed was a new essential part of a crystal theory. I, who have completely “dropped out” of cohomology for almost fifteen years, nevertheless realized it, as soon as Mebkhout last year took the trouble to explain to me as best he could what he had done. The fact remains that when I mentioned the thing (as a matter of course) to Illusie, he seemed to see a somewhat “off-the-wall” connection of things (modules and crystals) which really had nothing to do with each other. However, I know first-hand that he has a mathematician's flair, and so do my other students (cohomologists in this case, starting with Deligne) — but I notice that in certain situations, it is no longer of any use to them. The more I think about it, the more I find it extraordinary that in such an atmosphere, Mebkhout still managed to do his work, without letting his own mathematical flair be defused by the total incomprehension of his elders, so far above him. ...

(913) It is especially since my presentations at the Cartan Seminar on the foundations of the theory of complex analytical spaces, and on the precise geometric interpretation of “modular level varieties” à la Teichmüller, towards the end of the fifties, that I understood the importance of a double generalization of the current notions of “variety” with which we have worked until now (algebraic, real or complex analytic, differentiable — or subsequently, their variants in “topology moderate”). One consists of broadening the definition so as to admit arbitrary “singularities”, and nilpotent elements in the structural bundle of “scalar functions” — on the model of my foundation work

with the notion of schema. The other extension is towards a “relativization” above suitable locally ringed topos (the “absolute” notions being obtained by taking a punctual topos as a basis). This conceptual work, matured for more than twenty-five years and initiated in Monique Hakim's thesis, is still waiting to be taken up. A particularly interesting case is that of a notion of relative rigid-analytic space, which makes it possible to consider ordinary complex analytical spaces and rigid-analytic spaces on local bodies with variable residual characteristics, such as the “fibers” of the same relative rigid-analytic space; just like the notion of relative schema (which ended up entering into

morals) makes it possible to link together algebraic varieties defined on bodies of different characteristics.

(914) While Demazure's thesis work, like that of Raynaud, essentially uses a consummate technique of diagrams that they learned through my contact, the essential ideas of their respective works are not part of the panoply. Grothendieckienne", which distinguishes their work from that of my other students from the first period. It is possible that this circumstance resulted in a continuity in their work, free from a rupture due to the effect of the "master's burial syndrome". This does not necessarily mean that this syndrome has not affected one or the other in another way. I was struck, three years ago, by Raynaud's attitude towards Contou-Carrère's work on relative local Jacobians. The results announced are profound, difficult, and beautiful, and go well beyond a simple generalization of "well-known" things. There is an unexpected connection with Cartier's theory of typical curves, magnificent explicit formulas — all entirely within Raynaud's (and mine) ropes. The freshness of his welcome must have weighed decisively in the strategic withdrawal from Contou-Carrère, abandoning to the prof-its and doors a subject in which he had invested without reserve and which, it might seem, was not going to suit him. report nothing but trouble...(*). My letter in which I expressed my (painful) surprise to him about this insensitivity to the beauty of these results, remained unanswered.

(92) When I came to settle in the region, almost four years ago, there was a beautiful cherry orchard not far from my home. Often when I was walking I would take a look there. I was pleased to see these thick cherry trees, in the prime of life, with powerful trunks, which always seemed to be one with this piece of land, where weeds proliferate freely. They must not have known about fertilizers or pesticides, and during cherry season, that's where I went to pick some that tasted good. There must have been twenty or thirty trees.

One day when I went back, I saw all the trunks cut down to eye level, the crowns sprawled on the ground next to the trunk, the stumps in the air — a vision of carnage. With a good chainsaw, it must have been done quickly, an hour to break everything. I had never seen anything like it — when you cut down a tree, you generally take the trouble to bend down, to

(*) For details, see subnote n° 951 to the note "Coffin 3 — or the Jacobians a little too relative", n° 95.

cut it close to the ground. There is the poor sale of cherries, all right, and this cherry orchard wasn't supposed to yield tons, that's understood - but these stumps of trunks said something other than poor sales and yields...

Yesterday I had this feeling again, of a vigorous trunk, with powerful roots and generous sap, with strong and multiple branches extending its momentum - cut cleanly, at human height, as if for pleasure. It was having taken the trouble to look at the main branches one by one, and seeing each one cut off, that ended up making me see what happened. What was meant to unfold, in the continuity of an impulse, of an inner necessity with deep roots, was cut clean, by a clean cut, to be designated in the eyes of all as an object of derision.

This reminds me of the "misunderstanding" that Zoghman spoke of, which allegedly took place between my students (except Deligne) and me. What is clear, in fact, is that neither momentum nor vision was communicated from me to any of my students (apart from Deligne, decidedly "apart" in fact!). Everyone has assimilated a technical background, useful (and even essential) to do a job well done on the subject they had chosen, and which could even be of use to them later. I couldn't say if there was some hint of something else, going beyond that. If there was a primer, it had no chance in any case in front of the chainsaw, which quickly cleaned it up...

I know very well that if there continue to be people who do math — and unless we completely abandon the kind of math that we have done for more than two millennia — they will not be able to stop one day or the other is to breathe new life into each of these branches that I see lying inert. There are some which have already been taken over by my friend-with-the-chainsaw, and it is quite possible, if God gives him life, that he will do the same with some others or even with all of them. However, most of them are no longer in his style at all. But perhaps he will also end up getting tired of constantly substituting himself for someone else, something that is surely very tiring and also not very profitable, to be content with being himself (which is already not bad).

X. The Funeral Van

(93) (May 21) It will be two weeks since my thoughts have focused on my “good complexion” students, those “from before”. Each day, the reflection presented itself as a “final addition”, as a matter of conscience, to a reflection which seemed (practically) finished. More than once, it was an innocuous footnote, imprudently branching off from the reflections of the day before or the day before, which grew longer and longer until it reached the dimensions of a “note ” autonomous. Each time, she quickly found her name, distinguishing her from all the others, and inserting herself into his funeral procession, in just the right place, as if she had always been there! Every two days, I was there to redo (each time with pleasure) at least the end of the table of contents, which seemed closed and which was suddenly extended by two or three new participants in the Procession, when this was a whole new procession...

This Procession ends up taking on worrying dimensions, no one will ever want to read all that! But if it extends like this, it is not, to tell the truth, for the dubious benefit of a hypothetical reader, but first and foremost for my own benefit - just like when I do math. These “last additions”, which I embark on each time as if against my will, I have never had any regrets about having embarked on them.

By dint of final additions, I learned many things that I could not have learned otherwise, without having to think “on the spot”. And these things assembled one by one into a painting of bright colors, of vast proportions and with multiple panels.

Now again, I see that it is not entirely finished — there are still two places that seem to need a final brushstroke.

It seems to me that it is time, after my “good-natured students”, to speak now also, a little, of the buried – of those who “with me are entitled to the honors of this burial through silence and disdain”. No more than me or those who bury with enthusiasm, these buried are not saints and have no vocation for martyrdom. There is not one, I believe, who was not angry with me for the trouble that I very unintentionally caused him (by the sole fact that he had been imprudent enough to bet on me, on a certain approach to mathematics and on a certain style...) — or that he at least tried to distance himself from me, once he recognized that the bet was definitely losing (*). I was also able to see that it is there

(*) (February 1985) I was aware of a total of seven or eight (short) publications, outside my Uni-

wasted effort - once spotted, it's over, and to stand out is to fuel contempt, to provide it with tacit justification, instead of disarming it. More than once and in many ways, I have seen the roles of buryer and buried coexist and merge(**). It is undoubtedly these aspects of ambiguity which are the cause of a long reluctance in me to speak of the "buried" in a slightly more detailed manner than through the allusions that I have already been able to make to them in passing. It's possible that other than perhaps Zoghman, none of the other three I know would be grateful to me for giving him an "advertisement," as if I hadn't already gotten him into enough trouble as it was.

Like many times during Harvest and Sowing, I finally get over such reluctance within myself. I tell myself that even towards people who have had to suffer because of me (by a choice they made at a given moment and where, for one reason or another, they were well off, while they were no more aware than me of the disadvantages attached to their choice) — even with regard to them my role is not to help them avoid a situation that is entirely real, in which they are involved whether they like it or not, and which surely has meaning even if it presents serious disadvantages.

Before branching off into the dark series of the four coffins of my late co-deceased and co-buried people, I should perhaps brighten up the reader with a less funereal note. First of all, in my relationships at the "local" level of the Mathematics Institute of my University, I have never experienced anything other than the good things I could say about a candidate for a position, or the fact that a candidate was one of my students (after 1970, it goes without saying), or that his work was influenced by mine, necessarily worked against him. Such an attitude of systematic boycott only characterizes the relationship of the "big world" of mathematics to me, and by extension, to those who appear to be linked to me "after 1970". This boycott has been virtually flawless in the fourteen years since I left, as far as I have been able to find out, with two modest exceptions. One concerns a student who, after a promising start, was supposed to prepare a state doctorate thesis with me on a most attractive subject, and whose application for a position as assistant professor

versity, presenting (in summary form) work done with me and inspired by me, since I was in Montpellier. My name is missing from all

of them. (**) (September 2) In different ways from one to the other, each of them at some point ended up internalizing and taking over their disdain for their work, to acquiesce in the consensus that ignores this work or classifies it as "uninteresting".

at the USTL had been rejected by the Commission of Specialists of my University. He was “drafted” at the national level, with the help of Demazure to whom I had written about this student's work (*). Furthermore, on two occasions, the journal ~~accepted~~ ^{accepted} articles from students of mine: an article “Stein factorizations and cutouts” by Jean Malgoire and Christine Voisin, and a forthcoming article by Yves Ladegaillerie, containing the result central to his 1976 thesis (See note n° 94).

Above all, I had the opportunity to already talk about Zoghman Mebkhout, and I will talk about him again here only “for the record”(**). Mebkhout began to be inspired by my work from 1974 I believe, and has continued to be inspired by it against all odds until today. I am not aware that one of my “official” students has produced a work of comparable scope - whereas that of Mebkhout nevertheless necessarily suffers from the conditions of adversity in which it had to continue. As I said in the Introduction (6), for four years Mebkhout's ideas and results have been used by everyone, while his name remains carefully hidden(***). It is a mystery to me how my friend was able to continue to do math, while experiencing disdain, then inequity as a sort of inescapable fatality — a fatality that came to him through people he knew. must have (and must still) feel as if dizzyingly above him (*), people of whom he must have heard spoken for the first time as sort of “Gods of the stadium”, at a time when he was (like

(*) At the “practical” level of a promotion or accession to a position and status, the record of my teaching activity since 1970 is reduced, in all, to two accessions to a position with status at the key, once as master-assistant and another time as assistant. By a strange irony, both times, this accession was the signal for a sudden and radical cessation of all research activity on the part of the person concerned.

(**) Apart from the Introduction (6) (The Burial), there is talk of Mebkhout in the notes “My orphans”, “The unknown man on duty and the theorem of the good Lord”, “Iniquity — or the meaning of a return”, “The Perversity”, “Meetings from beyond the grave”, “The Victim — or the two silences”, “Le Pavé et le beau monde”, “Thesis on credit and comprehensive insurance ” (notes n° s 46, 48, 75, 76, 78, 78, 80, 81).

(***) Legion are those who acted as gravediggers in this funeral, in which the entire Luminy Colloquium (June 1981) participated, apart from my cohomologist students (see the note on this subject “ My students (2): solidarity”, n° 85), those whose professional good faith is directly and seriously in question here and of whom I am aware are JL Verdier, B. Teissier, P. Deligne, AA Beilinson, J Bernstein.

(*) Of course, Zoghman Mebkhout is no more stupid than me and he is sufficiently in the know to have a precise idea of the work of each of my cohomologist students, and to realize its scope as well as its limits, without any propensity to idealize it. This does not prevent the fact that inhibitions of considerable power held him back from even having the idea that he could publicly implicate any of them, even where malevolence is patent.

myself formerly) a modest emigrant student with precarious resources. At the time of his defense in 1979, he had an assistant position in Orléans. He then did everything possible to join the CNRS, returning to the charge three times - on the third time (in October 1982) they were kind enough to finally give him a position as research manager (equivalent to that of assistant or master). -assistant at the University). This gives it, if not a statutory guarantee, at least a certain relative security.

Among the four “co-buried” mathematicians of whom I am aware, Mebkhout is the only one who continued to pursue his work against all odds, trusting his mathematical instinct without letting himself be stopped by considerations of prudence and expediency. what could a merciless fashion have inspired in him. There was in him, which is not of a combative nature, an elementary faith in his own judgment, which is also a generosity, and which (much more than the cerebral “means”) is the primary condition for doing innovative work. and deep.

The idea that I can have of his work surely remains incomplete. From what I know of the main part of his work, it seems to me that with his brilliant means, placed in an atmosphere of warm and active sympathy, he could have accomplished it, and led it towards greater maturity, in three or four years instead of ten, and in joy and not in bitterness. But three years or ten, and “maturity” or not, the remarkable thing is that the innovative work appeared, and that it could appear under such conditions.

(94) Yves Ladegaillerie began working with me in 1974. It was “by chance”, in a hollow moment at home — I then submitted to him some naive reflections on the embeddings of 1-topological complexes in surfaces , at a time when I knew nothing about surfaces (except the notion of gender), and he even less. It was a bit grothendieckerie (at home it always starts like that anyway...), and it stuck with him more or less, until the day it ended up going “tilt”, I don't really know anymore. when and why. It was perhaps at the moment when a visibly juicy question emerged, a certain key conjecture on the determination of the isotopia classes of a compact 1-complex in a compact oriented boundary surface. Right wrong? It was suspense, which lasted for six months, a year, during which Yves became aware (and immediately made me aware) of the key theorems of the theory of surfaces,

while pushing on the “foundations” parts of his work. The known results made the conjecture rather plausible, but obviously were far from the mark - while the conjecture implied crude results from Baer and Epstein, and other things still which had unusual, even suspicious, aspects. He finally managed to prove the key conjecture in the summer of 1975. It amounts, essentially, to a complete algebraic description, in terms of fundamental groups, of the set of isotopia classes of embeddings of a compact triangulable space (say) in a compact edged surface oriented (*).

From the moment Yves was “hooked”, he did his thesis in a year, a year and a half, results, writing, everything, and still to the nines. It was a brilliant thesis, less thick than most of those that had been written with me, but as substantial as any other of these eleven theses. The defense took place in May 1976.

The thesis is still not published today. Although it was not thick, it seems that it was still too thick to be publishable, among many other excellent reasons that I was given. I point out some of them in the note “We cannot stop progress” (n° 50). The story of my efforts to “place” this unfortunate thesis, one of the best that I have had the good fortune to inspire, would make a small book, which would surely be instructive but which I have decided not to write. Among the close friends of yesteryear who had such good reason to forget to take note of the results and to bury it all with their eyes closed are (in order of appearance on the scene) Norbert A. Campo, Barry Mazur, Valentin Poenaru, Pierre Deligne — not counting B. Eckmann through the Springer house (*). The central result will finally appear, nine or ten years later and reduced to the bones, in a short article

(*) The “analogous” statement in the undirected case is false — it is definitely a delicate result, “cut out” carefully from a set of equally “plausible” but nonetheless false hypotheses-conclusions ! For further comments on Ladegaillerie’s work, see Sketch of a Program, especially the beginning of par. 3.

(*) I do not know Eckmann personally, and my correspondence to have Yves’ thesis published by Lecture Notes was with Dr. Peters, in charge of LN at Springer. I think that through around fifteen volumes of the LN which were published by me (SGA in particular) or by students (theses) in the sixties, I was among those who contributed by their guarantee to credit and success without precedent of this series still in its infancy. The reason given for refusing the work I recommended (that they didn’t publish theses) was a joke.

My first experience of the New Look in terms of correspondence also dates from this episode: with a truly impressive ensemble, A. Campo, B. Mazur, V. Poenaru and Dr. Peters refrained from honoring me with a response to a second letter, when naively (I’m slow to understand...) I returned to the charge,

of Topology (shh — I have an accomplice on the Editorial Board of this estimable journal...). The rest of the work, on the one hand demonstrated things that everyone has always used without demonstration (and we certainly did without it!), on the other hand developed typical grothendieckeries, completely contrary to custom and morality. I know very well that if my friend Deligne does not take it upon himself to “discover” them loudly in the next ten years, others will not be able to help but redo them in thirty or fifty years, given that my healthy instinct tells me that these are fundamental things. They have been a precious thread in my Anabelian cogitations, and if God gives me life, I will have ample opportunity to refer to them in the part of the Mathematical Reflections developing the yoga of Anabelian algebraic geometry.

This adventure was for me a revelation, the first of its kind — the revelation of something of which I only came to fully understand with the reflection on the Burial. I have tended to forget it since then, my mind being absorbed elsewhere. Yves Ladegaillie, one of the most brilliant students I have had, understood from that moment that to be accepted in the mathematical world today, it is not enough to invest fully and do work that meets all the requirements of excellence.

Having more than one string to his bow, for seven years he devoted himself to more down-to-earth tasks and less problematic returns. He is fortunate to have held, even before his unfortunate meeting with me, a position of assistant professor, ensuring him security that his misadventure did not jeopardize. Last year a mathematical spark seemed to have been awakened again, on a theme very close to those in which I have been interested in recent years - hyperbolic geometry à la Thurston and its relations to the Teichmüller group. It is even possible that we walk a short distance together again, or that he takes his personal walk, just for pleasure, and without expecting any return other than that which mathematics itself can give. He knows well that if he expects others, it is in his interest to change his interlocutor or his traveling companion (and even his past...).

(95) My first meetings with Carlos Contou-Carrère took place in the corridors of the Institute of Math, the day after my arrival in Montpellier in 1973. He cornered me in some dark corner to pour out a flood of mathematical explanations, before

after their reluctant response which showed that they had not taken the trouble to read the results presented in the introduction to Ladegaillie's work.

even though I had time to politely excuse myself and slip away. What he poured into me pell-mell with an impressive flow went entirely over my head, without him pretending to notice it, nor to be in the least disturbed when I let him hear it. timidly. He had a pressing need for an interlocutor and I was not his only “unwilling interlocutor”. It was at another time when I was absolutely not into math. For a year or two, I would run away as soon as I saw his silhouette (easily spotted) appear at the end of a corridor. It was like that until Lyndon, who had been in Montpellier for a year as an associate professor, made me understand that Contou-Carrère had unusual means and that he was on the verge of being wrecked, not knowing how to use them. Until then, the question of whether what Contou-Carrère was pouring out on me was valid or not, and whether or not he had the means, had not even occurred to me, it was all so far away. Perhaps Lyndon's suggestion came at a time when I was beginning to take some interest in mathematical questions again. The fact remains that I then took the bit by the teeth, I asked Contou-Carrère if he would explain to me something he had done, so that I could understand it. I suspect I was the first to ask him such a thing, at least in the many years he had already been in France. It wasn't easy to make him explain something, but it was by no means impossible, and it was worth it. I quickly realized that Lyndon was not mistaken - that Contou-Carrère was full of ideas that just needed to be carefully released and developed, and that he had an immediate and very sure intuition in practically all the mathematical situations that could be submitted to him. With this speed and certainty of intuition, even in things with which he was in no way familiar, he surpassed me and impressed me - the only other student where I knew it to a comparable degree was Deligne (*) . On the other hand, he had an almost total block against writing! Incredibly, he did math without writing - God knows how he managed to do even a little of it, without even talking about communicating with others, where the “shipwreck” was total (see above).

If I had something urgent and useful to teach Contou-Carrère, it was the art of writing, or even more crudely, to make him understand that maths is done by writing it down. . I must have tried for two years, maybe three, until 76 or 77(**),

(*) I am not sure of having encountered it in other mathematicians, except in Pierre Cartier (who had greatly impressed me at a young age with this remarkable ability) and in Olivier Leroy, who will be discussed in the next note.

without being entirely sure if I really succeeded entirely. His first major work entirely written in black and white was his thesis on the Schubert cycles, defended only last December (1983)(***). Between 1978 and today our relationships have been more episodic, my role practically limited to supporting him as best I can on the numerous occasions where he found himself stuck in one way or another in his life. professional, constantly suspended from the most precarious assistant-delegate positions.

For two or three years, I had tried to provide Contou-Carrère with the bases of a precise and flexible mathematical language and some principles of systematics. With this background, and his means and wealth of ideas, he was truly spoiled for choice on what to branch out into.

Rather than starting with his own initial ideas, he branched off into the theory of relative local and global Jacobians, which I had spoken to him about as a possible thesis subject. Once I left him to his own devices, in the space of barely a year he did some very good work, part of which is announced in a note to the CRAS (951). Going to the end of this vein would have represented a few years of fascinating work which motivated him strongly, enough to learn at the same time all the finer points of the technique of diagrams. I still didn't doubt anything at that moment - it was obvious to me that Cartier, Deligne, Raynaud were all three going to give a warm welcome to the work already done, which was profound, difficult, and unexpected in several aspects. Cartier was indeed very happy to see certain old ideas take on new relevance. On the other hand, indifference from Raynaud, just like from Deligne who kept the complete manuscript in his drawers for six months, without deigning to give any sign of life (*).

(**) (June 7) Checked, it was until February 1978.

(***) It is a long work (which I have not read) where he carefully develops ideas in which I have nothing to do, giving among other things a resolution of the explicit singularities of all cycles of the "Schubert" type — something that no one was able to do before him. For once he wrote a formal essay, he was criticized for being too detailed (not to mention that his statements were too general...)! For my part, if I have a criticism to make, it would go in the opposite direction: while Contou-Carrère claims that his methods should be applied to all types of semi-simple groups and Schubert cycles, he does not did the work only in the case of the general linear group — so he did not complete the work that needs to be done on the precise question: description of the resolutions of the equivariant singularities of the universal Schubert cycles, and of the loci singulars of the said Schubert cycles. This gap seems to me to be a legacy of this "block" against work on pieces and against writing, which had for a long time been its main handicap.

(*) Contou-Carrère had nevertheless taken the lead and said nothing in his note about me, who had provided him with the departure programme. It was wasted effort — even though he added his own, there is a "style"

It was two to one — enough to feel the wind. The Jacobians a little too relative are abandoned sine die to profits and losses. The chainsaw did its job well...

This did not, however, prevent the mishaps at Contou-Carrère, a detailed account of which would make another little book, which I am willingly refusing to write. It was around this time, I believe, that for the one and only time since I left (in 1970) the institution that I had been the only one for four years (1958–62) to represent and make credible.” on the ground”, during the years when she did not yet have a roof of her own — it was the only time I took it upon myself to recommend someone for an invitation (for a year in 'occurrence), at a time when Contou-Carrère risked finding himself without a job and on the street. I knew that the one I was recommending, just as unknown as Hironaka, Artin or Deligne had once been when I warmly welcomed them to IHES, would do honor like them to the institution which welcomed him. Of course, I didn't fail to say it. Fortunately for Contou-Carrère, his position as delegated assistant (certainly unworthy of the honor of an invitation to such a select institution) was finally renewed (*).

I was not so surprised by this episode, already knowing Deligne's dispositions, and seeing that Nico Kuiper had warned me that everything depended on him in this particular case. (The idea did not even occur to me to suggest to him that the thing could perhaps also concern the other members of the Scientific Council, given the specific case...) The episode which made me the most strongly affected on the other hand, among all the misadventures of Contou-Carrère (my “protege”, as Verdier decided to call him in a letter, as a matter of course...), took place in October 1981, about his application for a teaching position in Perpignan. The colleagues in Perpignan (where he had his position as delegated assistant) surely appreciated the presence among them of someone who was comfortable and who could be

which does not deceive, attached, whether we like it or not, to certain themes, which it is better to avoid if we want to make a career in mathematics today.

(June 7) Information taken from the person concerned, I note that I am confusing here two different episodes around the work of Contou-Carrère on the Jacobians. See the following note (n° 951) for details and precise references.

(*) I have no reason to complain, since five or six years later, on the occasion of the twenty-five anniversary jubilee of the IHES last year, I was indeed given the honor, to me, of an invitation, and I was even given the choice between the solemn reception with speech from the minister, or a subsequent stay of one week at the IHES. and all expenses still paid (I was assured). I told my old friend Nico Kuiper that it was very nice of you to think of me like that, but that I didn't travel anymore at my age...

consult in practically all branches of mathematics. During a teaching vacancy, they put him as the only candidate for the position - something more than rare, which clearly missed the fact that it was him and no one else that they wanted to see in this position. CC had relatively few publications apart from his doctoral thesis spent in Argentina with Santalo, they were mainly notes to the CRAS, announcing results (some of which were profound), but without demonstration. No one had yet suggested to him that in these times and as long as one is not settled, it is better to have articles with complete demonstrations as "conviction documents" — something that I had told him quite often on my side, but from a less utilitarian point of view(**). Still, Contou-Carrere's application was deemed inadmissible by the University Consultative Committee and the file returned. The thing that blew me away then was that neither the President of the CCU (the national body which made the decision), on behalf of the Committee, nor any of the members personally, had this minimum respect to write, either to the main interested party Contou-Carrere himself, or at least to the director of the Institute of Mathematics of Perpignan, to give a few words of explanation on the meaning of this vote, which absence of any explanation could only be received as a scathing disavowal of the choice of the colleagues from Perpignan, and as a disavowal of their only candidate as capable of honorably filling the position for which he was proposed. There were three of my former students on the Council, two of whom knew Contou-Carrère personally. Of course they knew that he had been my student just like them, especially since the file included a particularly laudatory report from me on the candidate's work. None of them, nor any of the other members of the Council, thought of the affront represented by this slash vote without further ado, and of the regular torpedoing of a mathematician as honorable as any of them.

It was this incident which, for the first time in my life as a mathematician, made me feel this "breath" of which I spoke more than once during my reflection. I had felt it already four

(**) The year before Contou-Carrère had been a candidate for a teaching position in Rennes, where he knew Berthelot and Larry Breen. Her application was then considered admissible by the CCU, but the position was awarded to another candidate. No one bothered to warn the person concerned that if he wanted to have a chance of getting a position, he would have to publish detailed demonstrations of the results he announced. The disavowal by the CCU the following year came as a total surprise for Contou-Carrere as well as for his colleagues in Perpignan and for me. With hindsight and in the light of this reflection, I doubt that the situation has really changed with the writing of his thesis (already declared "unpublishable" as it is) and his defense, and that he have a chance of finding a teaching position in France.

years before, with the episode of the strangers (*), but it was not inside the world which had been mine, blowing on one of theirs - on someone who without any reservation identified himself to this world. I felt sick for weeks, maybe months. To free myself from an anguish which then gripped me without me bothering to take note of it (*), I became agitated, writing letters here and there, and a text of around thirty pages "The Brain and Contempt", in a vein of black humor, which I finally gave up publishing(**). Looking back, I realize that it was the right time or never to meditate on the meaning of what was happening. The funny thing is that what "prevented" me from even realizing the need for in-depth meditation was a long meditation in which I was then engaged and which I had occasion to talk(***) — and a meditation, what's more, on my relationship to mathematics (if not on my past as a mathematician)! She was troubled by an episode where life challenged me forcefully — and where I evaded the challenge by becoming agitated, then plunging back into "meditation". I realize with hindsight that this "meditation" did not fully deserve this name, that it lacked an essential dimension of true meditation: attention to my own person at the very moment. I then "meditated" on the meaning of certain more or less remote events, while ignoring a repressed anxiety (perfectly controlled it is true following a long habit of such control), a sign of my refusal to take note of the message that this challenged "breath" brought me.

But I'm straying from my point. The torpedoing, of course, had the effect it could not fail to have. The colleagues from Perpignan were called to order once, that was enough. Apparently, there is no longer even a delegated assistant position with them, at least not for Contou-Carrère. He found a replacement at the last minute in Montpellier, for the current year, whose holder will return next year.

(*) See on this subject the section "My farewells — or the strangers", s. 24.

(*) I became aware of this anxiety only during a long period of meditation the following year, where I discovered the role of anxiety in my life, whose presence (chronic until in 1976, and occasionally after 1976) had been "the world's best kept secret" for my entire life. There were very effective mechanisms that evaded all the generally recognized signs of anxiety, which remained unknown to both myself and those close to me.

(**) I was discouraged from publishing it by the very people for whom I was preparing to go to war, to whom I had had the good sense to show my text before any attempt to make it public.

(***) See on this subject "The spoilsport boss — or the pressure cooker", s. 43.

I'm not too worried about its future though, it's been a while since Contou-Carrère had the wisdom to take the lead in the twists of fate, and connected with computing. With his brilliant means, he must dominate the subject from above for a long time, while doing the math he loves in his spare time. He is a father of family with two children, and maths in these times and with the past which sticks afterwards, it's decidedly hazardous, not to say violent. He has every interest in making a brilliant career as a computer scientist, where no one will hold it against him for having been my student A tiny bit.

(951) (June 7) It was towards the end of 77 that I submitted to Contou-Carrère a detailed work plan for a theory of relative local and global Jacobians, including, in the local case, the suggestion of "revisiting" the Jacobian and the ind-group of Cartier, to find a "complete" Jacobian having a more beautiful universal property, and which would be "autod-uale". I had no idea of a demonstration to offer, and no longer bothered with its work after February 78, having realized that my presence inhibited his abilities, instead to stimulate them. He actually managed to "start" in the year that followed, and his first note "The generalized Jacobian of a relative curve, construction of ^{And} universal property factorization" (concerning the overall case) appeared on 16.7.1979 (CRAS t. 289, Series A – 203).

The following month he found the decisive results for the local Jacobian, but did not publish nothing about it for a year and a half, where he published "half" (universal property of ordinary local relative Jacobian, not screwed back with the Cartier group), in a note to the CRAS of March 2, 1981, under the name (not very convincing at first glance) "Body of relative geometric local classes" (CRAS t. 292, Series I – 481). As for the theory of the complete local Jacobian, much more interesting in my opinion, there is a project note to the CRAS, which was never published, under the title: . Of "Local Jacobian, group of bivectors Witt universal et tame symbol" course, I was informed as early as 1979 of its results, that is to say a complete realization of the provisional program that I had proposed, for which considerable technical difficulties had to be overcome, requiring a lot of imagination and technical power. I have no knowledge (except error) than the first note, and I was surprised that he did not publish the rest, ie the local part, without him ever explaining it clearly - but he was visibly disappointed by the reception made at that first note. After the failure of his candidacy for Rennes in 1980, and given that my

letter of support attached to his application file reported remarkable results on global and local relative Jacobians, he must still have judged it prudent (to prepare his application the following year in Perpignan) to publish at least one more note on the local Jacobians, otherwise empty all your bags. It was two months later again, in May 81, that he sent the draft of his third note to Deligne and Raynaud (undoubtedly Cartier must have been aware of it for a long time), to first probe some ground I suppose. (I do not believe that he would have had the slightest difficulty in having this third note presented by Cartan, at any time since August 1979 when he had the results in hand.) Neither Raynaud nor Deligne give him any sign of life — but in March 1982 Deligne sent him the manuscript of an article dedicated to Deligne, by Kazuya Kato, who makes the Contou-Carrère theory in the case of a basic body, and conjectures its validity on any basic ring. Contou-Carrère spoke to me about it then, saying he was convinced that Deligne had communicated his results (without naming him, or even giving any indications of demonstration) to K. Kato. At the time the thing seemed so incredible to me that I didn't take Contou-Carrère seriously — whereas now I realize that it would be entirely in the style of “thumb!” usual from my brilliant friend Deligne. Contou-Carrère seemed truly outraged that someone would “allow himself to speculate” on something that he seemed to regard as some sort of private property. Yet he himself got his conjectures from me, without believing it necessary to allude to my person in any of the three notes (*)! From him to me it must have seemed self-evident to him, whereas the simple presumption of the same move which would be made to him by Deligne outraged him, but without him daring to say a word about it. interested. (I strongly advised him to explain himself to him, which he was careful not to do...)

He must have, in a way, forced himself during all these years, I imagine, not to publish very good results, in which he had to invest himself fully while producing them.

If he used violence in this way, it was out of concern for a situation that was clearly not favorable to this kind of grothendieckery. He was quite surprised these last days to receive a letter from the same Deligne, wondering (casually!) that he had not published his note on the “total” Jacobiniennes, and asking him everything he has on the subject and even on others. Zoghman Mebkhout had already told me a few days before that Deligne was using these things

(*) Concerning a certain role of collusion that I often played in this type of situation with certain of my students, see the note “Ambiguity”, n° 63

and that he had even named Contou-Carrère in this context. It would seem that the time is ripe for Contou-Carrère to finally recognize a child of his own, whom he had the prudence to bury almost five years ago. Perhaps, who knows, the time has come for a reconciliation of the two "enemy students"; of these two most brilliant among my students, one a medal-winning academician and the other a delegated assistant, and yet (whether they reconcile or not) have been two brothers for a long time.

(96) (May 22) I would hardly be exaggerating if I claim that I have never seen Olivier Leroy. What is certain is that from the moment he heard about me, he decided to avoid me like the plague. His reasons, I admit, escape me. Perhaps an instinct told him that I was only going to get him into trouble, perhaps also that Contou-Carrère (who for a long time was very friendly with him) whispered it to him - I don't we may never know. I still had the honor and pleasure of two substantial conversations with Leroy, which I remember very well.

The first time must have been in 76, 77, we went to see him at his house, Contou-Carrère and I, without warning, just to discuss maths a little - I don't know if we had some ulterior motive in mind. Perhaps it was understood that Olivier was thinking of embarking on a post- graduate doctorate, and I certainly had my sleeves full of subjects. Having seen him once or twice at Contou-Carrère, and from what Contou-Carrère himself let me understand, I had the impression that Olivier must have a quick understanding, and not just in math. . This evening for three was memorable. I had to quickly talk to Olivier about a program for a theory of the fundamental group of a topos and van Kampen type theorems in the toposic framework, and he seemed interested. He must have had a little exposure to toposics through the algebraic geometry seminar at Contou-Carrère, and he seemed interested in having an opportunity to "get his hands on" the language of topos on an example of concrete theory. For a good two or three hours, I had to pour out on him a detailed explanation of the theory that I saw to be developed, which was fleshed out as I spoke about it, and which arose within me a host of concrete situations of algebraic geometry and topology — situations that had to be expressed in the toposical framework, and that each time I first had to "remind" someone who heard about them for the first time. More than once in the evening, Contou-Carrère (who has read everything or almost everything and who has a strong stomach) had a vague and drooping eye,

even for him it was a lot at once — and more than once I thought it prudent to ask Olivier if it wasn't better to stop for today and start again another day. I could have spared myself this trouble - obviously Olivier was fresh and alert, bright-eyed and perfectly at ease, I even laughed about it, it was so unbelievable that he wouldn't break down, but not at all SO ! He was a young guy of perhaps twenty years old, who must have had just a taste of diagrams, a little topology and topos, he had still handled quite a bit of infinite discrete groups I think... It was three times nothing, to be honest, and with that he still managed to fill in all the blanks and to effortlessly “feel” what I, an old veteran, was telling him at full speed in two or three hours on the basis of fifteen years of familiarity with the subject.

I had never encountered anything like it, or at most at Deligne, and perhaps at Cartier, who had also been quite extraordinary in that line, when he was young.

The fact remains that it was obviously awarded, Olivier was going to do his 3^y cycle thesis on the subject in question. He must not have suspected, however, what awaited him at the end. Still, during the two years he worked and even beyond, I never saw him again. His official boss was Contou-Carrère, all right, but I would have been happy to have the opportunity to chat with such a hip guy. In fact, I was not even informed of the defense, and do not believe I ever received a copy of this thesis - but I remember having held a copy in the hands of someone who had been entitled to it (*).

I cannot say whether the defense was done before or after the “sinking” of the grade at the CRAS.

(*) All this secrecy is all the more unusual since I was surely, with Contou-Carrère, the only person in all of Languedoc who could understand anything about the work that Olivier Leroy had done. Needless to say, I never had Leroy's draft CRAS note in my hands either. Perhaps I am deluding myself, but it seems to me that if I had not been sidelined in such a drastic way that it was practically impossible for me to intervene, I would still have found a way to do publish this unfortunate note, via Cartan or Serre if necessary, who are not connected, but who would have trusted me if I guaranteed them the seriousness of the work.

(June 7) I must have learned long after that Leroy had completed his thesis, and been too busy on my part to think of wondering how it was that I had not even been informed of it. It only “tilted” after the thesis defense of Contou-Carrère himself, of which I was supposed to have been the thesis director(s). He found a way so that, alone among the members of the jury, I was not entitled to the definitive and official copy of his thesis! I finally just received a copy today — he had thought (he wrote) that I “wasn't interested” in having one...

(x) More precisely, for a year or two CC had cautiously played on two “directors” at the same time (you never knew...), each of them unaware of the existence of a “parallel” director. I was informed of the role

where Olivier summarized his work. I talk about this flow, in quite detailed terms but without naming anyone, in the section “The note — or the new ethics (1)” (s. 33). The two mathematicians who took care of this casting are Pierre Cartier (the same one whose astonishing speed of intuition came back to me when speaking of that of his young non-colleague, whom Cartier cast so kindly and with all regrets of the world), and the other was Pierre Dèlignè, with his historic remark that this mathematics “did not amuse him”. (They nevertheless “entertained” him at a young age...) I should add Contou-Carrère himself, who did not raise a finger to defend his student - this exposed him to the risk of displeasing the powerful men. He must have suggested to Olivier Leroy that it was better to forget the episode of his unfortunate thesis. What is clear in any case is that Leroy has indeed made a big mark on this episode - even if the possibility were to arise of publishing, not only a note to the CRAS, but even his entire work, I very doubt that he would use it (*). This time again, the chainsaw did its job well(**).

as director of Verdier at the last minute, when CC finally fell back on me in the spring of 1983, when it became clear that Verdier definitely wanted his life!

(*) An eloquent sign of this “big trait”: in Olivier Leroy's application file for an assistant position in Montpellier, presented during a vacancy two years ago, Leroy does not mention the title of his postgraduate thesis, nor the name of Contou-Carrère who had been his boss. It also makes no mention of any personal work whatsoever. Obviously, he was undecided then whether he wanted this position or not — which meant that, despite his impressive gifts, this position was awarded to another candidate, who had a solid file and for whom there was no doubt about his intentions.

(**) Interesting coincidence, I recently heard that Cartier had taken the time to dedicate one of these Bourbaki talks to me (this is the first time I think such a thing has happened to me), and that moreover, this presentation was devoted precisely to the theory of topos - these same topos, judged by this same Cartier unworthy of appearing in a note to the CRAS. A sign of a change in fashion trends in recent years? Certainly not, and everything still holds together: the presentation in question concerned the use of topos in logic!

The touching dedication of my friend Cartier seems to me to be in the same vein as the Eulogy pronounced last year on a great occasion (see the note “The Funeral Eulogy — or the compliments”, n° 104), where the word “topos” is pronounced (among other well-deserved compliments) to hasten to immediately add (as a unique and eloquent comment) that they are “used today in logic” — and nowhere else, is it? I need to say it, at least as long as my friends lavish with compliments can prevent it, by the power that is in their hands... (Reference of Cartier's presentation: Bourbaki Seminar n° 513, Feb. 1978). (June 23) I sense, in the attitude of Categories, logic And beams, set theory models . condescension (and boycott...) of certain

people (such as Deligne, Cartier, Quillen, among those who set the tone...), towards innovative notions and profound like that of topos in geometry, a phenomenal arrogance. Even supposing that only one of these has the right stuff (or

Despite this mishap, I still had the pleasure for several months, at the beginning of 1981, of seeing Leroy regularly. It was at a micro-seminar that I was giving at the time on the algebraic-arithmetic theory of the Teichmüller tower (which is briefly discussed in the Outline of a Program). The only listeners in the literal sense of the term were Contou-Carrère and Leroy. Even for an ultra-select Parisian audience (and I know what I'm talking about), there wouldn't have been three or four in a whole room to avoid being left out. To tell the truth, if I gave this seminar, at a time when Contou-Carrère was entirely taken up with developing his ideas on Schubert's cycles, it was for Leroy, thinking that perhaps he would stick to a subject so splendid. Obviously he "felt" what I was doing, but he had decided in advance (I think) that he would not "hold on". It's strange that he even bothered to come — something must have fascinated him, just as I was fascinated, and he wasn't quite sure himself what he really wanted. When I realized it wouldn't stick, I stopped the fees. I wasn't interested in continuing a monologue in front of two spectators, no matter how brilliant they were. This is also where the second and last conversation I had with Leroy took place. I don't even think I've seen him since.

There has been no real mathematical discussion between Leroy and me, apart from the one seven years ago - which explains why I know practically nothing about the work he has done, apart from his unfortunate topological work. His mishap should not have increased the confidence he had in people like me, even Contou-Carrère, or other people in the mathematical world. I heard that he was doing a seminar at the Faculty of Letters, where there is a group of friendly math people who get along well with each other. He would present ideas of combinatorial topology — a subject that has been on my mind for almost ten years. As I am discreet by nature (yes, yes!), I did not ask any questions about what he says, and I do not know if he intends it for publication. Situation-wise, he leads a most illegal existence (without however being a foreigner or in an irregular situation), doing TD (supervised work) here and there, paid (shhh...) by I don't know who

innocence...) to draw from nothingness, as I did by the introduction of flat and crystalline topos, a new topological vision of algebraic varieties (and from there, the means of a profound renewal of the algebraic geometry and arithmetic, while waiting for topology) — there is no doubt that this very attitude of contempt that he likes to cultivate in himself and to arouse in others, defuses this power of vision and renewal, for the only benefit of conceit.

secret funds and under the noses of the treasurer-payer and the Court of Auditors. I believe that he is not very decided, especially whether or not he is ultimately going to pursue a career in mathematics, and it must be an uncomfortable situation in the long run, Court of Auditors or not. I would be happy if my edifying painting of a Funeral, where he appears as the fourth coffin, could help him dispel his perplexities, this time with full knowledge of the facts.

(97) (May 24) It was against a certain reluctance in me that I ended up deciding to mention by name some of my close friends and colleagues from yesteryear, in the mathematical world, whom I was able to see the work of a "gravedigger" (or "chainsaw"), cutting short from the start the attempts made by certain mathematicians with a modest or precarious status, to take up some of my ideas and develop them according to their own logic, or only (as in the case of Yves Ladegaillerie) to follow an approach and a style which bears the mark of my influence. As I have said again and again, such reluctance to involve others, or even to name them (*) without having consulted them, was not rare during Récoltes et Semailles. In each case, I ended up examining the reluctance and understanding that it was unfounded, that its source was not delicacy but confusion, not to say pusillanimity. In all the cases (it seems to me) where I mentioned by name the acts or attitudes of others, these were in no way "confidential" in nature. They concerned the professional life of the person concerned, with the procession of repercussions which they imply in the professional life (and thus, in the life in general) of other colleagues.

(*) For example, I had such reluctance to include a note (note n° 19) in which mention would be made by name of all the students who prepared a state doctorate thesis with me and carried out to completion. This hesitation in me must have come from the reluctance in many of my students to see themselves associated with me, a reluctance that I must have perceived on an unspoken level for several years already. The only ones among my former students (with or without quotation marks) where the desire to stand out from my person had been clearly perceived by me, were Contou-Carrère (with whom I had only just discovered it), and Deligne (where the thing had already been quite clear since 1968, although I did not suspect how far this desire would take him). In the case of Deligne, my reluctance to name him as having been "more or less" a student was particularly strong, not wanting to appear to be claiming to be such a brilliant "student", whereas he - even did not want to let anything appear of this link which linked him to me and to my work. My reflection also made me understand that this link had taken on an infinitely greater significance in the life and work of my young friend than I had ever suspected.

(June 1) See regarding these deliberate remarks in me the note of March 27 (three days later) "Being apart" (n° 67).

legacies, including myself. Each of those I involve is as responsible for his actions and attitudes, and the full range of their implications (whether or not he likes to ignore them), as I am for mine. He has no reason to be offended if certain consequences of his actions come back to him in one form or another, for example that of a public “indictment”, by my intermediary in this case. If at times my language is colorful and harsh, my intention is in no way polemical, nor to offend or outrage anyone, but rather to describe facts and the way I feel them, as an incentive for everyone (and in first and foremost for each of those I involve) to examine them on their own, rather than evacuating them in one way or another (as I often did myself before the *Récoltes et Semailles* reflection). If someone who is thus challenged chooses to be offended, this is a choice that concerns them. This choice may pain me, coming from people I respect or even like, but it does not weigh on me. The reluctance I spoke of, a sign of a certain confusion in my vision of things, vanished without trace as soon as it was understood and thereby overcome.

At no time during the reflection on the Funeral did I have the feeling of some vast “plot” which would have been hatched against my work and against those who had the temerity to be inspired by it (rather than to be limit themselves to borrowing tools, not mentioning the name of the worker who had shaped them and placed them in their hands). There is no conspiracy, but there is a consensus which, in what I called “the big mathematical world”, has appeared to me to be flawless until now. This consensus, except in extremely rare exceptions, is in no way fueled by conscious “malice” towards my person or my work. In certain exceptional cases only, it was expressed by unequivocal malevolence towards one or other of the four “co-buried” mentioned in the previous notes (*). But surely such malevolence could not have proliferated in any of my students of yesteryear, and it could only be expressed without hindrance through the encouragement of the general consensus.

This consensus manifests itself, in most if not all of my former friends or former students, not by attitudes of “malice”, but by (I believe) entirely unconscious mechanisms, of a disconcerting uniformity and efficiency. without flaws, sweeping aside common sense and healthy mathematician instincts, to leave room for attitudes of rejection

(*) I only became aware of what I consider to be unequivocal acts of malice in the only cases of Deligne and Verdier.

purely automatic(**). Such automatic attitudes, I suspect, are not only evoked by myself and by those whose mathematical “smell” reminds us of it - but also towards any mathematician who does not present himself as already invested with the tacit endorsement of a certain “establishment”; either he himself is already part of it, or he appears as the “protege” (to use this expression from the pen of Verdier) of one of these. It seemed to me that among almost all mathematicians, provisions of a minimum “mathematical openness” (necessary so that this “common sense” and this “sound mathematical instinct” can come into play) do not is triggered only against someone already invested with such a guarantee.

This kind of mechanism must be practically universal, not only in the mathematical world, but in all sectors of society without exception. It goes far beyond any specific case. If (as it seems to me) an exceptional situation exists in the case of me, and of those who in the eyes of the establishment are considered “my protégés”, it is because in the past I was invested with the status “of one of them”, with the usual effect of “minimum openness” towards me and “mine”. This status was withdrawn from me due to my departure in 1970. Or more precisely, by my own choice, clearly expressed on more than one occasion in the years following my departure by my way of life until today, I have indeed stopped to be one of “them”. In fact, I myself no longer felt “one of them”, and I left a world that was common to us with no spirit of return.

(**) These attitudes of rejection, of course, never present themselves as such, even in extreme cases like those of my friend Deligne, or of Verdier. They are almost invisible at the level of conscious dispositions towards me, which (as I have already had the opportunity to say) are almost always (perhaps even always), among my friends and students of yesteryear, dispositions sympathy (which sometimes some of them try as best they can to defend themselves) and respect. Such dispositions of sympathy and respect are present, not only at the superficial level of conscious “opinions”, but even at the deeper level of real attraction (or repulsion), and of real knowledge that one has of others (independently of the images in which we try to confine it).

We are here in a typical situation of ambivalence (collective, I am almost tempted to say) where, at first glance, we “see” nothing! (Compare with the reflection in “The Enemy Father (1), (2)” (sections 29, 30), where for the first time in *Récoltes et Semailles* I address this ambivalent aspect which has marked many relationships in my life, and not only in the mathematical environment.) However, at the level of concrete manifestations (extensively examined in the Burial), the “result” of these ambivalent forces no longer has anything ambivalent, it seemed to me, but it does present itself, with “disconcerting uniformity and flawless efficiency”, like the “attitude of automatic rejection” that I am about to examine more closely.

Even today, my “return to mathematics” is in no way a return “among them”, in the establishment, but a return to mathematics itself; more precisely, a “return” to a continuous mathematical investment, and to an activity of publishing my mathematical reflections.

I am only beginning to realize to what extent my departure was felt as a sort of “desertion”, even as an “outrage” by my former friends and by my students (*). It must have been the simplest way to evacuate the meaning of my departure, the questions that it could arouse in them, by such a diffuse feeling of a wrong received, and the automatic reaction of a resentment, s 'expressing by an act of retaliation (which rarely must have been perceived as such, or even as an act, at the conscious level): since he has cut himself off from us, we cut ourselves off from him - we cease to grant him, him and “his people”, the benefit of “automatic attention” reserved “for ours” – he and his people will be entitled, like the first comers, to the rigors of automatic rejection!

The situation is further complicated (for my former friends and students) by the fact that not only was I part of the establishment, but moreover it is impossible for any of them to do their work as mathematicians, without using at every step notions, ideas, tools and results of which I am the author. I don't know if there has been, in the history of our science or of any other science, an example of such an embarrassing paradox! Seen in this light, the chainsaw effects (in no way limited to my friend Deligne) to cut off any desire to develop ideas that bear my imprint (while such a development could only increase this perplexity) now present themselves to me as driven by an implacable inner logic, as a necessity based on a certain choice already made — the choice of rejection. And it is the same with the efforts that I see made almost everywhere to conceal in complete silence the origin of these notions, ideas, tools and results which have become part of the common heritage and which we can no longer do without, which we like it or not. This “in-difference” that I thought I noticed, in the face of the very large “operations” of a Deligne pretending to claim, one by one, the authorship of a certain number of my main contributions to mathematics (or for the crumbs, generously allocating them to such

(*) Such a way of seeing and feeling things was expressed particularly eloquently by my friend Zoghman Mebkhout. It is through this desertion that I am responsible for his setbacks with the great mathematical world, he alone having found himself deprived of the “protection” and the support that those who today had previously found with me Today they like to treat him like a drag.

inseparable friend) — this is by no means indifference, but tacit approval.

Deligne is only doing what the collective unconscious of the establishment expects of him: erasing the name of the one who cut himself off from everyone, and thus resolving the intolerable paradox, by replacing real paternity with a tolerable artificial paternity. but unacceptable.

Seen in this light, the main officiant Deligne appears, no longer as the one who would have shaped a fashion in the image of the deep forces which determine his own life and his actions, but rather as the all-designated instrument (by virtue of his role “legitimate heir”) of a collective desire for flawless coherence, committed to the impossible task of erasing both my name and my personal style from contemporary mathematics.

I have little doubt that this vision of things essentially expresses the reality of things — at least at the collective level. Surely my “return”, which puts an unexpected end to a funeral which was continuing so satisfactorily for all, or (if it does not put an end to it) which at least disrupts in an unseemly and unacceptable way the progress of a ceremony which seemed settled in advance - this return will inconvenience and displease not only this or that other among the main officiants, but embarrass the entire congregation assembled for this funereal occasion! And I have no idea, of course, of the “parade” that this famous collective unconscious will invent, to evacuate the mess created by the untimely return of the late deceased, suddenly emerging (unacceptable scandal) from the cozy coffin provided for him, and pretending to officiate in his own way at his own funeral. However, I trust the congregation that it will find a way to eliminate this little additional contradiction in the mathematical structure, which is no longer close to that!

I seem to perceive quite well now, at the level of the images and attitudes of each person in particular, the reflection and the general form that the collective consensus takes, and the collective desire to erase, to bury. This is the universally used system of “two mutually contradictory tables” on which we operate simultaneously, and which I had occasion to speak of for the first time in *Récoltes et Semailles* in the case of myself. (See the section “Merit and Contempt”, s. 12.) I doubt that there is anyone who will say bluntly and clearly: “Grothendieck only did bogus mathematics, let’s not talk about it anymore and let’s get down to business.” As it stands, it would be too explicitly contrary to the axioms of the establishment, for the moment at least. In the expected evolution of things, in twenty or thirty years the question would no longer even arise, since there will no longer be any question of even pronouncing this name, forgotten by everyone for a long time.

The common tactic, individual as well as collective, is that of silence: we do not think of the deceased, not as a mathematician at least, we do not talk about him, and we do not mention him (except, when we do not can do otherwise, by the providential acronym SGA or EGA, while waiting for these references to be replaced by others from which any trace of the deceased is absent).

There are, however, occasions, undoubtedly exceptional, when complete silence becomes impracticable. One of these occasions, I imagine, will have been my application for admission to the CNRS, which must have embarrassed more than one person (*). Another will be the preliminary distribution of *Récoltes et Semailles* (*), pending its publication in volume 1 of *Réflexions Mathématiques* (if my editor does not break down and refuse to blame the entire scientific establishment combined). These are opportunities created by the unacceptable deviations of the deceased himself, inadvertently stepping out of the role assigned to him. Another occasion (perhaps more instructive for an understanding of the Burial, before its disruption by an unruly deceased) is the jubilee of the twenty-five years of the IHES, which was celebrated last year “with great pomp”. As “the first of the four IHES Fields Medals”, it would have been difficult to ignore me entirely on this solemn occasion — even if my role in giving real existence to IHES in the four heroic years of its existence. The Funeral Eulogy which was concocted in my honor, in the brochure issued on the occasion of this jubilee (brochure to which I have already had occasion to refer twice), seems to me a model of its kind - as an elegant and discreetly to resolve, to everyone's satisfaction, this “little contradiction” in contemporary mathematics...

And here I am suddenly all perked up — like the horse that begins to smell the stable! Almost two weeks ago I began reflecting on this instructive episode, in a note which immediately took the name “The Eulogy — or the Compliments”. After

(*) (May 26) I just learned today, through a phone call from Zoghman Mebkhout, that my colleagues from the National Committee at the CNRS have made an effort for me, by providing me with a “reception position ” two years. I don't know if they did it with enthusiasm - the fact remains that none of my friends on the Committee pushed the effort to the point of giving me a phone call or a little note to tell me the good news (which dates from May 15).

(September) I ended up being informed of this by a letter from the CNRS dated August 16 — it is an appointment for one year (not for two), in a research associate position.

(*) This is the distribution of a limited edition (of 150 copies) produced by my university, for the purpose of distribution among my closest colleagues and friends.

some hesitation where to place this note (from a late footnote to the first of the notes written for the Burial), it appeared that the most natural place to insert it was (not the “chronological” place, but) in the “Funeral Ceremony” which must complete the Burial. And now, without having looked for it, the “thread” that I have been following for three weeks is connected, through the last three processions “The Colloquy”, “The Student” and finally “The Funeral Van” which only comes to join the convoy, with the final part of the Funeral, namely the Funeral Ceremony; this ceremony marked above all, precisely, by this masterpiece of Eulogy which I began to examine on May 12, and which now constitutes the note following quite naturally from this one (*).

I'm finally (again?) reaching the goal! And at the same time this beginning of reflection on a Funeral Eulogy suddenly takes on a new dimension. It is no longer just the clever invention of a powerful brain in the service of a fixed idea, exerting itself in the face of the indifference or commanding attention of the distinguished guests of an official “big occasion” — but it is above all the perfect and tactfully delivered response, made on this most delicate occasion, to a collective expectation, regarding the attitude that it was appropriate to take towards my person. If anyone of his generation has deserved the unreserved recognition of the entire congregation, it is my friend Pierre Deligne, fulfilling with this flawless perfection the role expected of him.

(*) (November 1984) Following an unforeseen episode of illness, the note in question (n° 104) was separated of “this one” by a new procession — “The deceased — still not deceased” (n° s 98–103).

HARVESTING AND SOWING

Reflections and testimony
on a past as a mathematician

about

Alexandre GROTHENDIECK

Third part :

THE BURIAL (II) or The Key
to Yin and Yang

University of Science and Technology of Languedoc, Montpellier and
National Center for Scientific Research

In memory
of Claude Chevalley

HARVESTING AND SOWING (III)

THE BURIAL (2)

or

La Clef du Yin et du Yang

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Appendix to The Key to Yin and Yang: Doors to the Universe

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24. The language of images – or the way back 25. The Doors
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A) Doors and keyholes (directory)

B) The Tree

C) The Window

D) The icosahedron

XI. The deceased (still not deceased...)

(98) (September 22) The latest notes for the Burial (apart from a few footnotes) are May 24 — so that will be four months ago. The two weeks that followed, until June 10, were devoted mainly to rereading and completing or retouching here and there the notes already written, not counting a visit of a day or two from Zoghman Mebkhout, who came to read all the notes for the Funeral before I entrust it to typing, and to give me his comments. I thought that the final manuscript would be ready around the beginning of June, and that it would be typed and printed (it was still optimistic...) before the long university holidays. I really wanted to send my “five hundred page letter” to everyone before the commotion of going on vacation!

In fact, the text of the Burial is still not completed at the time of writing: as it was four months ago, the final two or three notes are still missing - plus one(*) which is there. added in the meantime: the one that I have just started with the lines that I am writing, as a quick report of what has happened in the meantime.

On June 10, a new unexpected event burst into the writing of Récoltes et Semailles, rich in unforeseen events: I fell ill! A point in my side, appearing suddenly (even though a minute before I had suspected nothing), pushed me onto my bed with peremptory force, without response. Standing or even sitting suddenly became very painful for me, only the lying position seemed suitable. It was really stupid, and especially at this moment when I was about to finish some urgent work, and we don't talk about it anymore! There is no question of typing while lying down, and even writing by hand in this position is no easy task...

It took me almost two more weeks, during which I tried as best I could to continue my work against all odds, to realize this obvious fact: my body was exhausted and demanded insistently, without me pretending to to hear, complete rest.

It was so difficult for me to hear it, because my mind remained fresh and alert, quivering to continue its momentum, as if it had an autonomous life, totally separate from that of the body. He was even so fresh and so quivering that he had the greatest difficulty in taking into account the body's need for sleep, stubbornly refusing to let go of the tasks it had to do.

(*) (September 23) In fact, it appears that this planned “note” broke up into three distinct notes (n° s 99 — 101)

he was harnessed, and constantly pushing back to the limits of exhaustion the deadline for sleep, this obstacle to going in circles!

Throughout my life and until three or four years ago, the unlimited capacity for recovery through deep and prolonged sleep had been the solid and salutary counterpart to sometimes disproportionate investments of energy: when the sleep is safe, we no longer fear anything, we can allow ourselves (without it being madness) to throw ourselves headlong and to the point of exhaustion into orgies of work - even if it means making up for it with orgies of restful sleep! This capacity which all my life had seemed self-evident to me just as much as the capacity for work, the capacity for discovery (and surely the two are intimately linked...), has ended up in recent years disappearing. , and sometimes by disappearing, for reasons that I have difficulty discerning now, and that I have not yet really made an effort to fathom. More and more, when, after a long day spent on my typewriter (or on handwritten notes) and obeying the injunctions of my body which refuses to continue, I finally resolve to go to bed, in the lying position (and the partial relief it provides from the tension of sitting) immediately rekindles reflection. It starts again with a vengeance, for hours or even for the entire night (or rather what remains of it...). Although I realize that the system is not profitable (even assuming that it is viable in the long run), given that (at least for me) prolonged reflection without the support of writing ends up turning in circles, often becoming a sort of re-chewing - the bad crease is well established, and tends to get worse. It had become, it seems to me, the great focus of energy dispersion in my life in recent years, while other dispersion mechanisms were eliminated one by one, gradually, over the years.

If this mechanism has taken root in my life with such tenacity, if I have been willing throughout these last years to pay such a price, it is surely because something in me has found its reward, and would find his account there when the time came. It would not be a luxury for me to examine the situation closely — and more than once during the past four months I have been on the verge of doing so.

This was undoubtedly an urgent task. However, I ended up understanding that there was something even more urgent. I first had to deal with what was most urgent: to reconnect broken contact with my body, to help it recover from the state of exhaustion that I ended up feeling and admitting, and to regain the vigor that had disappeared. . I understood then that for this, I had to renounce for an indefinite period all intellectual activity - even that of meditating on the

sense of what was happening to me. It is with the notes included today that this long and beneficial “parenthesis” in my major investments ends, which for a time (since February of this year) had come together in the writing of “Récoltes and Sowing”. This note is a very first reflection, or at least a sort of summary report, on the subject, ide this four-month “parenthesis”.

By the time I finally understood the need for complete rest, great fatigue had become profound exhaustion. For lack of knowing how to listen to the nevertheless peremptory language of my body, the. a few paltry pages of comments and. alterations to the Funeral, carried out in a state of physical fatigue in these first two weeks, were done at the cost of an investment of energy which, in hindsight, seems insane to me! Still, after these feats, I had to stay in bed for many weeks, only getting up a few hours a day for essential practical tasks.

Remarkably, once I finally understood the need for complete rest, I did not experience the slightest difficulty in completely withdrawing from all intellectual activity, without any desire to “cheat”. I didn't even have to make a decision strictly speaking — just by having understood, I had already decided. The tasks that had kept me in suspense the day before suddenly seemed very distant, as if belonging to a very remote past...

The present was not empty, however. While for weeks and months sleep was reluctant to come, and I lay for long hours, seemingly in total inaction, I do not once remember finding the time long. I re-acquainted myself with my body, and also with the most immediate environment - my room, or sometimes the piece of grass or dry grass bathed in sunlight right before my eyes, where by chance I had been lying down, near the house or during a short (and careful...) walk. I spent long moments following the dance of a fly in a ray of sunlight, or the wanderings of an ant or tiny translucent green or pink creatures along endless blades of grass, in tangled forests. such strands tangled before my eyes. These are also the dispositions where, thanks to silence and a state of great fatigue, we follow with solicitude the hesitant wanderings of the slightest wind through our guts - the dispositions in short where we regain contact with elementary things and essential; those where we know how to fully measure all the benefits of a

restful sleep, or even the wonder of just peeing without a problem!

The humble functioning of the body is an extraordinary marvel, of which we become aware only a little (sometimes reluctantly) only when this functioning is disrupted in one way or another.

It was very clear that “technically”, the root of my “health problem” was sleep disturbance. The deeper reasons for this disturbance escaped me and still escape me. It was through trial and error that I tried above all to get back to sleep, the good sleep as I had known it, and which mysteriously slipped away when I needed it most! I only found it recently. Needless to say, probably the idea would not have occurred to me to rely on pills, and if I tried herbal teas or orange blossom water (which I became acquainted with this occasion), I knew deep down that these were expedients at best. More seriously, I took this opportunity to make significant changes in my diet: reduction in starchy foods in favor of green vegetables and fruits (both raw and cooked), reintroduction (moderate) of meat as a regular ingredient in my food. , and above all, drastic reduction in the consumption of fats and sugars, where there has been a systematic imbalance for me (like for many others in affluent countries), since at least the end of the war. I was helped a lot, in particular to realize the importance of such a change of diet to regain a disrupted life balance, by my son-in-law Ahmed, who practices Chinese medicine and who has a very good “feeling” for these things. It was he who tirelessly insisted on the importance of significant bodily activity, of the order of a few hours per day, to cope with intense Intellectual activity. Otherwise, this tends to exhaust the body, pulling the available vital energy towards the head and creating a strong yang imbalance.

Ahmed was not content, moreover, with providing me with good advice, accompanied by a yin-yang dialectic to which I am quite sensitive, in the four or five years since I had ample opportunity to familiarize myself with this delicate dynamic of things. As soon as I was well enough to garden, and seeing myself putting in my efforts to somewhat restart a mini-garden that was looking very poor, Ahmed took the lead in starting larger-scale work. : clearing new strips of land, bringing in soil, transplanting and sowing, making terraces, retaining walls, rearranging the compost heap... Over the days and weeks, I saw people unfold in front of me, un

from my indefatigable friend, enough planning tasks to keep me busy for years, if not for the rest of my life!

This was exactly what I needed, and what I also need in the long term to counterbalance too fiery intellectual activity. In this regard, daily walks that I could impose on myself, as was suggested to me for a long time, would not be of much help: the head continues to grind during walks as in bed, without being disturbed. by the beauties of the landscape, which I cross without seeing almost anything! On the other hand, when watering the garden, it is up to me to take care that it is doing well, and better still when hoeing a bed of vegetables, I cannot help but pay attention and absorb it a little. — realize the texture of the soil, how it is affected by hoeing, by vegetable plants as well as by the “weeds” that grow there, by compost and by mulching — and also, over time, realize the state of the plants that I am supposed to care for, a state which reflects to a large extent the greater or lesser attention that I have been able to give them. This gardening activity, and everything that revolves around it, responds to two strong aspirations or dispositions in me: the one which pushes me towards an action where day after day I see something coming out of my hands (which is by no means the case for the walk, and even less for the weights and dumbbells that such a colleague and friend suggested to me...); and also that pushing me towards action where, at every moment, I have the opportunity to learn through contact with things. It seems that I am most willing to learn in situations where I “do” something — “something” that takes shape and transforms under my hands...

Once beyond the state of exhaustion strictly speaking; my convalescence took place, it seems to me, thanks to two types of activity, or rather, two types of important and beneficial factors in my day to day activities, both in the house and in the garden . On the one hand — there was the physical effort: even though I often felt tired and without enthusiasm before starting work — the “harder” this work was, requiring me to wield a heavy pickaxe or large let's say, more afterwards I felt in good shape, heavy with good fatigue. And there was also contact with living things: the plants that had to be looked after; the land that had to be prepared to welcome them, then mulch or hoe; the foods that had to be prepared and that I ate with as much pleasure as I had preparing the meal; the cat demanding its pittance, and its share of affection; the various utensils and tools too, and even the rough and often poorly polished stones that had to be turned and turned in all directions,

in order to assemble them into low walls that will stand upright...

Physical effort and contact with living things - these are precisely two aspects which are lacking in Intellectual work, and which make such work by nature incomplete, fragmentary, and at the limit, if it is not completed and compensated by something else, dangerous or even nefarious. This is the third time, in just over three years, that I have had the opportunity to realize this. It has even become very clear now that I am faced with a draconian deadline: to change a certain way of life, to find a balance where the yin pole of my being, my body, is not constantly neglected in favor of the yang pole, the mind or (to put it better) the head — or otherwise, leave my skin there for the next few years. This is what my body told me, as clearly as it can be said! I am now at a point in my life where the need for some basic “wisdom” has become a matter of survival, in the literal sense of the word. This is surely a good thing — otherwise the so-called “wisdom” saw itself perpetually postponed to the calendar, in favor of this kind of bulimia in intellectual activity, which has been one of the dominant forces throughout my adult life.

Faced with such a clear deadline: “change or die!” — I didn't have to examine myself to know my choice. This is why, for almost four months, I was able, without ever feeling like I was doing violence to myself, to abstain from any intellectual activity, math or no math. I knew, without having to be told, that ultimately, a living gardener is still better than a dead mathematician (or a dead “philosopher” or “writer”, never mind. !). With a little mischief, we could add: and even better than a living mathematician! (But that's another story...)

I do not believe, moreover, that I will ever find myself forced into such a “limit” situation, where I would have to renounce in the long term all intellectual activity, whether mathematical or meditative. Rather, the most immediate practical task, the most urgent in the years to come, seems to me precisely to arrive at a balance of life where the two types of activity coexist day to day, that of the body and that of the spirit, without one nor the other becoming devouring and crowding out the other. I do not hide the fact that it is in the “spirit” direction that my most powerful investments have been since my childhood, that it is also towards it that the two main passions which have continued in these last few years to dominate my life. Of these two passions, the mathematical passion and

the passion for meditation, it seems to me that it is the first named above all, if not exclusively, which acts as a factor of imbalance in my life - as something which still maintains an unfortunate tendency to "devour" everything else at the same time. profit from her alone. It is surely no coincidence that the three "illness episodes" in my life which have marked a situation of imbalance, since June 1981, have occurred in periods precisely where mathematical passion was at the forefront. from the scene.

We could say that this is not entirely the case for this last episode, which occurred during the writing of *Récoltes et Semailles*, which constitutes a period of reflection on myself, not to say a period of meditation strictly speaking. talk. But it is also true that this reflection on my past as a mathematician was constantly fueled by my mathematical passion. This was especially the case in the second part, the Burial, it seems to me, where the egoic component of this passion was involved in a particularly strong and constant way. However, even in retrospect, I do not have the impression that at any moment, this reflection took on a rhythm, a devouring, even insane pitch, as on the two previous occasions when my body was finally forced to do hearing a "fed up!" without reply. Seen separately from the context of an entire life, my Intellectual activity for a year and a half (since the "resumption" with the writing of *La Poursuite des Champs*, followed by *Récoltes et Semailles*) appears to be continuing at a most reasonable pace. , without forgetting to drink or eat (but sometimes, a little, to sleep...). If it ended up leading to a third "health episode" (to use a euphemism), it is undoubtedly on the basis of a whole life marked by this eternal imbalance of a head that is too strong, imposing its rhythm and its law to a robust body which has endured for a long time without flinching (*).

Over the past two months, I have had ample opportunity to realize the irreplaceable benefit of working with the body, in intimate contact with humble living things, speaking to me in silence about simple and essential things like books or reflection alone is powerless to teach. Thanks to this work, I found sleep again, this companion even more precious than drinking and eating - and with it, a renewal of vigor, a robustness which had suddenly seemed to have vanished. And I was able to see that in the season of life that is mine, if

(*) I should here make an exception for the five years from 1974 to 1978, which were not dominated by any major task, and where manual occupations absorbed a significant part of my time and energy.

I want to continue this new mathematical adventure started last year for a few more years, I cannot do it without endangering my health and my life, except with my two feet firmly planted in the soil of my garden .

The coming months will be those where a new way of life will have to be put in place, where the work of the body and that of the mind find place and are reconciled on a day-to-day basis. There is some bread on a wooden board !

(99) (September 23) I had to force myself last night to cut it short, so as not to continue on my path until two or three o'clock in the morning and to be caught up in a gear that I could not know only too well. I felt refreshed and refreshed, and if I had followed my natural inclination, I would have continued until the early hours! The trap of intellectual work - at least that which one pursues with passion, in a subject where one ends up feeling like a fish in water, following a long familiarity - is that it is so incredibly easy. We pull, we pull, and it always comes, we just have to shoot; sometimes we barely have the feeling of an effort, of a friction, a sign that it is resisting somewhat...

However, I remember, from my young years as a mathematician, a persistent feeling of heaviness, of heaviness that had to be overcome, through stubborn effort, leaving in its wake a feeling of fatigue. This above all corresponded to a period in my life when I worked with insufficient, even inadequate, tools; or to that, later, when I had to more or less painfully acquire somewhat "all-purpose" tools, under the pressure of an environment (essentially, that of the Bourbaki group) which used them commonly, without their reason for being does not appear to me gradually, or even sometimes for years. I had the opportunity to talk about these sometimes somewhat painful years. (see "The welcome stranger" s.9, and "a hundred irons in the fire, or: there is no point in drying out!", note n° 10), in the first part of *Récoltes et Semailles*. It was mainly the period from 1945 to 1955, which coincides with my period of functional analysis. (It seems to me that among the students I had subsequently, between 1960 and 1970, this resistance against learning without sufficient motivation, where we ingest notions and techniques on the basis of the authority of elders, was much less strong than it was at home - to be honest, I didn't notice it at all.)

To come back to my point, it was especially from the years 1955 and following that I often had the impression of "flying" — of doing math while playing, without any sensation.

of effort - just like those of my elders whom I had so much envied in the past for such almost miraculous ease, which had seemed well beyond the reach of my modest and heavy person! Today, it appears to me that such "ease" is not the privilege of some exceptional gift (as I encountered in some, at a time when such a "gift" seemed entirely absent in me). , but that it appears of itself as the fruit of the union of a passionate interest in a particular subject (like mathematics, say), and a more or less long familiarity with it. If the "gift" does indeed intervene in the appearance of such ease, it is undoubtedly through the time factor, more or less long from one person to another (and sometimes also from one occasion to another with the same person, it is true...), to achieve perfect ease in working on this or that subject(*).

Still, the more things go — with the years that pass — the more I have this impression of "ease" when I do math — that things are just waiting to reveal themselves to us, as long as we take the trouble to look, to scrutinize them a little. It is not a question of technical virtuosity - it is very clear that from this point of view, I am in much worse condition than in 1970, when I "left maths": since then I have had Above all, it was an opportunity to unlearn what I had learned, "doing math" only sporadically, in my own corner, and in a spirit and on themes that were very different (at first glance at least) from those of yesteryear. I don't want to say either that it would be enough for me to tackle a famous problem (of Fermat, of Riemann, or of Poincaré, let's say), to make a straight path towards its solution, in a year or two or even three ! The ease of which I speak is not that which proposes and allows one to achieve a certain goal, fixed in advance: to prove a certain conjecture or to give it a counter-example... It is rather that which allows one to launch into the unknown, in a direction which an obscure instinct tells us is fruitful, with the intimate assurance, which will never be denied, that each day and each hour of our journey cannot fail to bring us its harvest of new knowledge. What knowledge exactly has in store for us the next day, or even the hour which follows on this very day, we certainly have a presentiment -

(*) However, I know several mathematicians, each having produced a profound work, and who have never seemed to me to give this impression of ease, of "ease" which is in question here - They seem to be struggling with an omnipresent heaviness, which they must overcome with effort, at every step. For one reason or another, the "natural fruit" just mentioned did not "appear of itself" in these eminent men, as it was supposed to do. This shows that not all unions always bear the fruits that one might expect...

and it is this “presentiment” which is constantly taken by surprise, and this suspense with which it is one, which constantly launches us forward, while these very things which we search for seem to attract us into them. Always what becomes known exceeds what was foreseen, in precision, in flavor and in richness - and this known in turn immediately becomes a starting point and material for a renewed presentiment, rushing off in pursuit of a new, eager unknown. to be known. In this game of discovering things, the direction we follow at each moment is known to us, while the goal is forgotten, assuming that we started from a goal in fact, which we intended to achieve. This “goal” in fact was then a starting point, reproduced from an ambition, or from an ignorance; he played his role in motivating “the boss”, setting an initial direction, and triggering this game, in which the goal does not really play a part. As long as the journey undertaken is not of a day or two, but is long-term, what it will reveal to us over the days and months and where it will lead us at the end of a long cascade of unknown adventures, is for the traveler a total mystery; a mystery so distant, so out of reach in fact, that he hardly cares about it! If he happens to scan the horizon, it is not for the impossible task of predicting a point of arrival, and even less to decide on it according to his wishes, but to take stock of where he is at the moment. even, and among the directions available to him to continue his journey, choose the one that he feels is the most burning...

Such is this “incredible ease” of which I spoke earlier, in connection with the work of discovery in an entirely intellectual direction, like mathematics. It is not slowed down either by internal resistance(*) (as is so often the case in the work of meditation as I practice it), nor by a physical effort to be made, generating fatigue which ends up give an unequivocal signal to stop. As for intellectual effort (assuming that we can even speak of “effort”, having reached a point where the only “resistance” remaining is the time factor...), it does not seem to be generative fatigue neither intellectual nor physical. More precisely, if there is physical “fatigue”, it is not really felt as such, except for occasional aches and pains, from sitting for too long in a fixed position, and other incidental annoyances of the body. same kind. These are easily eliminated by

(*) I know. yet a remarkably gifted mathematician, whose relationship to mathematics is typically conflicting, hampered. at every step by powerful resistances, such as the fear that a given expectation (in the form of a conjecture, let's say) could turn out to be false. Such resistance can sometimes lead to a state of true Intellectual paralysis. Compare this with the previous footnote.

a simple change of position. The lying position has the unfortunate virtue of making them faint, and thus favoring a relaunch of intellectual work, instead of the much-needed sleep!

However, I eventually realized, there is a physical “fatigue” that is more subtle and more insidious than muscular or nervous fatigue, which manifests itself as such through an undeniable need for rest and sleep. The term “exhaustion” here (rather than “tired”) would better describe the matter, it being understood however that this state is not perceived as such, in the common sense of this term, which designates extreme fatigue, manifested in particular by a great effort required just to get up, walk a few steps, etc. It is rather a “depletion” of the body's energy for the benefit of the brain, which manifests itself by a gradual lowering of the general “tone” of the body, of its level of vital energy. It seems that this exhaustion by excessive intellectual activity (I mean: not compensated by sufficient bodily activity, generating physical fatigue and the need for rest) — this exhaustion is gradual and cumulative. These effects must depend on both the intensity and duration of intellectual activity during a given period. At the level of intensity at which I pursue intellectual work, and with my age and constitution, it would seem that for me the cumulative exhaustion in question reaches a critical, dangerous threshold, after a year or so. two of uninterrupted activity, without compensation by regular bodily activity.

In a sense, this “ease” of which I speak is only apparent. Intense intellectual activity involves considerable energy, it is clear: energy is taken somewhere, and “spent” in work. It would seem that the “somewhere” is located at the level of the body, which “cash in” (or rather disburse) as best it can the expenses (sometimes dizzying) that the head pays without counting. The normal way of recovering the energy provided by the body is sleep. It is when the head becomes bulimic that it ends up encroaching on sleep, which amounts to eating up energy capital without renewing it. The trap and the danger of the “ease” of Intellectual work is that it tirelessly encourages us to cross this threshold, or to remain beyond it as soon as it is crossed, and that this crossing is not signaled not to our attention by the usual, unmistakable signs of fatigue, even exhaustion. It takes great vigilance, I realize, to detect the approach and crossing of the threshold in question, while we are entirely engaged in the pursuit of an exciting adventure. Perceiving this void of energy at the body level requires a state of listening to each other.

of the body, which I have often lacked and which few people have. I doubt, moreover, that such a state of communion of conscious attention with the body could flourish in anyone, in a period of their life dominated by purely intellectual activity, to the exclusion of all physical activity.

Many intellectual workers instinctively feel the need for such physical activity, and arrange their lives accordingly: garden, DIY, mountains, boat, sport... Those who, like me, have neglected this healthy instinct for the benefit of a passion that is too overwhelming (or a lethargy that is too strong), sooner or later pays the price. It's been three times in three years that I've gone to the cash register, I have done it without complaint I must say, or to put it better, with gratitude, realizing with each new illness episode that I don't know that I could reap the fruits of my own negligence, and what's more, that he also brought me a lesson, which undoubtedly only he could give me. The main lesson, perhaps, that the last of these episodes brought me, and which has just ended, is that it is high time to take the lead and make such calls to order unnecessary from now on - or more concretely: it is high time to cultivate my garden!

(100) In my reflections yesterday and today, I voluntarily left aside an event which took place right in the illness episode, in the first days of July, at a time when I I was still bedridden. It concerns the death of Claude Chevalley.

I learned about it from a vague article in Libération more or less devoted to the event, which a friend had passed to me by chance, thinking that it might interest me. There was almost nothing on Chevalley, but a few toasts on Bourbaki of which he was one of the founding members. I felt stupid when I heard the news. For months I saw myself on the verge of finishing with Récoltes et Semailles, paperback and all — and going to Paris at once to bring him a copy that was still hot! If there was one person in the world who I was sure would read my column with real interest, and often with pleasure, it was him — and I wasn't at all sure if there would be any someone other than him!

From the beginning of my reflection, I realized that Chevalley had brought me something. a crucial moment in my itinerary, something sown in an effervescence, and which had germinated in silence. What I then felt connecting me to him was not so much a feeling, of recognition let's say, or of sympathy, of affection. These feelings were surely present, as they are also present towards one or another of the “elders” who

had welcomed me as one of their own, more than twenty years earlier. What made my relationship with Chevalley different from my relationship with any of them and most, if not all, of my friends is something else. I believe it is the feeling, or better said, the perception, of an essential kinship, beyond cultural differences, conditioning of all kinds which have marked us from our young ages. I cannot say if something of this "kinship" appears in the lines of my reflection where it is a question of him(*). In the period of my life to which these lines refer, Chevalley perhaps appears more like an "elder" again, this time in terms of an understanding of certain elementary things in life, than like a "parent". This is a distance, however, that my later maturation must have reduced and perhaps abolished, as had been the case for a long time on a mathematical level, in my relationship with him as with my other elders. If I now try to define in words the meaning of this kinship, or at least one of its signs, this comes to me: both of us are "lone riders" — both travelers. other in his own "solitary adventure".

I express myself about mine in the last "chapter" (of the same name) of "Fatuousness and Renewal" (**). Perhaps, for those who knew Chevalley well (and even for others), this part of the reflection is more apt to suggest what I would like to express, than the part which concerns him by name.

Meeting him and talking with him even a little would surely have allowed me to understand this friend better than in the past; and to better situate both this essential kinship and our differences. If there was, apart from Pierre Deligne, one person for whom I felt eager to be able to give him the text of *Récoltes et Semailles* in person, it was Claude Chevalley. If there was one person whose comment, whether playful or sarcastic, would have particular weight for me, it was him again. On that day in the first week of July, I knew that I would not have the pleasure of bringing him the best I had to offer, nor the pleasure of hearing the sound of his voice again.

The strange thing - and which undoubtedly contributed to making me feel so stupid when I heard this news - was that more than once over the past months, when talking about an upcoming meeting with Chevalley, I remembered that 'he was struggling with health problems - and there was a worry in me, constantly brushed aside, that this meeting

(*) See "Meeting with Claude Chevalley — or: freedom and good feelings" (section 11), and the last paragraph of the following section, "Merit and Contempt".

(**) See especially, in this sense, the two sections "The forbidden fruit" and "The solitary adventure", nos . 46, 47.

might not have Lieu, that my friend perhaps might disappear before I come to see him. The idea of course crossed my mind to write to him or telephone him, if only to inquire about his health and how he was, and to say a few words to him about the work I was engaged in, and my intention to go and see him about this. The fact that I rejected this idea as stupid and unwelcome (that there was really no reason why... etc.), as we so often do in situations of this kind, illustrates well the extent to which I - even, like many others, continues to live "below my means" — pushing away the obscure foreknowledge of things which whispers to me a knowledge that I am too busy and too lazy to hear...

(101) (September 24) After the digression of the previous two days around the "illness episode" of the past months, it would be time for me to pick up the thread interrupted in June, where I left off. I then anticipated that there would still be two final notes, which remained to be written: a "Eulogy (2)" (which would take over and complete the note "The Eulogy (1) — or the compliments" of the 12 May), and a final "De Profundis", where I intended to outline an assessment of all of my thoughts around the Burial.

The intended substance of these two notes was still hot when I got sick — I was about to throw it all out on paper, just in time to finish putting the finishing touches to the set of notes previous ones, to have the feeling of working on solid and tidy "backs"... During the three full months (since June 23rd) when I practically stopped all work on the Burial, except for a few corrections occasional typing, this one has, unfortunately, slipped my mind a little. I even feel a little stupid, embarrassed in any case, to wisely begin to fill the blank pages waiting behind the title-pensums, under the pretext that these appear in a provisional table of contents, and that I have had the imprudence of alluding to it here and there in a certain text intended for publication. This is especially the case for "The Funeral Eulogy (2)", and even rereading the first juice "The Funeral Eulogy (1)" (aka "the compliments") was not enough to warm me up for me. a substance which for months had been able to cool in its corner!

However, from the day after May 12 when I wrote this note, and throughout the month that followed, my hands were tingling to delve more deeply into this new mine that I had just got my hands on, without even suspect it. When Nico Kuiper had the attention to send me the jubilee brochure of the twenty-five years of existence of the IHES, the year

last year, I had to spend half an hour going through it (including the two guides, half a page each, on Deligne and me), without finding anything in particular. The only thing that struck me was the absence of any allusion to the difficult first years of the IHES, where its reputation was established in a makeshift premises, myself (with the first Geometry Seminars Algebraic) being the only one to represent it "on the ground". I thought about it again months later, while writing the note "The salutary uprooting" (n° 14), in March 84. Not being sure of my memory, I, as a matter of conscience, asked Nico to send me another copy of the brochure (not being able to get my hands on the first one). It was a second opportunity to go through the two guides in question again, perhaps with a slightly less hasty eye. However, this time again I am definitely not connected. I note in passing, with a certain surprise, that it is said in the topo on Deligne that "The guiding axis of his work is to "understand the cohomology of algebraic varieties"", who would have believed it! To forget the thing for a month or two (until the moment when I was led to remember it, by writing the note "Refusal of an inheritance - or the price of a contradiction", n° 47). On the other hand, I do not notice that in the guide about me the word "cohomology" is not pronounced, any more than the word "schema". In the state of inattention that was mine then, nothing yet makes me suspect that this innocuous text, a little overloaded with hyperbolic epithets, functions as a Funeral Eulogy, "served" (moreover) "with a delicate touch Perfect"! A skill so perfect that I wonder if any of the readers of this booklet (a little boring around the edges, due to the deliberate use of all-out pomade, as the occasion demanded, one must believe...) noticed this more than me, during my first and second reading.

This immediately ties in with an observation that constantly comes back to me, each time for one reason or another, I am led to look with somewhat intense and sustained attention at something that I had previously been content to look at "in passing". , with the "usual", routine attention that I give to the small and large things and events that pass through my life from day to day. Such a situation frequently presents itself during periods of meditation, which many times leads me (most often "one thing leading to another" and without deliberate intention) to subject to a more attentive examination certain events of the day or of the night (including dreams), which had passed more or less unnoticed in my usual state of attention, or whose meaning (often clear and obvious) had entirely escaped my conscious attention at first.

When I speak here of "somewhat intense and sustained attention", what I mean by that

basically, it is an awakened look, a new look, a look that is weighed down neither by habits of thought, nor by “knowledge” which serves as a facade. As long as for one reason or another, we are led to take an alert, attentive look at things, they seem to transform before our eyes. Behind the apparent flatness of the dull and smooth surface of things that our everyday “attention” presents to us, we suddenly see an unsuspected depth opening up and coming to life. This deep life of things did not wait to be there, for us to take the trouble to become aware of it - it is there at all times, it is part of their intimate nature, whether it is mathematical objects, a garden lawn, or all the psychic forces that act in a particular person at a particular moment.

Thought is one instrument among others to reveal to us and allow us to probe this depth behind the surface, this secret life of things, which is only “secret” because we are too lazy to look, too inhibited to see. . It is an instrument which has its advantages, as it has its disadvantages and its limits. But in any case, it is rare that thought is used as an instrument of discovery. Its most common function is not to discover the secret life in us and in things, but rather to mask and freeze it. It is a multi-use tool available to both the Child Worker and the Boss. In the hands of one it becomes a veil, capable of capturing the forces of our desire and carrying us far into the unknown. In the hands of the other it becomes an immutable anchor, which neither eddies nor storms can shake...

The reflection was in the process of getting lost somewhat, and now it returns to a starting point - which is also the observation on which I stopped yesterday: to what extent, through inveterate habits and conditioning, I screw underneath. of my means! (In which I find myself, moreover, in very numerous company...). It is thanks to a progressive discovery of the Burial, based on facts as big as the volume LN 900 (*), that a lazy attention finally ended up awakening. A reading of the note “Refusal of an inheritance — or the price of a contradiction” (nŷ 47) leads me on May 12 to reread a third time (!) the two famous “topos”. This time, however, I noticed a slightly unusual detail: no question at any time of “cohomology” (nor of algebraic varieties or diagrams), in the little text in dithyrambic style which is devoted to me in the jubilee brochure! There

(*) See the note “Remembrance of a dream — or the birth of motives”, nŷ 51, as well as the following note “The Funeral — or the New Fathers”.

Something seems funny enough to me to deserve a footnote, which I'm starting to write just as quickly. Along the way, I realize one or two other "funny" details, which had not yet caught my attention: although it was a third reading, it too had remained superficial, mechanical — more or less, I limited myself to repeating, to reproducing the readings made previously. It was only by writing what was to be a footnote, and which became the note "The Funeral Eulogy (1)", that little by little I got involved in the game, that a curiosity arose. is awake, which made me return to these texts once again, looking at them a little more closely this time. It was only at this moment that this transformation of which I spoke earlier took place - that a "depth" opened up, an intense life behind the flat facade of a dithyrambic speech, served in the let's celebrate a great occasion! It is this curiosity that transformed a mechanical, repetitive, distracted gaze into an "awakened" gaze...

"The awakening" in question was not instantaneous, moreover, it happened gradually, with the progression of the reflection pursued in this footnote-sic. To be honest, it was not complete until the final point of this note, even though the hour was late (I think I remember) and encouraged me to "get it over with" (**). But I had no sooner placed this point, or at least the next day, than I realized that I was still far from having exhausted the subject of the Eulogy. It was only then that I fully felt the extent to which these two texts, so short and seemingly innocuous, were rich in meaning, real mines to say the least! And that I was far from having covered what they had to say, as long as I listened...

(September 25) Again, last night, I had to cut the reflection short, even though it had only just started, it seemed to me. However, I had been sitting at my typewriter for three and a half hours straight, and little discreet signs were starting to show me that it was time for me to get up and move.

I remember well the first time when I was led to direct "intense and sustained attention" to written texts, and when I experienced day after day, for months in a row, the astonishing metamorphosis of a dull, flat "surface", coming to life and revealing meaning

(**) This all the more so, surely, since I had already just gone through the long and substantial reflection "The massacre" (n° 87) that very day, to which I refer towards the end of the note "The Eulogy — or the compliments" which followed on from this one.

rich and precise, an unsuspected “depth”. It was also, at the same time, my first long-term meditation, in the spirit of a journey into the unknown, what would last what it would last... The starting material was the voluminous correspondence 1933/ 34 between my father (emigrated to Paris) and my mother (still in Berlin then, with me who was five years old at the time). My intention was to “get to know” my parents. I had discovered the previous year that the admiration I had devoted to them throughout my life, and which had ended up congealing into a sort of filial piety, covered and maintained a very great ignorance about them. This phenomenal ignorance in which I had been pleased to maintain myself all my life, only appeared to me in its full dimension during the long-term meditation of the following year, in August 1979 to March 1980.

I had begun to “prepare the ground” throughout the month of July 1979, notably by doing a first reading of all of this correspondence, alongside work on a “poetic work of my own composition” (*) which I was then putting the finishing touches to. Every evening I spent a few hours reading three or four response letters, with interest for sure and, I would have said then without hesitation, attentively. However, I realized obscurely that I remained foreign, external to what I was reading - that the true meaning escaped me. What I read was often quite crazy, as if this man and this woman that I saw living and parading before my eyes had nothing in common with those I thought I knew - those of whom my memory gave me a clear and clear image. clear, intangible. In the absence of patient, meticulous, demanding work on what I read, which I would have continued as I progressed, I was only stunned, nothing more, by the (relatively) little, in these letters, which was “big” enough to grab my superficial attention. What was thus recorded was superimposed without further ado on the “well known”, which had been since my early childhood and even up to those days (without me ever realizing it, of course). the invisible and immutable foundation of my life, of my sense of identity. Supposing that I had then stuck to this first reading, surely the thin layer of new and undigested “facts” which had thus been superimposed on the main layers, would have quickly been eroded and carried away without leaving much of traces, in the months and years that would follow.

At the time of this preliminary work, my main investment was elsewhere, in the writing of a work which then absorbed most of my energy. I felt good

(*) Allusion is made to this work and to the episode of my life that it represents, at the end of the section “The Gurus-Guru, or the three-legged horse”, n° 45, and in the note p° 43 to which reference is made.

take into account the limits of a work done on the sidelines of another, and that I would have to come back to it from start to finish, through work on pieces in which I would invest myself fully. I anticipated that it would be a matter of a few weeks — in fact I spent seven months straight there, devoted to a careful examination of the letters and writings left by my parents, the most “hot” part of which was surely the correspondence 1933/34. Seven months, in fact, at the end of which I ended up cutting it short, realizing that the subject (“getting to know my parents”) was inexhaustible, so to speak. It had now become more urgent to get to know myself, with the help of all the things I had just learned about my parents, and through that, indirectly at least, about my own forgotten childhood...

I have just spent nearly two hours going through the beginnings of the notes of this meditation on my parents, begun on August 3, 1979. Contrary to what I thought I was hastily remembering, I did not yet realize, if not perhaps -to be very confused, the need to thoroughly review, “from start to finish” (as I wrote earlier), the letters and other written records from my parents that I had read over the past month. At least I don't suggest anything to that effect in my notes. After a summary reflection of a day or two, making a provisional assessment of my multiple impressions, a tad confused, aroused by this reading, I make no pretense of resuming it by meticulous work on documents.

I rather follow up (like something that would go from ground to ground) with a reading (at just as rapid a pace) of other letters (and in particular of a voluminous correspondence from my parents in the years 1937/39), and with a parallel reflection fueled by by Reading Impressions. It is one thing leading to another, during this month of August and the following month, that I begin to learn what it is to work on a letter (or another written testimony of a life), which allows us to grasp its true, sometimes striking, meaning - a meaning that the person writing often likes to ignore, to hide from himself or from others, neither seen nor known! while managing to display it “between the lines” in a sometimes ostentatious, incisive way. And it must be rare that insinuation or provocation (sometimes fierce...) does not reach the recipient, that it is not perceived and “received” by him at a certain level, while he too is careful not to let this perception, this knowledge enter the field of his gaze, and he too enters with all sails deployed, in this same game of “neither seen, nor known!”. It is the most obscure passages, infallibly, those which seem to border on debility (or dementia...) and defy any rational interpretation, which to the curious eye reveal themselves to be the richest in

meaning: real mines, providing irreplaceable keys to penetrate further into the simple and obvious meaning behind the accumulation of apparent nonsense. Such passages, frequent in the correspondence between my parents, and especially in the letters from my mother who led the dance, of course completely “went over my head” during my first readings, during the month of July . I started hanging on to it, here and there, over the next month. It was only in September that various cross-checks made me understand that I had perhaps missed something essential in what I had to learn in the letters of 1933/34, and brought me back to these, encouraging me to a first “in-depth” reading of some. This reading immediately completely changed the image that I had, since my childhood, of the person of my parents and of what their relationship had been with me and my sister.

(102) (September 26) It's been two days since I found myself in the middle of “autobiographical reminiscences”, while I had left to write (“cold”) the continuation of a certain note, on a certain Eulogy . I don't know if this digression will have been able to warm up my ardor even a little! It would be time at least for me to arrive at the point I had in mind when I started there the day before yesterday, a little in the direction of: “On the art of reading a message which pretends not to say what he has to say”. This type of text message is much more common than I would have previously suspected...

It goes without saying that the question of the “how” of this “art” does not arise, as long as one is willing (as I was for most of my life) to take everything at face value and literally. what you are told or written, and not to look for or see, in anything and in anyone, intentions other than those expressly expressed by the person concerned. On the other hand, it arises when we see ourselves confronted with this indefinable expression, that in a given declaration, tirade or narration, something is “wrong”, that something is wrong, that something has “happened”, somewhere, which is not supposed to have been said (what would you imagine there to be!). Sometimes also it is the perception, elementary and disconcerting, of an incoherence, of an absurdity, so enormous sometimes and at the same time seemingly elusive, that it seems to defy all formulation, to the limits that it appears to be. debility or delirium. These situations are often overloaded with anxiety - and it is indeed through an instantaneous influx of anxiety, never recognized as such but blurred and immediately hidden under a wave of violent, desperate anger, that I invariably reacted to such situations, where

absurdity suddenly burst into my life: an unacceptable, incomprehensible absurdity, fraught with threats, each time shaking my serene vision of the world and of myself to the very foundations! It was like this at least until the moment I discovered "meditation", when an intrepid and enterprising curiosity defused and took over these waves of anger and anguish...

It is curiosity, that is to say the desire to know, which made me spontaneously find, under the pressure of needs, this "art" of deciphering a scrambled testimonial text - or more modestly speaking, a method which suits the limited means and the heaviness that are mine. No matter how much I did and no matter how curious I was, on first reading (or even second reading) of these letters loaded with meaning, everything essential went over my head - "I couldn't see anything but fire". Sometimes, commenting on some often confused Impressions, perhaps concerning this or that particularly obscure and confusing passage, I managed to penetrate further into the meaning of a text which had seemed hermetic. Along the way, I was sometimes led to copy, for the purposes of quotation, passages of varying length, which were distinguished either by obscurity, or because at first glance they gave me the impression of being "important", for one reason or another. Over the days and weeks, I realized that the simple fact of copying in extenso a certain passage from the text that I was scrutinizing, modified in a surprising way my relationship to this passage, in the sense of an opening to an understanding of its meaning. true meaning.

This was something completely unexpected, although my initial motivation (on a conscious level at least) had been one of pure convenience. I even remember that for a long time, there was a certain suppressed impatience in me, to devote precious time to acting as a copyist, nothing more, nothing less, I was champing at the bit to have reached the end and writing as quickly as possible. I could... But there is no common measure between the speed of the eye scanning written lines while reading them, and that of the hand which transcribes them word for word. No matter how quickly we write, the "time factor" is absolutely not the same. And I suspect that this "time factor" does not act in a purely mechanical, quantitative way — or to put it better, that it is only one aspect of a more delicate and richer reality. Nor is there any common measure, in my case at least, between the action of the eye which runs over lines that another has thought and written, and the act of the hand which letters after letter, word after word rewrites these same lines. Surely, there is a deep symbiosis between the hand, and the mind or thought; and at the very rhythm of the hand that writes, and without any words

deliberate, the mind cannot help reforming, rethinking the same words, assembling themselves into sentences loaded with meaning, and these into discourse. As long as a desire to know animates this hand which reproduces letters, words and sentences, and as it animates this mind which, in unison, also "reproduces" them, at another level, - surely this double action then creates a much more intimate contact between my person and this message of which I make myself the scribe-editor, than the act, especially passive and without support or tangible trace, of the eye which is content to read.

This groping intuition goes in the direction of a long-standing observation - it is that for me the rhythm of thought which works (whether it is mathematical work or any other, including the work that I called "meditation") is most often (if not always) that of the hand that writes, and by no means that of the eye that reads(*). And the written trace left by my hand (or sometimes, by the typewriter operated by my hands...), to the rhythm of thought which progresses without haste and without ever lingering, is the essential material support of this and its "memory". I also suspect that it must be more or less the same (perhaps to a lesser degree, however) among most if not all "intellectual workers".
thought — both his "voice"

(103) (September 27) In any case, the fact is there: just as I can only "enter" into a mathematical theory by writing, I hardly begin to enter into a text-message, into the "between the lines" of a message, than by rewriting it. My first work of meditation "on texts" was transformed, an apparent flatness began to open up to a living depth, and the absurd to find meaning, from the moment I began to rewrite verbatim. the message, or (in the case where this is prohibitively large) the passages that a flair made me feel were crucial.

I will be told that in the absence of reliable "objective" criteria to guarantee the validity of an "in-interpretation", presented as the result or outcome of a (so-called?) "work", on a text let's say, we can make any text say exactly whatever we want or

(*) This circumstance, which seems to work for me to a greater degree than for most of my mathematician colleagues, had previously made it difficult for me to fit into the collective work sessions of the Bour-baki group, finding myself well unable to follow the readings at the pace they were going on. In fact, I never really liked reading mathematical texts, even those of great beauty. My spontaneous way of understanding math has always been to do it, or to redo it (helping myself where necessary, here and there, with ideas and indications provided by colleagues or, for lack of something better, by books. ...).

speech, inventing such a “message” that we like to give to him. Nothing could be truer, of course — and your examples surely abound! I also doubt (except perhaps in a delimited discipline like history - and then again...) that it is possible to identify such criteria. This would not be of much use in any case: neither to prevent anyone from inventing fanciful interpretations galore, nor to allow anyone to probe and discover the true meaning of a message, of a situation, of an event. Rules and criteria are ingredients of a method, which has its usefulness and importance (often overestimated moreover, to the detriment of other factors and forces of a completely different nature), as a tool of discovery and consolidation in the development of scientific or technical knowledge, also in that of any know-how: driving or repairing a car, etc. On the other hand, at the level of knowledge and discovery of oneself and others, the role of the method becomes entirely incidental: it is “stewardship” that certainly follows, when the essential is there. And drawing inspiration or starting from a method, or even clinging to it, in no way promotes the appearance of this more essential thing - quite the contrary!

To put it another way: he who sets out to find a certain thing decided in advance (which he will qualify as “true”, or “truth”) will have no difficulty in finding it, and even in proving it to his complete satisfaction. — and surely he will find this or that other along the way, so it's not a whole crowd, all happy to conclude an alliance with him and to share convictions and satisfaction. He is like the butterfly hunter, who leaves with a beautiful butterfly in his net (stuffed if that happens), and who takes it out quite happy (and to his complete satisfaction) when returning from his “hunt”.

And there is also the one who finds himself placed before a stranger, like a naked child before the sea. When the child desires to know it, he enters and knows it - whether it is warm or cool, calm or agitated. He who is attracted by some unknown thing, and who sets out to know it, will surely know it more or less. With or without a net, he will find the truth, or at least the truth. His errors like his discoveries are so many stages in his journey, or better said, in his love affair with what he desires to know.

I know very well what I'm talking about, because in my life I have been abundantly alternately between this butterfly hunter and this naked child. There is no difficulty in distinguishing one from the other. I doubt that “objective criteria” will be of much help here, it's much simpler than that! All you have to do is use your eyes...

And there is no difficulty either in distinguishing the successive stages, the stages of decan-

successive tations, in this progression of which I have just spoken, from this “dead” stage where no presentiment flush with consciousness yet makes us suspect “something”, beyond a certain flat and amorphous surface which presents to us sleepy eyes, and which through successive “awakenings” leads us towards an increasingly delicate, more intimate, more complete apprehension of this “something”. It is not of an essentially different nature, whether it concerns the journey in the discovery of mathematical things, or in that of oneself and others. The feeling of progress in knowledge, which deepens little by little (even through an accumulation of errors, patiently, tirelessly corrected) - this feeling is as undeniable in this last case as in the other.

This assurance - this is one of the faces of an interior disposition, the other face of which is an openness to doubt: an attitude of curiosity excluding all fear, with regard to one's own errors, which allows one to detect them and to constantly correct them. The essential condition of this double foundation, of this faith essential to welcome doubt as well as to discover, is the absence of any fear (whether apparent or hidden) about what will “come out” of the research undertaken — of any fear, in particular, that the reality we are about to discover shakes up our certainties or convictions, that it disenchant our hopes. Such fear acts as a profound paralysis of our creative faculties, of our power of renewal. We can discover and renew ourselves in sorrow and pain, but not in fear of what is about to be known, what is about to be born.

(No more than a man can know a woman and make her conceive, in an instant when he is afraid of her, or of the act which carries him into her.) Such fear is undoubtedly relatively rare in the context of scientific research, or any other research whose theme does not involve our own person in the slightest way. On the other hand, it is the great stumbling block when it comes to the discovery of oneself or others.

However, the feeling which accompanies a discovery, large or small, is as irrefutable in the case of the discovery of oneself or of others, as in the context of impersonal research, mathematical for example. I have already had the opportunity to allude to this feeling. It is the reflection, at the level of emotions, of a perception of something that has just happened - the appearance of something new - and this “something” appears as tangible, as undeniable (I apologize repetitions!) than the appearance of a mathematical statement, let's say, or of a notion or a demonstration, of which we had never thought of before. Moreover, it seems difficult to me to distinguish or separate this feeling which

accompanies a particular discovery, the feeling of progression that I spoke about earlier, which accompanies a whole search. "Large and small" discoveries are like successive levels that materialize progression, like successive thresholds that we must cross. Progression is none other than this series of crossings of these thresholds, of accessions from each of these levels to the next.

The "feeling" or better, the perception which reflects, which restores this process, is a sure, unmistakable "criterion" — I do not remember that it has ever led me astray, whether in math or in meditation : that I had to see, with hindsight, that this feeling would have been illusory. Often it allows, without any residue of doubt, to distinguish the true from the false, or to discern the true which is in the false, and the false in what is supposed to be true. But above all it is an irreplaceable guide in any real research - a guide ready to inform us at any time (as long as we take the trouble to consult it) whether we are on the wrong track, or are on the right track.

The willingness to listen to this reliable guide is nothing other, it seems to me, than what in another place of my reflection(*) I have called "rigor". This rigor is not of a different essence, it seems to me, whether it is the requirement in mathematical research, or that in self-knowledge, without which there cannot be a such knowledge. But it goes without saying that this in no way means that the presence of this rigor, at the level of such intellectual work, is a guarantee or sign of its presence for the knowledge of oneself and others. In fact, the opposite is true, which I have observed on countless occasions, starting with myself. In this area, the "rigor" that I am talking about here appeared in my life at the same time as meditation. Or to put it better, I can't really distinguish between one and the other. The moments of meditation in my life are none other than those where I examine myself (most often through my relationship with others) in such extremely demanding positions with myself.

(*) In the section "Rigour and rigor", n° 26, where I speak of "rigor" as "delicate attention to the quality of understanding present at each moment" in research.

XII. The Funeral Ceremony

(104) (May 12)(*) Remarkably, in the little “topo” on my work which is made in this same brochure (**), the word “cohomology” or “homology” is not pronounced! Neither does the word “schema”. It is certainly a question (as circumstances required, while I was serving as the “first Fields medal brought to the IHES”) of the “titanic aspect” of my work, the number of volumes published, the identification of essential problems. , with the greatest natural generality (funny French that), very careful terminology, allusion to “Grothendieck groups” (another one of those greatest natural generalities I bet!), and even topos and their usefulness in logic (but especially not elsewhere!)... But no allusion to a result, or to a theory that I would have developed and which could perhaps have been useful - one must believe that these twenty titanic volumes were strictly empty, or just collections of problems (never resolved) and notions, with the greatest natural generality it is a given: Grothendieck group is awarded (since my name is already stuck there afterwards), presented as “ancestor” of the K -algebraic theory (!) (and which has nothing to do of course, with topological K-theory, of which we say nothing)(***). as for the Riemann-Roch theorem, it must be the descendants of the “ancestor” who took care of it

(*) (May 18) The following note is “from a footnote (to note n° 47) which took on dimensions prohibitive”. I inserted it here, thinking that this order is more natural this time than the chronological order.

From the very moment this note was written, I felt the need to develop it further - this will be done in a note following this one, which is not yet written at the time of writing these lines.

The set of two notes has now taken the appropriate name: “The Funeral Eulogy”!

(**) (May 18) This is the brochure published in 1983 by the IHES (Institut des Hautes Études Scientifiques) on the occasion of the celebration of the jubilee of its twenty-five years of existence. Reference is already made in the footnote to the note “The salutary uprooting” (n° 42), and again at the beginning of the note “Refusal of an inheritance — or the price of a contradiction” (n° 47), to which the present note (The Eulogy (1)) relates (see previous footnote).

(***) My work on the Riemann-Roch theorem is the first strong start of algebraic K-theory, and in no way an “ancestor”. Topological K-theory was born the same year (1957) that I demonstrated the Riemann-Roch-Grothendieck theorem, following my presentation at the Hirzebruch seminar. The “ancestor” of this silenced “descendant” was not yet a year old! Algebraic K-theory (with Bass's introduction of the K functor

¹ in addition to the functor K^0 that I had introduced) developed in the years that followed, under the double influence of the “ancestor” and the first “descendant” of this one.

Moreover, from the second half of the sixties, I had an approach towards a description of higher K (for a “monomial” category, for example additive), in line with Ms. Sinh's thesis. This one

— those who do the real theorems, the serious things!

In an era where fashion is contemptuous of generalities (casually mocked by this vaguely ridiculous phrase “greatest natural generality”...), the anonymous pen which took care of my funeral eulogy here has rewarded me superabundantly with which today is given over to disdain(*). I also appreciated for its value (perhaps I am the first...) all the humor of the same anonymous pen in this passage from the funeral eulogy:

“He created a school of algebraic geometry at IHES, brought together around the seminar he led and nourished by the generosity with which he communicated his ideas” (my emphasis). Unfortunately, just like my “titanic work”, this “school of algebraic geometry” that I have so well nourished is strictly empty — not a single name is pronounced, and no one has come to complain that it is forgot, not to me anyway.

However, I seem to remember seeing young Deligne faithfully haunting this seminary (presumed empty) between 1965 (he must have been nineteen years old then) and 1969, and learning in this seminar and in our tête-à-têtes as well the technique of diagrams, that coho-mological techniques and flat cohomology — that is to say, the tools precisely used on each page of his work (among those I have seen, at least). In the “topo” devoted to Deligne in the same brochure, there is no allusion either that could make the reader suspect that he may have learned something from/me. However, remarkably, my name is mentioned three times in this eulogy (by no means funeral) by Deligne (“third Fields medal from IHES”). And even in a periphrasis it is alluded, with the vague rigor which must surround each appearance of my modest person, to the fact that I would have “constructed the theory of cohomology in geometry on any body” — and certainly again “with the greatest natural generality”, it smacks of grothendieckerie(*).

remained heuristic, being based on the intuition of Picard's enveloping $\tilde{y}$ -category, while no one yet at that time (nor since) had taken the leisure to develop the notion of a (non-strict) $\tilde{y}$ -category, ie The notion that I now call by the name of $\tilde{y}$ -field (on the punctual topos). With the outline of the foundations for a cohomological-homotopic formalism of fields that I am about to develop in La Pursuit des Champs (in line with the ideas that I developed between 1955 and 1965), this “geometric” approach towards a theory of higher K-invariants would finally be available.

(*) (May 18) And I've had more! For a full quote from my Eulogy, see the note “The Eulogy (2)”.

The full quote of the context is worth giving, it is a small masterpiece of the genre :

“Starting from there [classical Hodge theory] and from p -adic analogies suggested by Grothendieck [one wonders where Gr. found the time to learn such serious things, while writing his twenty volumes of greatest natural generalities] , he [Deligne] released the notion of mixed Hodge structure and provided it with the cohomology of any complex algebraic variety. In cohomology - adic, therefore [?] for varieties over a finite field, he proved Weil's conjectures, with proverbial difficulty. This result seemed all the more surprising[!!] because Grothendieck, after having constructed the theory of cohomology in geometry on any body [one wonders what else he was looking for there], had brought back the remaining conjecture [???] to a series of conjectures which are as unapproachable today as then.”

Clearly, far from having contributed in any way to proving this surprising result of such a proverbial difficulty, these grothendieckeries (with a name that would scare away the most hardened generalist-naturalist) were only just good at still burden us with conjectures as if it were right (he never makes any others!) and unaffordable what's more (we would have suspected it), just as much today as when He had the preposterous idea of Do them.

However, I seem to remember having discussed them, these unapproachable conjectures, but it was undoubtedly because I was poorly informed. It was around the time I left, sorry deceased I meant, and my posterity, better informed than me, was careful never to put its nose into these things, since Deligne was categorical: it was unaffordable !

I recognize the style: we have done all our duty, quoted Grothendieck extensively

(*) (May 18) In the Eulogy, it speaks of the “great attention” that I paid to terminology. In the use of absurd expressions like “the greatest natural generality” or “the theory of cohomology in geometry on any body”, I clearly perceive the intention of making fun of this attention.

The extreme care I give to the names given to things arises naturally from the respect I have for these things, the name of which is supposed to express the essence, or at least some essential aspect. From the echoes that reach me, I have been shocked more than once by the affectation of disdain which today seems appropriate towards this attitude of respect, disdain which is sometimes expressed by the use of absurd names for important concepts. See also on this subject the note “Perversity” (n° 76).

(he nor anyone will be able to claim that he is buried on this solemn day), and even a thumbs-up allusion was made to “-adic analogies” which had played a role in the start of Hodge's mixed theory. This must be the second time since the famous pithy half-line thirteen years before(*); both allusions strangely resemble the “considerations of weight” in a certain article from 1968 (**): we are “thumb”, and we have led the reader by the tip of the nose at the same time ! Here, with the help of the solemn occasion, the thumb-reference does better than drown out the fish - the impression that this text wants to suggest about this famous Grothendieck is precisely that carried by this “wind” of fashion that I have felt for several years - the one that I had the opportunity to feel already today (***), no longer in the tones of the funeral eulogy and of the great occasions in front of a large audience, but in those of the massacre ...

I continue the quote, it is worth it:

“This theorem (formerly Weil's conjectures) contributed to making Cohomology - adic a powerful tool, no need to name the brilliant and modest inventor of this powerful tool... applicable to questions apparently far removed from algebraic geometry such as , for example, the Ramanujam conjecture.

More recently, he studied Hodge cycles on abelian varieties, taking a first step towards a “motivic” theory such as Grothendieck had dreamed of.

He also demonstrated the algebraic mechanism of “intersection cohomology”, the topological theory of MacPherson and Goresky. This made it possible to transpose it to -adic theory, where it proved surprisingly useful.”

Thus, an anonymous pen (which I guess is the same) ended up repairing, a year after the publication of the “memorable volume” (****), a small “oversight” in said volume. Someone has

(*) This “spider half-line” is found in Deligne's report “Hodge Theory I” to Congress International of Nice in 1970. See the comments in note n° 782 .

(**) See on this subject the beginning of the note “Canned weight and twelve years of secrecy” (n° 49), and the examination more detailed in the note “Eviction” (n° 63).

(***) See the note of the same day “The massacre”, n° 87.

(****) This is the volume Lecture Notes n° 900 published in 1982, which is discussed in the notes “Remembrance of a dream — or the birth of motifs” and especially “The Burial — or the New Father” (n° 51, 52). This is the volume where the motifs are “exhumed” (after a dead silence of twelve years about them), under an (implicit) alternative authorship.

should perhaps have asked a question all the same, and Deligne acquits himself here of repairing the oversight in his own way (it's nice to quote this dreamer from Grothendieck, when it comes, finally, to serious mathematics!). And always deceiving the reader, given that the “first step” was taken in 1968 with Deligne's launch of the Hodge-Deligne theory, taking root in the yoga of motifs on which he had indeed “nourished ” in fact in my contact, throughout the four years which had preceded. This yoga from which his work comes, from which he never knew how to detach himself while denying it, is in fact sent in the circumlocution of the first quotation under the name of “-adic analogies”. A reader who is not both very informed and very attentive would certainly not suspect a link between these “-adic analogies” which would have played a role as a starting point (but especially not beyond...) for Hodge's theory -Deligne(*), and a “motivic theory” that I had indeed dreamed of (and a devilishly precise dream at that) — if not this link, it is still this same dreamer from Grothendieck who manages (by dint of greater natural generalities) to suggest analogies to real mathematicians, making it their responsibility to do real work.

As for the famous “algebraic mechanism of “intersection cohomology””, here we are right in the Colloquium Pervers(**) (yet the word “pervers” is not pronounced). We certainly took gloves with one of the “four IHES Fields medals”, given the solemnity of the occasion – but we need not be embarrassed with the posthumous student of this same Grothendieck. My own burial on this exceptional occasion in the limelight, minister's speech and all, is not burial by silence, but by compliment, skillfully measured and administered. But it goes without saying, where MacPherson and Goresky are named, that for the posthumous student Zoghman Mebkhout silence is required, as it had been two years earlier during the Pervers Colloquium, and as it is even today.

(105) (September 29) The “previous” note, “The Eulogy (1) — or the compliments”

(*) This Hodge–Deligne theory still remains in its infancy, failing to develop the notion of “Hodge-Deligne complex” on any schema of finite type on $\mathbb{C}$, and the formalism of the six operations for these “coefficients”. The need for such a theory was obvious to Deligne as much as it was to me, even before his first work on mixed Hodge structures, it followed clearly from the yoga of patterns. But as soon as I left the mathematical scene, a “block” developed in Deligne against the key ideas that I had introduced in homological algebra (derived category, six operations, not counting the topos), which prevented the natural growth of a theory whose start had been spectacular.

(**) See, regarding this Colloquium Cortège VII, “The Colloquium — or bundles of Mebkhout and Perversity”.

(nŷ 104), is from May 12 — it is more than four months old. It had started as a footnote to “Refusal of an inheritance, or the price of a contradiction” (note nŷ 47, from the end of March), just to note in passing a “funny” little fact which I had only just noticed. But while writing it, I realized over the lines and pages that these two seemingly innocuous short texts on which I was commenting, without having planned or researched it much, were a real “mine” (*). It was also the day when I had already painted the picture of a massacre (note nŷ 87), a picture which had gradually emerged from the mists over the past weeks. There it had suddenly materialized, had taken shape by the sole virtue of an enumerative description, and now it challenged me with force.

The massacre, and the “compliments” — Eulogy to the late deceased — these were like two complementary parts of the same striking picture, appearing on the same day!

There was certainly something to satisfy me! The next day, “my hands were tingling” to continue the momentum and, in particular, to probe further this little gem of a mine on which I had just unexpectedly laid my hands; It had become clear that the first thing to do was to quote in full the two passages in question from the jubilee brochure - at the same time it would also be the best way to better contact these texts and better imbue myself with their truth. message, the message “between the lines”... (**). Without even having had the leisure yet to copy the two texts, the contact the day before had already been enough to arouse or awaken in me several associations of ideas, which I felt were juicy. I couldn't wait to pursue them, without really knowing where they would take me...

Ultimately, it was not on this momentum that I continued in the days and weeks that followed, while promising myself, during all this time, to return to it in the very next days. An unforeseen “health incident” put an end to all reflective work on *Récoltes et Semailles* for more than three months, and even to all intellectual work of any kind(*). The “hot moment” propitious for pursuing this direction of reflection, which had just opened up in those days, has now passed. It is not certain that he will come back, nor

(*) For some retrospective comments on this subject, see the beginning of the note of September 24 “Surface and depth” (nŷ 101).

(**) See on this subject the note “On the art of deciphering a message — or praise of writing” (nŷ 102), which follows the note cited in previous footnote

(*) See on this subject the notes “The incident — or the body and the mind” and “The trap — or ease and exhaustion”, nŷ s 98, 99.

even though I want to make the effort to “blow” (the heat!) to bring him back at all costs. To be honest, my real desire now is to come to the final note, drawing a provisional assessment of the entire reflection called the Burial - and to draw a final line!

As for this note, I will at least already give the complete quotation that I had promised myself (and already promised to the reader, moreover); and perhaps at least some summary indications too, about certain associations of ideas that these two texts (and perhaps also the fact of rewriting them in black and white) will have aroused in me.

The two texts in question (pp. 13 and 15 respectively, of the 1983 jubilee brochure entitled “Institut des Hautes Études Scientifiques”) are part of the series of “minute portraits”, “permanents” and “long-term guests” who have passed through IHES since its founding in 1958, arranged in chronological order of entry. These are fairly brief texts, approximately half a page each, each including the dates of the visit to IHES and the function (professor, or long-term visitor), the main honorary distinctions, the main areas of interest and the most important contributions, with (if applicable) the names of certain collaborators. To my modest self, however, there is a remarkable void regarding these three “objective” aspects of a work and a personality—areas of interest, major contributions, principal collaborators or students—which void is fulfilled by these “compliments” in dithyrambic style, some of which have been noted and cited already in the previous note...

The series in question, which I have the honor to open, is made up of the following mathematicians and physicists: A. Grothendieck, L. Michel, R. Thom, D. Ruelle, P. Deligne, NH Kuiper, D. Sullivan, P. Cartier, H. Epstein, J. Fröhlich, A. Connes, K. Gawedzki, M. Gromov, O. Lanford.

I thought I remembered that Dieudonné had been a professor at IHES at the same time as me, and I see on this list that this is not the case - he was therefore content to ensure the direction of Mathematical Publications. However, I now realize, on page 3 of the brochure, in the IHES “Curriculum Vitae”, that this is not the case, that Dieudonné has indeed been a “permanent professor” like me since 1958. (and until 1964), theoretically at least. A little strange contradiction! Here I copy the beginning of the “Curriculum Vitae”, on the first two “dates”, 1958 and 1961: 1958

Creation of the association Institut des Hautes Études Scientifiques in Paris, by Léon

Motchane, assisted by world-renowned scientific advisors and by a group of European industrialists.

Scientific activity was launched by two mathematicians:
Jean Dieudonné (1964) and Alexandre Grothendieck (1970)
appointed permanent professors. Publication of number 1 of
"IHES Mathematical Publications".
1961 Recognition of public utility.

.....

I note in passing that it seemed useful, in this brief Curriculum Vitae, to mention the publication (a tad symbolic) of number 1 of Publications Mathématiques (consisting of a 24-page article by GE Wall, whose author had no particular link with the association which had just been born), but not the algebraic geometry seminars (well known by the familiar acronyms SGA 1 and SGA 2) with which I began to alone ensure the scientific reputation of an institution, for years when it barely existed other than "on paper". Moreover, until around volume 24 of the Mathematical Publications, the bulk of these publications was made up of the successive volumes (1 to 4) of the "Elements of Algebraic Geometry" (*), all the other volumes revolving around around fifty pages each (of a high scientific level, of course). Furthermore, on page 19 (after the series of "minute portraits" from which Dieudonné was absent, God knows why(*)), we find, in a very "advertising" layout (with a tempting photo of the pile impressive volume of the entire prestigious Publications); Mathematical Publications It was Jean Dieudonné who, alone [!], brought Mathematical Publications to the pinnacle of world excellence in 1959.

Since 1979 they have appeared as a regular periodical of 400 pages per year, under the direction of an editorial committee whose editor-in-chief is Jacques Tits.

Distribution is ensured by... (etc)

If the Mathematical Publications are highlighted in this way, in this jubilee presentation of a prestigious institution whose main vocation has never been that of publisher of a periodical, there is no doubt that it is to make people forget a certain fact

(*) Of which I am the author, in collaboration with J. Dieudonné.

unpleasant to some (**): that the said institution would undoubtedly have gone into profit and loss and forgotten for a long time, if for three or four critical years a certain person, stubbornly pursuing in his corner ideas of his own (which had the good fortune to attract some, including in the “big world”), had then only brought it against winds and tides (***) a guarantee and credibility than the most beautiful association statutes in the world, and even the finest “world-renowned scientific advisors” (sic), are powerless to give.

(September 30) The “stunning” and “all-out pomade” style, sorry, I meant “public relations” of (very) high standing, of this jubilee brochure C which I will end up knowing well!), don’t is certainly not that of my friend Pierre, nor that of Nico — they surely have other things to worry about, both of them, than composing this kind of occasional text.

On the other hand, it is obvious that the two minute portraits which concern me, one of me and the other of Deligne, were not written without the latter providing at least the key words - do not perhaps because he is the only one at IHES who is in a competent position to do so; and it is just as clear to me that these two texts, at least, were not delivered to a printer, without this same Deligne having first read them and given the green light. Also, it seems clear to me from the outset that the two texts in question in any case reflect

(*) (September 30) The idea came to me that the reason could well be this: so as not to have to say that during the years in question (1958–1964), Dieudonné’s time was divided for the essential between the writing of the Elements of Algebraic Geometry (where I unfortunately appear as main author) and the Bourbaki writings - apart from the piano and the kitchen (Dieudonné was both a fine musician and a fine cook), of which he did not could unfortunately be a question, certainly, in this brochure, too select for a passing smile to slip in...

(**) No offense to my friend Nico (who was then director for twelve years of the said jubilee institution), who surely (on this occasion as on others) saw nothing but fire. ..

(***) Against all odds: without allowing myself to be impressed throughout these four years by the persistent warnings and rumors of the imminent bankruptcy of an “adventure” (as well-informed friends suggested.. .) entirely unrealistic, not to mention humbug on the edges! THE. The fact is that IHES did not then have the slightest financial or land base, its life remained constantly suspended on short-term donations from a few more or less well-disposed industrialists. I hardly worried about it, limiting myself to trusting the founding director Léon Motchane, who managed from year to year to “save the day” through miracles of financial conjuring and “public relations”. After all, in these good times, if things collapsed, I had a good chance of quickly finding a less “problematic” base! On the other hand, if I won the bet I had made on IHES (with the encouragement of Dieudonné, who knew Motchane and in whom I had complete confidence), my position at IHES suited me better than any other of which I was aware.

and first of all the dispositions and intentions of my friend — the image he strives to give of my person and his own, both to himself and to the mathematical public.

It is for this reason of course that these two passages interest me. . This interest does not depend on whether or not Deligne is the author of these revealing lines, or whether the author is someone else (the one undoubtedly who “thought” the pamphlet as a whole), who for one reason or another another would have embraced this “message” that my friend wanted to convey.

Here at the end of the ends are the two minute portraits, taken from the portrait gallery (pp. 13–19) entitled “Activity of permanent professors and long-term visiting professors”.

Alexandre GROTHENDIECK, mathematician, professor at IHES from 1958 to 1970, Fields medal.

During the 12 years he spent at the institute, A. Grothendieck renewed the foundations and methods of algebraic geometry, and opened up new applications, particularly arithmetic. He created a school of algebraic geometry at IHES, brought together around the seminar he led and nourished by the generosity with which he communicated his ideas. The titanic aspect of his work is reflected in his publications, including the treatise “Elements of algebraic geometry”, in collaboration with Jean Dieudonné (8 fascicles) and the 12 volumes of the “algebraic geometry seminars of Bois-Marie”, in collaboration with many students.

In algebraic geometry, he identified the essential problems and gave each concept its greatest natural generality. The concepts introduced proved essential well beyond algebraic geometry. They often appear so natural that it is difficult for us to imagine the effort they cost. If they are self-evident today, this was undoubtedly facilitated by the great attention he paid to terminology.

Let us also recall that the “Grothendieck groups”, linked in algebraic geometry to the theory of intersections and used in topology, are the ancestors of algebraic K-theory.

The topos introduced in algebraic geometry on a general base body to transpose the results previously proven on $\mathbb{C}$ by topological means, are now used in logic.

He left IHES in 1970, at a time when his passion for mathematics was fading. Are we to believe that the problems he posed in the line he had drawn for himself had become too difficult?

.....

Pierre DELIGNE, mathematician, professor at IHES since 1970, Fields medal, me-gold medal Henri Poincaré, Foreign Associate of the Academy of Sciences.

The guiding principle of his work is to “understand the cohomology of algebraic varieties”. If the complex algebraic variety X is non-singular projective, the theory of harmonic integrals provides a Hodge structure on $H^*(X)$. Starting from there and from p -adic analogies suggested by Grothendieck, he released the notion of mixed Hodge structure and provided the cohomology of any complex algebraic variety. In p -adic cohomology, therefore for varieties over a finite field, he proved Weil's conjectures, with proverbial difficulty. This result seemed all the more surprising since Grothendieck, after having constructed the theory of cohomology on any body, had reduced the remaining conjecture to a series of conjectures which are still as unapproachable today as then.

This theorem contributed to making p -adic cohomology a powerful tool, applicable to questions apparently far removed from algebraic geometry such as, for example, the Ramanujam conjecture.

More recently, he studied Hodge cycles on abelian varieties, taking a first step towards a “motivic theory”, such as Grothendieck had dreamed of. He also demonstrated the algebraic mechanism of “intersection cohomology”, the topological theory of MacPherson and Goresky. This made it possible to transpose it into p -adic theory, where it proved surprisingly useful.

He is currently interested in non-commutative harmonic analysis (theory of functions on real or p -adic Lie groups - or finite classical ones - and certain homogeneous spaces), as an extension of his work on automorphic forms (Ramanujam's conjecture) and, with G. Lusztig, on the representations of finite groups.

He has a great speed of assimilation and penetration of all mathematics and he, consequently, has enlightening and constructive reactions to each question asked of him.

These two texts are to be completed by a third, in which Deligne and I appear in one breath. I found it in a loose sheet inserted in the brochure, under the same title “Orientation of research at IHES” as the chapter where the “portrait gallery” is inserted, with the subtitle: “Summary note on “prospects of scientific activities”.

It is essentially a draconian “shortcut” of the portrait gallery, reduced this time to only “permanent professors” (present or past) (*), with two or three lines devoted to each. They are (in the order in which they are cited) myself, Deligne, Michel, Thom, Ruelle, Sullivan, Connes, Lanford III, Gromov. This is the order of the more detailed gallery of portraits, except that this fols Deligne has “gone back”, for the benefit of being quoted in one breath with me. Amusing detail, in this text the proper names of the eminences reviewed all appear underlined, with the sole exception of my modest person (**)! Here is the passage about my friend and me:

The legendary profound theories of Alexandre Grothendieck and the brilliant discoveries of Pierre Deligne (both Fields Medals) linked topology, algebraic geometry and number theory by “interdisciplinary” means (cohomology).

Very recently, this allowed G. Faltings from Federal Germany (who has already worked at IHES) to prove a difficult theorem which stands out in number theory and which sheds light on the famous “Fermat’s theorem”.

I note in passing that the “Fields medals” were entitled, in this mini-gallery, to a capital M - and that “interdisciplinarity” was from the beginning of the IHES the great favorite theme of its director - founder. It is perhaps thanks to this circumstance that in this digest, we finally seem to suggest that my person could have something to do with a certain “interdisciplinary means” called “cohomology” (which also happens to be “ the guiding axis” of Deligne’s work, by some unknown coincidence).

But here I am, taking this text by the small end! The appropriate reference to Faltings, who had just, overnight, risen to the forefront of the news

(*) (October 1) To make it “good weight”, we also included Connes (although he is only a “visitor”), that always makes one more “Felds Medal” for the collector. On the other hand, my friend Nico Kuiper was left behind. It’s not him who would have made it difficult to step aside for the occasion...

(**) (October 1) The typographical effect obtained by this brilliant process (the intention of which is perhaps not conscious), is that this passage which will be quoted appears as dedicated to Pierre Deligne (whose the name appears typographically as the head of the line of “permanents”, excluding mine), and that I appear a bit like a “collaborator, foreigner to the establishment! The chronological order is certainly respected, nothing to say that’s for sure - and yet the effect produced (and surely sought) is that of a reversal of roles, arousing in me familiar associations (evoked in notes like “The reversal”, “Eviction”, “Thumb”, n̄ s 68 63, 77). As a result, I also find a certain style of appropriation — the “Thumb!” style. — which clearly indicates to me the real author of the message.

scientific with its sensational result (qualified here as “arduous”, as if that is what it was about - but it does not matter for my purposes...) - it is also part of the “little part” of the text : the “signature” of the scribe in short, and hardly deserves my attention. It is the first sentence about Deligne and me which obviously contains the essential “message” of the passage.

It tells me a lot about certain dispositions in my friend and ex-student — and above all about a profound “Unsicherheit” (insecurity, lack of assurance, — deep inner foundation)(*).

Here, no more than in any of the published texts signed by him(**), or in the two minute portraits which preceded, there is nothing to suggest that my friend could at any time have learned anything from me. But here he is who, in clear and clear terms, presents himself as another father of a vast unifying vision “taken” from others(*), as if subjugated by the intimate conviction of his deep incapacity to conceive himself and let to flourish in him his own visions, as vast or even more vast; and as if, in order to be and appear “great”, he didn’t read! All that remained then was the paltry resource of taking back into his own hands this halo, with which he had enjoyed since his youth to surround a prestigious and now deceased elder (or at least, declared such by a providential consensus..). To seize a halo, rather than allowing the still formless and nameless things to germinate and blossom within him which are waiting for him to be born and to be named - rather than to live his own force which rests in him, and which also waits...

(October 1) It seemed to me that night I was once again touching the heart of the conflict - the very one that I had mentioned in general terms from the very beginning of Récoltes et Semailles, eight months ago (in the section “infallibility (of others) and contempt (of oneself)”, n° 4), and that I

(*) The German word “Unsicherheit” which came to me here has no equivalent in French, nor (I believe) in English. Its literal translation “insecurity” can hardly be applied to designate a psychological trait. The negative term “lack of confidence” is another approximation of fortune. It is understood that what we are dealing with here is “confidence” at a deep level, the lack of which can be perceived on certain occasions, while superficially the impression of assurance, of perfect ease prevails; they form a sort of protective shell, often of considerable inertia and “solidity”, foolproof...

(**) In those at least that I have had before my eyes until now.

(*) There is a particular irony in this fact, moreover, that this vision, taken here from others as a “halo” for himself, has in fact been given over to disdain and systematically countered since the “death” of the master, by the same person acting as an heir while standing out and repudiating the inheritance. See on this subject the three notes “The heir”, “The co-heirs...”, “... and the chainsaw” (n° 90, 91, 92); and for other illustrations , the procession

found “in an extreme and particularly striking case”, towards the beginning of the Funeral (in the note “the knot”, no. 65, of April 26). This was once again an unexpected encounter, at the turn of a quote that I ended up including in the wake of the other two, out of conscience! I had spotted the passage a few days ago already, while looking through the famous brochure, it really struck me at the time, but without me stopping to think about it. But yesterday, once I had written it in black and white, it immediately seemed more meaningful to me, and more striking, than the two detailed passages that I had just copied and which were supposed to constitute the main theme of the note I was writing. However, there was no shortage of places that clicked in these two passages, arousing associations that I would not have missed, even four months ago, of developing so dryly over ten more pages if not twenty. . But it suddenly seemed to me that what I could have developed in this way was basically, with one exception at most, already known which I found confirmed, from a perhaps somewhat different angle, and above all: that these were ultimately accessory aspects, the kind of aspect on which I had expanded sufficiently in the previous note “Compliments” from the month of May (and even throughout my reflection on the Funeral) . The third passage, on the other hand, brought me back to something essential, and which I had tended to lose sight of throughout this long “investigation” that was (among other things) my work on the Burial.

I was also tempted to leave it there then, without at least trying to grasp in words what this single pithy sentence of four lines was telling me, and which at a certain level was indeed “understood”. ”. I finally got over it. The words were slow and hesitant to come up, while the impression, at first diffuse, settled over the course of the writing. Once it was written in black and white, and pruned out what seemed unnecessary, I knew I had nailed down what I had “heard” as well as I could possibly do.

It was getting prohibitively late, I really had to stop there. I went to bed happy, but still not sure if I would include, in my testimony intended for publication, what I had just written. After all, I might as well leave it to the reader, if he was interested in going beyond the surface of a message, to bring to light himself what he heard! It was only today that I knew that I would include this passage, which indeed expresses a certain perception or understanding that I have (or believe I have) of something that seems important to me, and even crucial like deep spring from this Burial.

(106) (October 2) I would still like to pursue at least one of the associations of ideas, cited by the Funeral Eulogy in three parts (of which I ended up giving the full quotation yesterday). This association had imposed itself on me the day after May 12, when I had just written the note “The Funeral Eulogy (1) — or the compliments” (nŷ 104). It touches on a certain aspect of things which often goes unnoticed, and which I only began to really realize over the last five or six years.

Between the lines in the texts examined, we see the cult of certain values asserted. Thus, what is highlighted about Weil's conjectures, proven by Deligne, is their “difficulty”(*) — not their beauty, their simplicity, the vast perspectives that they opened up from the moment they already were stated by Weil. I also think of the fruits borne by these glimpsed perspectives, long before they were demonstrated, and of other glimpsed fruits which now come at the right time, once we have taken the last step in the long journey which led to its demonstration. It is the beauty, the extraordinary internal coherence of these conjectures, and the previously unsuspected links that they reveal, which have made them such a powerful and fruitful source of inspiration for two generations of geometers and scientists. arithmeticians. The deepest part of my work (both the “entirely completed” part, as well as the “dream of the motifs”) is directly inspired by it (by Serre interposed, who was able to capture and communicate all the force of the vision that expressing in his conjectures).

Without them, neither p -adic cohomology, nor even the language of topos would undoubtedly have seen the light of day. To put it better, this “vast unifying vision” of (algebraic) geometry, topology and arithmetic that I endeavored to develop for around fifteen years of my life, it is in these “conjectures of Weil” which I found to be a first and striking draft. And as the vision gained in scope and maturity, it was this vision itself and the previously hidden things that it allowed me to apprehend one by one, which suggested to me step by step what to do, by what means. take” whatever came within reach. The last step in the demonstration of Weil's conjectures was neither

(*) (October 3) Difficulty described as “proverbial”, what’s more! This makes little sense, other than the intention to impress those who are not in the game! The “difficulty” of a conjecture can only be truly appreciated once it has been demonstrated — it is its fruitfulness, on the other hand, which can be foreseen from the outset, and which often manifests itself objectively, even before its demonstration, through the work it inspired. The “great” conjectures are not distinguished from others by their “difficulty” (which is unknown — even assuming that the term has a meaning...), but rather by their fruitfulness. I note in passing that this is a typically “yin”, feminine aspect of a thing, while “difficulty” is a typically “yang”, “masculine” value.

more, nor less than one of the steps in a long and fascinating journey which began I cannot say when, certainly long before my birth, and which after my death will still not be close to being completed!

But following the spirit that we detect in the cited text, we could believe that “Weil's conjectures” were a question of weights and dumbbells: here is the weight to lift “by snatch”! Two hundred kilos is not nothing, the difficulty is proverbial, many have tried and not one yet has been able to achieve it - until “H-day” (like “Hercules”)! The result is surprising (1061), so judge two quintals - no one would have believed that we would ever get there...

It is the same spirit that we perceive in the laconic commentary on the “arduous theorem” proven by Faltings: here again, in the very designation of this new stage in our knowledge of things, it is still the difficulty which is put in relief, to arouse the admiration of the crowds - not the perspectives which open up, from a new summit reached(*). It did not even seem useful to mention the name “Mordell conjecture” (unknown, it is true, to a non-mathematical public) — as if the apprehension and formulation of the conjecture (here, by Mordell) was an incidental thing, because “easy”. Instead, a bogus perspective on “Fermat’s theorem” (which is supposedly “enlightened”). It is true that the latter is universally known (and even outside mathematical circles) as a weight of well three hundred kilos (which has withstood three centuries of effort).

The first point I wanted to come to is that the values which are exalted in these texts (with the discretion which befits the circumstance, of course), are those which we can call the values of the muscle, of the “cerebral muscle ” in this case: the one which makes it possible to surpass, with the strength of the wrist, proverbial records of “difficulty”.

These values are not only those of the hero highlighted here, like those of the author of a certain jubilee brochure (author who remains anonymous and whom I believe I recognize). These are also the values which increasingly (it seems to me) dominate in the mathematical world, and more generally, in the scientific world. Even beyond this world, which is still relatively restricted, we can say that these are also, and increasingly, the values

(*) What struck me most, from the moment I held in my hands Faltings' preprint where he proves three key conjectures, including that of Mordell (which is discussed here), is On the contrary, it is the extraordinary simplicity of the approach, by which he proves in around forty pages these results which were supposed to be “out of reach”! (Compare with note # 3.)

of a certain “culture”, described as “Western”(*). Nowadays and for a long time, this “culture” and its values have conquered the surface of our planet by annihilating all others, irrefutable proof of their superiority. The planetary symbol, the heroic incarnation of these values, is the cosmonaut in his waterproof armor, the first to set foot on some unimaginably distant and desolate planet, in front of millions of panting viewers, slumped in front of their screens.

These values, which for lack of understanding more closely I have limited myself to designating by a summary term of symbolic value, “the muscle”, do not date from yesterday. In ethnologist jargon, we could also call them “patriarchal”. One of the first written texts, it seems to me, where their primacy is forcefully asserted (an unanswerable force!) is the Old Testament (and more particularly, the book of Moses). However, it is enough to read in this fascinating document from a distant era, to realize that the primacy of “patriarchal” values, that of man over woman, or that of the “spirit” over the “body ” or on “matter”, was far from going as far as the negation or contempt of complementary values (which were perhaps not yet perceived as “opposite” or “antagonistic”(**)). I don't know if the story of the vicissitudes of these two complementary sets of values has been written — and it must be a fascinating thing to continue that story, across centuries and millennia, from the times of Moses to the present day. It is also the story, undoubtedly, of the progressive degradation of a certain balance of “values”, “patriarchal” or “masculine” on the one hand, “matriarchal” or “feminine” on the other — of “muscle” and “gut”, “spirit” and “matter”; degradation which has visibly taken place in the direction of “male” values (or “yang”, in the traditional oriental dialectic), to the detriment of “female” values (or “yin”).

(*) When I refer here to the “values” of our culture as they appear today, I of course mean the “official” values — those which are conveyed by the school, the media, the family , and which are the subject of a general consensus in various professional circles. This does not mean that these values are accepted without reservation by all, nor that they constitute the basic note in the attitudes and behavior of all. It is, moreover, with sadness that honest people, the media and competent professional literature (from the pens of educators, sociologists, psychiatrists, etc.) speak of a “certain youth” in particular, who definitely do not “fit ” hardly and which spoils a certain picture!

(**) Thus, the cult dedicated to the mother is a tradition strongly rooted in Judaic culture, which undoubtedly has a compensatory role with regard to the “official” values (so to speak) put forward in the texts Holy. This tradition is found, in a modified and more exalted form, in the Catholic tradition, with the cult of (the virgin!) Mary.

It seems to me that our era is characterized as that of an excessive exacerbation of this cultural degradation. Among the last acts of this history, there are those, intimately united, of the "space race" between the two antagonistic superpowers (imbued with essentially identical values), and of the arms race (nuclear no- tamly). As a final act and probable outcome of this frenzied evolution in the overbidding of a certain type of "force" or "power", we can foresee from now on some nuclear holocaust (or other, there is the embarrassment of choice. ..) on a global scale. It will perhaps have the merit of resolving all the problems at once and once and for all. all...

My purpose here, however, is not to paint a tantalizing picture of the "end of the world" (I was not expected to do that), and even less to go to war against the "muscle", or against "the brain". (aka the "spirit"). I know very well that even my "guts" would have nothing to gain from it! I care about my muscles and my brain, which are very useful to me as you can imagine, just as I also care about my "guts", which are no less useful. Rather, it seems useful to me to say here in a few words (if possible) how this deep conflict, conveyed by the surrounding culture, between these two types of values played out in my own person. In more down to earth terms, it is also the history of my attitudes (acceptance or even exaltation, or rejection) of two equally real and tangible aspects or sides of my person, inseparable and complementary by nature , and in no way antagonistic in themselves. I could call them "the man" and "the woman" in me, or also (to take less "loaded" designations, and which therefore offer less risk of misleading), the "yang" and the "yin".

It would seem that for most people, the "games are made" from early childhood, where the essential mechanisms are put in place which, throughout life, will dominate in silence, with the efficiency of a perfectly fine-tuned automaton, attitudes and behaviors. At the heart of. these mechanisms are those of affirmation or rejection of such and such traits in us, or such deep impulses, with either a yang or yin "signature", or such and such "packages" of traits and impulses with a given signature. , or even the "yang" package or the entire "yin" package. It is these mechanisms which, to a very large extent, determine all the other mechanisms of choice (affirmation or rejection) structuring our "self".

For reasons that still remain mysterious to me, in my own case the story

relationships (both conscious and unconscious) between the self (“the boss”) and the “male” and “feminine” in my person (both in the “boss” himself and in the “worker”), both of which are dependent on the double yin-yang aspect of all things) — this story has been more eventful than usual. I distinguish three periods. The last in a certain sense joins the first, which spans the first five years of my childhood. This third period, which I can call that of maturity, can be seen as a sort of “return” to this childhood, or as a gradual reunion with the “state of childhood”, with the harmony of marriages without fuss. “yin” and “yang” in my being. These reunions began in July 1976, at the age of forty-eight — the same year in which I made the discovery (three months later) of a hitherto unknown power in me, the power of meditation. (*).

The dominant values in the person of each of my parents, both my mother and my father, were yang values: will, intelligence (in the sense: intellectual power), self-control, ascendancy over others, intransigence, “Konsequenz” (which means, in German, extreme coherence in (or with) one's options, particularly ideological), “idealism” at the political and practical level... In my mother, this valorization took on an exacerbated force from a young age, it was the reverse of a real hatred that she had developed towards “the woman” in her (and from there, towards the feminine in general. This hatred in her ended up taking on a vehemence and a force all the more destructive because it remained entirely hidden throughout my life. (I myself ended up discovering these things only five years ago, three years after meditation appeared in my life.) such a parental context, it is a mystery (and yet a fact which is beyond doubt for me) that I was able to fully flourish during the first five years of my childhood — until the moment of tearing away from my parental environment and the destruction of my family of origin (made up of my parents, my older sister, and me), by the will of my mother and thanks (so to speak) to events policies of the year 1933.

(1061) (October 3) Neither I nor Deligne have ever had the slightest doubt that Weil's conjectures might not be valid, and I do not recall having heard anyone express such doubts. Describing the “result” (ie the demonstration of these conjectures) as “surprising” further demonstrates the deliberate intention of impressing the gallery. Besides at

(*) See the two sections “Desire and meditation” and “Amazement”, nys 36 and 37.

at no time since the introduction of 'topology' and étale cohomology have I had the feeling that these conjectures were out of reach, but rather (from 1963) that they would not fail to be demonstrated in the coming years. At the time of my departure, in 1970, I had little doubt that Deligne, who was best placed of all for this, would not take long to prove them (which he did not fail to do), in at the same time as the stronger "standard conjectures on algebraic cycles" (which he nevertheless tried to discredit).

It is also right that Deligne expresses reservations about the validity of these latest conjectures, of which I am no more convinced than he is. But the significance of a conjecture does not depend on whether it will ultimately turn out to be true, or false, any more than its character of so-called "difficulty", which would make it "out of reach" – an entirely subjective character, itself. . It depends solely on whether the question on which the conjecture puts its finger (and which had not been perceived before it was asked) — whether this question touches on something truly essential for our knowledge of things. Now it is obvious (for me at least!) that there can be no question of having a good understanding of algebraic cycles, nor of the so-called "arithmetic" properties of the cohomology of algebraic varieties (or even of the "geometry of patterns"), as long as the question of the validity of these conjectures is not resolved. Even today, as during the Bombay Congress in 1968, I consider this question, with that of the resolution of singularities, as one of the two most fundamental questions that arise in algebraic geometry. I clearly feel the significance of both! This potential fecundity cannot fail to manifest itself, from the moment we no longer limit ourselves to sidestepping a conjecture declared "too difficult", and when someone finally takes the trouble to roll up their sleeves and get stuck into it!

(107) (October 4) I have already had occasion to mention an important aspect of these first five years of my life, as a "privilege" of great value(*): a deep and without problems with my father, who was never touched by fear or envy. I became aware of this circumstance, and of the very existence, like the silent force, of this identification with my father, only four years ago (during the meditation on my childhood and on my life which followed that of August 79 to March 80 on my parents). This identification was like the peaceful and powerful heart of an identification

(*) See the note "The massacre", n° 87.

to the family we formed, my parents, my sister (who was four years older than me) and me. I had boundless admiration and love for both my father and my mother. Their person was for me the measure of all things.

This in no way means that my attitude towards them was one of automatic approval, of blissful admiration. I probably didn't know that they were the measure of everything for me, but I knew very well that they were fallible like me, and there was no fear in me that would have prevented me from noticing a disagreement. and to manifest it clearly. In the conflicts that surrounded me, I was not afraid to take sides in my own way. This in no way affected a certain faith, an assurance which formed the deep, unshakable foundation of my being - rather, it flowed spontaneously from this faith, from this very assurance.

It happened that my father, in fits of impotent anger while my sister (without seeming to) took pleasure in provoking him, hit her brutally — and each time I was outraged, in a surge of solidarity without reservations with my sister. These were, I believe, the only big clouds that passed in my relationship with my father (there were none with my mother). It's not that I approved of my sister's sometimes wicked tricks, nor do I believe that they really troubled me - it wasn't she who was the measure of things for me, Her tricks (the reason for which surely eluded me just as much as it did my father, who “worked” every time, or my mother who was careful not to intervene before or after) — these tricks in a sense did not really have any consequences In my opinion. She was my sister, she was as she was, that's all. But for my father to indulge in such blind brutality...

The three closest beings, who together constituted the matrix of my early years, were torn apart by conflict, pitting each of them against himself and the two others: an insidious, impassive-faced conflict between my mother. and my sister, and conflict with violent outbursts between my father and my mother on one side, my sister on the other, each of whom on her own behalf (and without anyone during my parents' lifetime having ever pretended to 'seeing it...') made him walk in his own way. The mysterious, extraordinary thing is that surrounded thus by the conflict in these most sensitive, most crucial years of life, it remained external to me, that it did not really “bite” on my being in those years and settled there permanently.

The division in my being, which marked my life as much as that of any other, did not settle in me in those years, but in the two or three years that followed, from my sixth

about my eighth year. At a certain moment (which I thought I could place within a few months, and which would have been in my eighth year) there was a certain shift, after more than two years of separation from my parents (who did not hardly bothered to give me any sign of life) and my sister. It was above all a break with my childhood, “buried” from that moment on by effective mechanisms of forgetting (which have remained in place, more or less, until today). At a certain deep level (not the deepest though...) my parents were then declared by me as “foreigners”, just as my childhood was now declared “foreign”. I abdicated, in a sense: to be accepted in the world that now surrounded me, I decided to be like “them”, like the adults who make the law there — to acquire and develop weapons who command respect, to fight on equal terms in a world where, only a certain type of “strength” is accepted and valued...

It was also this strength that was preferred by my parents, who had supported my early years. And there I return to this “mysterious thing” (from which I have just moved away, following the thread of another association aroused by this thing), the absence of division in me, in these first years of my life.

Perhaps the mystery is no longer for me in this absence, but rather in this: that my parents, my father like my mother, each then accepted me in my totality, and totally: in what in me is “manly”, is “man”, and in what is “woman”. Or to put it another way: that my parents, both torn apart by conflict, each denying an essential part of their being - Each incapable of a loving openness to himself and to the other, as if 'a loving openness to my sister... that nevertheless they found such an openness, an unreserved acceptance, towards me, their son.

To put it another way: at no time in these first five years of my life have I experienced the feeling of shame for being what I am, whether in my body and its functions, or in my impulses, my inclinations, my actions. At no time have I had to deny something in myself, to be accepted by those around me and to be able to live in peace with them.

Of course, it happened that I did things that didn't “work”; Like all children, I certainly found it difficult, even unbearable, when I got started - and it was clear sometimes that I had to rectify the situation. I was not making the law, nor was I tempted to want to make it, not having to compensate for some secret mutilation. And in my parents' love for me, there could have been no room for adulation, for indulgence in whims—for

unconditional approval. But if it inevitably happened that I was “sent to the coses” by my father or my mother (just as the opposite could sometimes happen), never in those years did one nor the other take me. shamed them for an act or behavior that would not have pleased them.

Against the background of a deep identification with the father, without any ambiguity, my person as a child appears to me today as imbued with both virility and femininity, both strong.

It seems to me that in each being and in each thing, in these indissoluble and fluctuating marriages of the yin and yang qualities in him which make him what he is, and whose delicate balance is the profound beauty, the harmony which lives in this being or in this thing - that in this Intimate union of yin and yang there is often (perhaps always) a background note, a “dominant”, which is either yin or yang. This underlying note is not always easy to detect in a person, because of the more or less effective and complete mechanisms of repression, which distort the game by replacing an original harmony with a borrowed image. Thus my “brand image” for forty years was an almost exclusively virile image - without ever being questioned or even detected as such, by myself or (it seems to me) by others, until in my forty-eighth year. I tend to believe, however, that the underlying note present at birth remains present throughout life, at least in deep layers which perhaps never find the opportunity to manifest themselves in broad daylight. In my own case, strangely enough, I still cannot say today what this dominant note is, the one which permeated my early childhood and which was already “mine” at my birth. Various signs have made me suspect more than once that this note is “yin”, that it is the “feminine” qualities which dominate in my being, when it finds the opportunity to manifest itself spontaneously, in the moments when it is free from all kinds of conditioning that have accumulated in me since childhood.

To put it another way: it could be that what is the creative force in my body and in my mind, what I have sometimes called “the child” or “the worker” in me (as opposed to the “boss” who represents the structure of the self, that is to say what is conditioned in me, the sum or result of the conditioning accumulated in my person) - that this force is even more “feminine” than “virile” (while by nature and necessity it is one, and the other).

This is not the place to review all these “signs”. The important thing, moreover, is not whether this deep dominant note in me is “feminine”, or whether it is “virile”. It is

rather, that I know at every moment how to be myself, by accepting without reluctance both the traits and the impulses in me by which I am "woman", as those by which I am "man", and by allowing them to be express freely.

When I was a child, in those early years, it was not uncommon for strangers to mistake me for a girl - without this ever creating in me the slightest discomfort, the slightest feeling of insecurity. It was mainly my voice, I think, which had this effect, a very clear, high-pitched voice - not to mention that I had long hair (most often disheveled), perhaps simply because my mother (who never missed no other worries) didn't often take the time to cut them off for me even a little. I was also strong like a Turk and I didn't mind playing games that were a little violent or daredevil, which in no way prevented a penchant for silence, even for solitude, and also a penchant for playing. to the doll (*). I don't remember anyone making fun of me about it, but it certainly couldn't have failed to happen here and there.

If such incidents passed without leaving a trace of injury or humiliation, it is surely because they did not receive any echo or amplification, due to some feeling of insecurity within me, whereas the acceptance of who I was, by those who alone really mattered to me, was beyond any question. The mockery could not have reached me, it could only turn against the one who must have appeared to me to be very stupid, for pretending to find fault with the most natural thing in the world.

I also knew well that this kind of slightly strange stupidity is by no means a rare thing, that the mere sight of nudity can cause scandal! Yet as far back as I could remember, I had had occasion to see my mother, father and sister naked, and every opportunity also to satisfy my legitimate curiosity as to how each of them and myself were facts. It was very obvious that there was no cause for scandal in the conformation of the men or the women, which seemed to me decidedly very good as it was - and more particularly (I made no secret of this) that of the women.

(108) (October 5) It was in 1933, when I was in my sixth year, that the first crucial turning point in my life took place, which was at the same time a crucial turning point also in the life of my mother like my father, in their relationship to each other as in that to

(*) If this inclination seems rare among little boys, it is above all I believe because it is systematically discouraged by those around him.

their children. It is the episode of the violent and definitive destruction of the family that the four of us formed, a destruction of which I was the first and the only one, forty-six years later, to observe and follow the adventures. , in my parents' correspondence and in one or two bloodless, enigmatic and tenacious memories, patiently probed and deciphered - long after the death of my father and that of my mother(*).

It is not my intention to dwell here on what I learned and understood during this long work, regarding the scope and meaning of this episode. I already alluded three days ago to this turning point(**), as marking the brutal end of the first of the three great periods, in the history of the marriage of the yin and the yang in me. In December 1933, I found myself hastily dropped into a foreign family, whom I, nor my mother who brought me there from Berlin, had never seen. In fact, these unknown people to whom she took me were simply the first comers who were willing to have me as a "boarder" for a more than modest pension, and with no guarantee of any kind that it would ever be paid, so that my mother was preparing to join my father as quickly as possible, who was moping around waiting for her in Paris. It was an agreed thing between my parents that everything was going to be for the best both for me in Blankenese (near Hamburg), and for my sister who a few months ago had been dumped at the end of the year in an institution in Berlin for children. disabled (where she was welcome, even though she was no more disabled than me or our parents).

At the end of six strange months, heavy with dull threat and anxiety, I found myself overnight in a world totally different from the only world I had known in my life, the one formed by my parents and my sister. and me. I found myself there as one among a group of boarders, who ate separately from the family and seemed like second-class children to the children of the house, who formed a world apart and looked down on us. From my mother I received a hasty and stilted letter from time to time, and from my father never a line from his handwriting, during the five years that I remained there (until 1939, on the eve of the war, when I ended up joining my parents under the pressure of events).

The couple who welcomed me quickly took a liking to me. As well as him, former pastor

(*) My father died in Auschwitz in 1942, my mother died in 1957. The work I am talking about here continued between August 1979 and October 1980.

(**) See end of note "Yang buries yin — or muscle and guts", n° 106.

who had left the priesthood and lived on a meager pension and private lessons in Latin, Greek and mathematics, his wife, sparkling with life and sometimes mischief, were unusual people, endearing in many ways. He was a humanist of broad culture who had lost his way a little in politics, and had had trouble with the Nazi regime, which ended up leaving him alone. After the war I reconnected and remained in close contact with them until the deaths of both of them(*).

From him and especially from her, just like from my parents, I received the best as well as the worst. Today, looking back, I am grateful to them (as I am to my parents) for this “best”, as well as for this “worse”. It is this best and this worst that I received, from my parents first, then from them, which formed the bulk of the voluminous “package” that I received as a share in my childhood (like everyone receives his...), which it was up to me to unpack and examine, they are part of the substance, the richness of my past, which it is up to me to nourish my present.

My new environment was everything “proper” and conformist in many respects, with in any case the repressive attitudes required for everything that concerns the body and, more particularly, the sex. However, it took several years, I think, before I internalized myself and took on board these attitudes, such as the shame of showing myself naked, going hand in hand with an ambiguous relationship with my body. This shame, instilled from a young age, is one of the aspects of a deep division, where the body is the object of tacit contempt, while so-called “cultural” values (confused with intellectual capacities for memorization and others) are hairpin climbs. This division within me remained unaddressed until my forty-eighth year, when it began to resolve itself. This is the second major turning point in my life, which marks the advent of the “third period” in the history of my relationship with myself, that is to say also that of my relationship with my body. , and to the “man” and “woman” in me. But before then I had ample opportunity to help transmit this division to my children (*), whom I was able to see transmit it in turn...

I already alluded yesterday(**) to the “shift” that ended up taking place within me. With a

(*) She died at the age of 99, two years ago, and I was still able to see her dead, face to face with her, the eve of the funeral.

(*) At least, to the four of them that I helped raise. The fifth and last is being raised by his mother, and until now there has not been a favorable opportunity to even get to know him and moi.

(**) See the beginnings of the previous note “Blooming of force — or the nuptials”, note n° 107.

gap of more than two years after the uprooting from the initial family environment (or to put it better, after the destruction of this environment), this shift consecrates the establishment of current repressive mechanisms, of which my childhood had the rare lucky to be exempt until then. I have detected so far two major forces of a repressive nature, which have dominated my adult life and a large part of my childhood (1081). I think I can say that their appearance did not happen gradually, but that in my case these mechanisms appeared more or less overnight and in all their force, as a consequence of a deliberate choice, at the unconscious level. . I previously described this choice as an "abdication", but at the same time it was also a powerful principle of action: the "I will be like "them"" (and not "like me") also meant: I will "betting" on "the head", no worse with me than with anyone else after all, and fighting and beating "them" with their own weapons!

One of these mechanisms, and the one that particularly interests me here, is one of the most common there is: it is the repression of my "feminine" traits (or those felt as such by current consensus), for the benefit of "manly" values. The silver lining was of course the complete investment in my traits and skills that were felt to be "manly" and the excessive development of these, which took on a disproportionate place.

If something here is out of the ordinary, it is of course not the simple presence of this double mechanism, nor (it seems to me) the force of the "repressive" component strictly speaking, the force therefore of the repression of traits, attitudes, . "yin" impulses. There is no comparison here with what happened with my mother, whose life (and that of those close to her) was devastated by her hatred (which remained hidden throughout her life) of what made her a female. At no time, I believe, have my ways of being been entirely free from a certain gentleness, even tenderness, which stubbornly rounded the corners of the character that I had carved out for myself since my childhood, and which attracted me often sympathy and affection. The exceptional side would rather be found in the excess of my investments, in the excess of the energy that I invest in my tasks, without letting myself be distracted by a glance to the right or to the left! Apart from the work itself, my mind is continually projected towards accomplishment, towards the outcome of this or that stage of the work. This attitude ("Zielgerichtetheit" in German, "aimdirectedness" in English) is par excellence a yang attitude, an attitude of tension, of closure to everything that does not appear directly linked to the task.

This excess was likely to arouse in others the image of a sort of "superman" or

"super-male", certainly admirable, unfortunately! (given the current values), but immediately arousing (at a level which most often remains unconscious) instinctive reactions of defense or even antagonism in the face of such a deployment of force, felt as threatening or even aggressive, or in all dangerous cases (1082). And above all, this image irresistibly evokes the image of the "super-father", and immediately sets in motion the ambiguous multiplicity of reactions of attraction and repulsion tied around the eternal conflict with the father... This is where MU has contributed in these relationships of ambiguity, which have been so common in my life, and which I found myself confronted with so many times during Harvest and Sowing. This ambiguity is reinforced, not diminished, by your persistence of yin traits in me which fuel a sympathy, which the mere hypertrophy of yang traits into a sort of gigantic "superman" would be powerless to arouse.

And once again I can see, in these endless "relationships of ambiguity", that I am still only reaping what I myself have sown, even if each time the harvest turns out to be unexpected (and unwelcome...) ! Because the motivation (or at least one of the motivations) which pushes "the boss" in me to constantly surpass himself in the accumulation of works, was it not precisely to force and constantly relaunch the esteem of my evens (first of all) and my odd ones (in addition); to hear some of the best lament that they can't keep up with me at the pace I'm moving forward?! Yes, there was indeed in me this secret desire to arouse in others (as in myself) this "larger than life", disproportionate image - like the very one it reflects - and which stubbornly returns to me, through the other: in clear and lofty words, by the expected praise (and taken as due) - and also, by the dark and deep ways of deaf enmity and conflict...(*)

(*) (October 6) To be honest, "this secret desire" on which I have just put my finger again, is not yet consummated today, even if it was finally detected (since a few years ago). hardly...), and if it is less devouring today than in the past.

(1081) (October 6) I want to say that the forces of a repressive nature which have played in my life, seem to take mainly, if not exclusively, one of these two specific forms: burial of the past, and highlighting of my traits “manly” to the detriment of my “feminine” features. I do not intend to say that these two “forces”, both of a repressive nature (that is to say, aimed at a “repression”, at an evasion of a certain reality), are the only ones who “dominated my life”! This would mean forgetting the entire non-egotic aspect of my being, the drive for knowledge expressing itself both at the level of body and mind.

(See on this subject in particular “My passions”, section n° 35.)

Even among the forces structuring the self, emanating from the “boss” therefore, there is at least one, of a non-repressive nature in itself, well prior to the forces of repression and whose role in my life has been even more essential: it is the identification with my father, who was like “the peaceful and powerful heart” of the feeling of my own strength. This identification in no way went in the direction of exalting certain values or qualities (virile, let's say) to the detriment of others (“feminine”). Regardless of the values professed by my father, his person (until 1933, when a shift took place in him(*)), was imbued with a strong yin-yang balance, where intuition and spontaneity were not had no less part than intellect and will.

Finally, as another important “force” of an egoistic nature, intimately linked to repressive mechanisms (or better said, of a “repressive” nature itself), it is still appropriate to take into account the eternal vanity, whose role has been as heavy in my life as in anyone's. But this “force” is of such a universal nature, as is the dominant role it plays in the life of each person (in a more or less gross or subtle form), that there is hardly any reason to question it. expressly include, in a statement of the specific forms that the forces and mechanisms which structure the self take in a person, and give it its particular physiognomy and its foundation.

(1082) (October 6) In this “deployment of force” there is no “aggressive” intention

(*) Remarkably, this “shift” in my father (then aged 43) was towards a super-yin state, towards a sort of pasha pasha, in close collusion with my mother, playing a super role -yang. She took charge of him in place of his children. (They were left to “profit and loss”, until at least 1939, the year when under the pressure of events and against his will, she ends up taking me back to her...) This relationship of dependence on my father and reversal of yin-yang roles between my parents lasted until my father's death in 1942.

in the common sense of the term, conscious nor unconscious, only an unconscious desire to impress, to command esteem. It is true that this term “force esteem” which comes to me spontaneously, already carries a connotation of constraint, close to that of “aggression”. This unconscious intention of constraint, also perceived at the unconscious level, must often be experienced as a sort of aggression (even though this experience remains hidden, just like the antagonistic reactions it triggers). At the same time, this experience must often be amalgamated with similar experiences, dating back to childhood, with the father as the protagonist, and where he appears as the main holder of repressive authority, even as a overwhelming rival, envied and hated.

Even without such an amalgam, and also independently of any perception in others of an intention of “constraint” in me, there must often be the perception of a strong imbalance, of a fundamental disharmony, in this “deployment of force ” exclusively yang (in spirit and intention, at least). This excess is harmful to the main person concerned, namely myself, and at the limit well and truly “dangerous” for his physical survival itself (as health incidents in recent years have clearly shown me!). This is undoubtedly what was implicit in my thoughts, when I wrote that “such a deployment of force” was felt “in any case as dangerous” – dangerous “by nature”, an example therefore to be especially avoided. not follow...! Such a feeling is surely sufficient to provoke “defense reactions”, even in the absence of any aggression or intention to attack.

It is true that such relationships of ambiguity were reproduced after 1976, with certain of my students in particular, at times when any mathematical investment was absent, and where there was no apparent “deployment of force” in my life. It is also true that the “deployments” in question from the past have created a reputation, which continues to stick to me, especially in my professional life, and which to a certain extent replaces the perception of who I am in the present. Furthermore, I have acquired in dealing with certain mathematical themes such ease that, even outside of my mathematical periods and my reputation helping, this ease or natural mastery can already have the effect of “deployment of force”, on unmotivated students, and making me feel to them (despite certain pleasant and even reassuring traits) as a sort of Superman (a little Superfather on the edges!).

Moreover, as a reverse of the ease of which I speak, I often tend to underestimate the difficulty that the acquisition of such baggage, or the development

of such a tool — which tends to place it at odds with my expectations. (See on this subject the note “Failure of teaching (1)”, nǚ 23 iv.) Such a situation must quite often be one of the important ingredients of a false relationship with the father...

(109) (October 9) I felt very happy when I finished the previous note(*), four days ago. I unexpectedly found myself reconnecting with an intuition that had come to me on a certain Sunday, October 17, 1976 (a few days ago it will be eight years ago) — the intuition of the devastating effect, in my life as in that of my mother, of a “certain strength” in me. It was the first time in my life that I devoted a reflection, however brief, to what my life had been like and, above all, my childhood. It was also two days after the day on which I had discovered the power of meditation (**), and it was the first time since that moment that I had used this power, so long ignored. It was without deliberate intention, by the effect of a deep impulse, as if moved by a very sure instinct, that the reflection that day ended up being directed towards my childhood. Only with hindsight can I see to what extent it was at the source of my true strength, as well as the conflict and division within me, that a deep need to know had brought me then. For almost three years I was not going to return to it, distracted as I was during these years by only “agenda” questions, without realizing that I remained on the periphery of the conflict in my life, all by stubbornly keeping myself away from the heart itself: from this childhood drowned in mists, which seemed so infinitely distant...

I have just gone through again, “diagonally”, the eighteen sheets, of exceptional density, of this crucial meditation in my life. It was during the night following this meditation, or rather in the early morning after this night of meditation, that I had a dream of overwhelming force - also the first dream in my life whose message I had fathomed. , passionately. I was no more aware then of where I was going and what was happening than the day before when I was “discovering meditation”. For four hours I immersed myself in the meaning of this experience, of this dream-parable, through successive layers of increasingly burning meaning, before arriving at the heart of the message, its simple and obvious meaning. .

It was not then the sudden trigger of an understanding of “intelligence”, nor even

(*) See the note “Yang buries yin — or the Super father”, nǚ 108.

(**) See the section “Desire and meditation”, nǚ 39.

like a sudden light in darkness or darkness. It was more like a deep wave born in me and which suddenly surged through me and in its vast waters brought me this sense which had been hidden until then: that I found in this moment a very dear and very precious being, that I had lost since my childhood...

This moment was experienced as a birth, as a profound renewal. This feeling remained very strong throughout that day, and again in the following days. With the hindsight of eight years, this moment still appears to me today as a creative moment among all in my life, and that of an essential turning point in my spiritual adventure. It was certainly prepared by many other "moments", in the days and months which had preceded. The first precursor perhaps was this "salutary uprooting", more than ten years previously, from an institution where I intended to end my days (*). These previous moments appear to me a bit like the ingredients, or rather the means at my disposal, with which I could cross this other "threshold" which was in front of me without me noticing it, which was located at a deeper level. , more hidden than others I had passed. Everything had come together, for a few days or hours, for me to cross it - and I could cross it, or I could not cross it, day after day for my life...

And also, this threshold having been well and truly crossed, the way was found open towards other crossings still, towards other "awakenings" or "awakenings", each of which by nature is also a renewal, and both or a little, a "new birth", a re-birth. It happened to me to evade some of them for months or even years, only to end up taking the plunge, relieving myself in the process of some tenacious illusion, which for a lifetime had stood between me and the full flavor. of my life and the world around me. And surely also, there are some that I continue to evade, even as I write these lines...

From the perspective of the reflection of these last days, it is this moment of reunion with my childhood, believed lost and dead for a long life, which marks the end of the "second period" of my spiritual journey: that of predominance, in my personal life, of egoic mechanisms, against the creative forces, the forces of knowledge and renewal, which had gone through an almost complete stagnation of forty years. It is also the time of the preponderance of a "certain force", a force with an almost exclusively "manly" character, like the values in honor in the surrounding world, at the expense

(*) See note n° 42, of the same name.

deep “feminine” aspects and strengths of my being, ignored and repressed (with never complete success, thank God!).

The very first intuition about the destructive nature of this force, which had dominated my life like that of my mother, and that of other women too who had been important in my life - this intuition made a brief appearance in these days of intense maturation, surely thanks to the resurgence of yin, “feminine” energy, in my conscious apprehension of things. Contrary to what I thought I had hastily remembered earlier, this apparition did not take place in the meditation the day before the reunion, but a few hours after it, in a short meditation on the meaning of what had just happened.

Intuition is born and takes shape at the very end of the few pages of notes for this meditation. I perceive the destructive nature of this “force” (which today I would call “superyang force”, i.e. excessively yang dominant) in my mother first, then in other women, to continue with these final lines:

“As for the “strength” in myself, it is certainly this which made me the target and the object, expected for a young life, of the secret hatred and resentment of M., then of J. , then of S. — of a hatred deposited in them long before they knew of my existence, in the helpless days of a childhood deprived of love.

The word “childhood”, in the last line which testifies to an important day among all in my life, appears there for the last time for almost three years! As for the intuition on the nature of the superyang force in me, as provocative of antagonistic reactions, even of hatred and resentment, it had a tendency (it seems to me) to sink a little into oblivion until these very last days again. More precisely, it remained present only in my perception of certain important relationships in my life (and especially, relationships with women I loved). On the other hand, she hardly really penetrated conflict situations that were a bit “all comers” (*), with certain students in particular, as I had to examine or discuss many times during Récoltes et Sowing. During all this reflection, the fact that by a sort of involuntary “provocation”, I myself made my own contribution to the conflict situations that I evoked or examined here and there — this fact often remained completely concealed, while the contribution of the protagonist

(*) Or treated as such...

On the other hand, it appeared very clearly to me. This is of course a very widespread, if not universal, reflex! The reflection of these last days ended up defusing it and at the same time, making me detect it again in myself - by making me suddenly find myself, at the bend in the path (of a reflection on the yin and the yang ...) face to face with myself — with a certain myself, at least.

The short reflection of four days ago barely begins the multiplicity of aspects of my person, through which the yang imbalance was felt in the “character” that I had portrayed since my childhood; and also the crushing effects that this imbalance could sometimes have on others. Particularly on those in whom the yang type force was still lacking – and first and foremost on my own children. I am thinking here above all of a certain “mode” of peremptory assurance on which I functioned, in all the things (and there were many) about which I had, rightly or wrongly, a way of seeing or feeling, or strong opinions. Certainly, the idea would not have occurred to me to impose these ways of seeing on anyone, and on my children less than on anyone else - and with this absence of any desire for constraint in me (at the conscious level at least), I was incapable for most of my life of realizing to what extent these ways of being in me (which seemed spontaneous and natural to me, and which I was far from discerning the complex nature...) — to what extent they have the same effect on my children and others as a constraint; or rather, an even more insidious effect: that of arousing or maintaining in the other an insecurity about the value of their own feelings, ways of seeing, opinions - as if these (in the face of my self-confident assurance flaws, even to my pained astonishment) did not even have reason to exist.

I also sense that the development of this propensity in me, particularly in my relationship with my children, could well be quite complex, intertwining intimately with the vicissitudes of my married life. This is not the place to try to follow its mysteries; nor to make a more or less complete inventory of other aspects of my person through which this imbalance manifested itself, of which I tried in the previous note to identify a particularly apparent aspect: that of the “deployment of force”.

We should not believe that this imbalance, cultivated over a lifetime, and the multitude of psychic mechanisms by which it manifested itself, vanished overnight as if by the wave of a magic wand. I didn't expect anything like that either, nor in this

reunion day, nor in the days and weeks that followed.

(October 10) These were days of melting ice, carried by a powerful influx of new energy — days of inner work and wonder, before these new worlds that day after day I saw half-open, taking birth. in the humble fabric of the small daily facts and unfolding under the intense action of eyes eager to see. These were also the days when the first presentiment of the wealth of this stranger began to appear who suddenly challenged me, whom I had ignored until the day before. I understood it through these “bits” that had just made themselves known to me, in the very moment of reunion, and in the unpredictable and unforeseen journey that followed it. I felt very well that this “birth” through which I had just gone through was just the beginning of something entirely unknown, or rather the recommencement of something which had been interrupted, which had been cut off or stifled one day, and who had left mysteriously. To tell the truth, this “d”. “come” intense had started moving again in the preceding months, but at a level where introspective thought had hardly had a part yet...

One of the profound aspects of this becoming which had come back to life, of this work which had resumed, was the progressive restoration of the original balance of “woman” and “man”, of yin and yang in me, over the days, weeks and years. In a way, I can say that since the moment of reunion, “childhood” or the state of a child has remained present, “in potential”, through a deep and indelible knowledge within me of my own nature, of my essential unity, Indestructible, beyond the effects of a certain “division” which often continues to agitate the surface of my being. The very word “child” or “childhood” to designate the thing, this unity of being, only appeared years later, around the time when I began to get to know each other, at the level of conscious thought, with the double yin-yang aspect of all things. It was also the moment when this knowledge (or at least, this presentiment) appeared that the state of childhood, the creative state, is that of the perfect balance of yin and yang forces and energies, that of “weddings”. ” of yin and yang, manifesting as a state of creative harmony.

It seems to me that at a certain level, this knowledge of my grounded unity is present at all times, and that it acts at all times. It is also true that this action is more or less sensitive and effective depending on the moment, and that it is in no way in the nature of a more or less permanent elimination, or even of a wholesale destruction of ego-tic forces. , of the “boss” therefore — nor even of an elimination of the forces of repression (which form

a good part of the “soft”, if not quite all of it...). These are the forces of surreptitious evasion of the reality which surrounds me and the reality which unfolds within me - the forces silently and obstinately at work to maintain against all odds the tenacious illusions, which without them would immediately collapse under their own weight... Some of these repressive mechanisms were identified one by one and disappeared. I got rid of certain illusions that weighed heavily on me, and I clarified the few stubborn doubts that, for a lifetime, were relegated (by the care of the “boss”) to languish in underground trash bins, never examined. Their message finally heard, these doubts disappeared, leaving a peaceful and joyful knowledge. I have also identified mechanisms of repression of great power, deeply rooted in the self, of which I have realized (for several years) that their impact in my life remains considerable today as much as ever. They go in the direction of yang imbalance, in the direction of the occultation of certain yin forces and faculties. I don't know if these mechanisms will ever be defused — and I know that it's up to me. No doubt they will disappear the day, and the day only, when I have entered into the origins of the conflict in my life much more deeply and more completely than I have done so far.

For the moment, with the present orientation of my life towards a mathematical investment-important tick, I can definitely say that it is in no way the way!

(110) (October 11) I have wanted for a day or two to take stock, in a few words, where is (after eight years) this “progressive restoration of the yin-yang balance” in me.

Perhaps the most important change of all is in a much greater acceptance than in the past of myself as I truly am from moment to moment. Another way of expressing it is that the repressive mechanisms within me have softened considerably. As I said yesterday, some disappeared after being discovered and understood, and others, which I had ignored all my life, became familiar to me in their everyday manifestations. I steal them in action, not as enemies that I must try to extirpate at all costs, but as part of the multiplicity of facets of my conditioned being, and thus, of the richness of the present “given”, which faithfully reflects my past history; both the “old” history of my conditioning and the roots of the division in my being, as well as the more recent history of my maturation, of the work through which I end up unpacking and “eating” and assimilating the initial package bequeathed

by my parents and their successors. This “acceptance” in me therefore includes, not only the impulses and traits of the “child” that I had for a long time ignored and repressed (and notably those which reflect the feminine aspects in me), but also the mechanisms of repression specific to the “boss”, that is to say precisely inveterate mechanisms of “non-acceptance”! Accepting these has nothing in common with “cultivating” them, or strengthening them. On the contrary, it is an essential first step to unravel or defuse them whatever little, through curious and loving attention. The experience of these eight years gives me the conviction that, as long as this attention plunges deep enough and to the root even repression, it resolves and disappears by releasing considerable energy - the one which until then was immobilized to maintain against wind and tide such a set of repressive mechanisms, and the habits of thought and others that serve to maintain them.

But it was not with regard to the inherently “knotted” aspects of my person that this new acceptance of myself first made its appearance in my life. She came without drum nor trumpet, from before the discovery of meditation, therefore from before the “reunions” following it closely. It was in July 1976, during a short affair in love with a young woman, G., perhaps a bit more “masculine” in her ways of being than the women I had previously loved. Chance (?) wanted that the circumstances material which surrounded these loves displayed such that I saw myself placed in a typically “feminine” role. I cleaned and prepared evening meals, while waiting for the husband returns from a long and tiring day of work: tending a herd of one hundred and fifty goats in the hills, which she also had to milk in the evening. It turned out that this unusual role of housewife fit me like a glove. The thing may seem small — yet, it did “tilt” then. The link was made in me with certain impulses and desires in my love life, expressed then and for the first time in certain love poems, where the love experience appears, without any ambiguity, as “feminine”. I understood then, without reflection or “effort”, without any hint of reluctance or embarrassment, only in my body as in my desires, in my feelings and in my mind, I was a woman, at the same time as I was a man — and that there was no conflict of any kind between these two deep realities in my being. In those days the dominant note was feminine — and I accepted that thing with gratitude, in mute astonishment. When I thought about it, there was in me a silent, very sweet joy.

This joy was sufficient in itself, it had no need to be expressed in words, only

whether to myself or to others. I don't know if I spoke about it to the one whose lover I was, or the lover perhaps... Surely, on a certain level she knew it, without me having to say it.

This joy did not fade, it remained alive until today. It flows from living knowledge, as perfume accompanies a flower. In certain moments or in certain periods of my life, this knowledge, and this joy which is a sign of it, is more present than in others, more strongly active. But I don't think she'll ever leave me.

When I happened to speak here and there of this experience and this knowledge, in the weeks and in the years which followed, it was each time as if it were something of great value that I communicated to others, in a moment when I felt it open to receive, if only for a few moments, something of this joy in me. I have never felt any discomfort that would have stopped me from talking about it, as if it were something the slightest bit scabrous. (Perhaps there would sometimes have been such discomfort, however, if the reality and the strength of the "man" in me had not been beyond suspicion!) And I also remember an occasion when I was definitely strutting around, making it a point to play and win on both counts at the same time - all I needed was to have my period like everyone else and to give birth to such a dry kid.

My new feminine identity, superimposed on my virile identity, had an immediate renewing effect on my love life. It aroused a very strong echo among the women of whom I was subsequently a lover, by awakening in the lover masculine impulses, which throughout her life had been carefully repressed, and had not found expression until there only "on the sly", like some sort of blunders, unworthy of appearing in the conscious love experience.

The unconscious love experience is rich in archetypal impulses, one of the most powerful of which is that of returning to the Mare, of returning to the original fold. Such an archetype is present in the deep layers of the love experience, in men and also in women. In women, the resistance to the satisfaction of such an impulse in the couple's romantic experience is even stronger than in men, where she comes up against a key taboo, and not two as in her case. In both, the satisfaction of these impulses - in common experience often remains more or less symbolic and above all, hidden from consciousness. When such an archetype and this experience rise from the deep layers to the light of day, in the field of conscious gaze, this experience immediately transforms, it acquires a di-

new word. At the same time, considerable energies are released, previously compressed by repressive mechanisms, or bound by the tasks of repression. The effect is that of an immediate release of the erotic drive, manifested by a renewed intensity and by a new fullness in the romantic experience.

From the above, it will surely already appear that this new acceptance of my own person went hand in hand with an acceptance of others. Both are indissolubly linked. It is understood that this is "acceptance" in the full sense of the term, which in no way means tolerance (often bittersweet) with regard to such and such "flaws" or "faults", felt as an unfortunately inevitable evil, for which we are obliged to "deal with it". In such an attitude, I feel above all a resignation, not to say an abdication, and certainly not a source of joy, nor a surge of knowledge of something worthy of being known: the anticipated, unknown depth. , behind the flat surface of such "defects" or "failures" that we are willing to tolerate...

That this is a joyful, creative acceptance does not in any way mean that this acceptance is total - yesterday I already noticed that this was not the case. An attentive reader will have already noticed this for himself more than once during *Récoltes et Semailles*, as I happened to realize in passing, when I saw myself confronted again with this eternal mechanism. in me of rejection of everything that presents itself under an unpleasant appearance, in others or in myself. (But when it comes to oneself, this mechanism most often has the effect of not even becoming aware of the unpleasant thing in question...)

The acceptance I am talking about is rooted in an interest in this thing that we "accept", in ourselves or in others. While acceptance is in itself an inner disposition of a typically "yin" character, this connotation of "interest" that it takes on for me is of a "yang" nature — it is the "yang in the yin", in the delicate Chinese dialectic of the infinite intertwining of yin and yang... I was going to venture to say, a little at the same time; that there was a pure and simple identity between acceptance (the real one!) and this interest, this curiosity. However, by thinking a little about the thing, I realize that there is also another way of accepting, by nature, more totally yin than the one which is especially customary to me. It is like a welcoming of the thing accepted, and not a rush towards it to probe it. (This nuance of welcome suddenly appears to me like the "yin within the yin", here we are

!) The impulse of interest, and the attitude of welcome, can both form the basis of acceptance of others or of oneself. The thing common to both is sympathy. This is also one of the forms of love. If there is some deep identity to be identified here, it would be through the observation that acceptance is a form of love. Self-love, love of others, both indissolubly linked...

Except in rare moments, my interest is more intensely involved when it concerns my own person than that of others. It is this passionate interest in myself that has driven the long periods of meditation over the past eight years. It is true that it is self-knowledge that is at the heart of knowledge of others and of the world, and not the other way around - and I feel that it is towards the heart of things, towards the most essential, which has brought me and still brings me my new passion, meditation. Interest in others appeared in a more fragmented and more reluctant way during these years, as did the acceptance that resulted from it. One of the ways in which it has manifested itself concretely is through a less propensity to speak when I am in company, and through an attitude of listening. For most of my life, this ability to listen had been almost entirely lacking. Even after the big turning point of reunion, I had to realize very often that I had spoken out of time, due to lack of listening and discernment, before this inveterate propensity began to pass me by. If it has become much less invasive, and has even almost disappeared, it is in no way the result of any discipline that I have imposed on myself (style: you will only open your beak if...). It is simply because I have lost the desire to speak, at times when I feel that it is useless, that it brings nothing to others or to me - nothing at least that has any value for me. eyes. If I can often sense such things now, it is undoubtedly because I have become more attentive. This also did not come as the result of a discipline ("you will be careful to keep your ears open when..."), but I cannot say how. In any case, I feel better, life is all the more interesting (and above all less noisy!). And the others feel better too...

I think I really started to talk less, from the moment when this force in me disappeared (which is to say) which pushes me to always want to rectify what appear to me (rightly or wrongly) as "errors". " in others — as if it wasn't enough for me to detect and correct mine! It is also the force that pushed me (and sometimes still pushes me) to want to convince others of this or that, instead of looking simply-

why so and so steadfastly prefers to believe this rather than that (which seems “that” to me, and of which I would really like to convince him!); or why I'm so keen for him to believe this, rather than this. This almost universal force in us, which constantly pushes us to seek in the approval of others (and even just one...) the confirmation of the validity of what we hold to be true - this force deeply rooted in the ego has finally, I believe, let go of its hold within me. It was a great relief, the end of a huge dispersion of energy. It was when I finally realized, two years ago, the scope of this force in my life, its nature, and the extraordinary dispersion of energy that it represented, that it found itself defused — and that I found myself suddenly relieved “of a weight of a hundred tons”. To become aware without hesitation of the echo that others send back to us about ourselves, without being bound by a desire or “need” (however hidden it may be) for approval or confirmation — that is truly what being “free from him”. It is such a need or desire which truly constitutes the “hook”, discreet and unfailingly solid, by which the conflict can “hook” in us, and by which we are (whether we want it or recognize it). , or not) under the dependence of others, of his good will - whereby in short he “holds” us, and (casually) us as he pleases...

Logically, acceptance of others should also imply acceptance of their way of seeing things, whether they seem erroneous to us or not, and even when it concerns their way of seeing our own and precious person (including our own ways of seeing...). However, this is especially where the problem lies - this is the nerve center in the acceptance of others, and not in the acceptance of more or less embarrassing common “faults” which do not directly involve our person. Very often, moreover, if we reject such “defects” in others, it is above all because we feel directly challenged by them, simply by the fact of being confronted with ways of being which seem to us (rightly or wrongly again) the opposite of ours. In other words, it is an insecurity in us, manifested by the reactions (more or less apparent or hidden) of vanity, which is the great obstacle, opposing our acceptance of others. But this deeply rooted insecurity, compensated for by the movements of vanity, appears to me as indissolubly linked to the non-acceptance of ourselves, it is like its inseparable shadow.

Thus, it is full self-acceptance which appears here as the key which opens us to the acceptance of others. And this link which has just appeared to me here, joins another deep link, which I have known for a long time, perhaps forever: that self-love is the heart,

peaceful and strong, of the love of the other.

(111) (October 13) Yesterday I didn't continue writing the notes. Instead, I had fun reviewing a number of yin-yang "couples." Starting with those that came to mind, a bit by chance, I then got into the game, and ended with a sort of "census" of all those I managed to get my hands on. .

I started because I told myself that a lot of what I had written recently was likely to go entirely "over the head" of a reader who was already somewhat unfamiliar with the double aspect yin- yang of things. It would perhaps not be amiss to take the trouble to give at least a few striking examples of such couples, in addition to those who had been introduced by the gang in recent days. Then, carried away by the little devil (or angel, I don't know...) of systematics in me, I ended up bringing out my visible reflections from five years ago on this theme. For a week or two I had fun "picking up" a hundred or two of these very suggestive couples, who then assembled by affinity into around twenty groups. As this reflection was made on the sidelines of the famous "poetic work" that I was writing, I could not help but place these groups as best they could in a single file, by affinities and connections of meaning from one group to the next. Last night, returning to reflection with hindsight, and without a poetic straitjacket around my neck, I found eighteen groups (instead of twenty), by perhaps a little more rigorous grouping.

I also suspect that there must be many other groups, perhaps even an unlimited number, corresponding to modes of apprehension of reality which I did not think about during the work (nor, perhaps, never again).

As for the eighteen groups that I have indeed identified, I have endeavored to assemble them into a diagram (or "graph") following the main links of affinities which connect them to each other. Some of these links only came to my attention during the drawing of successive drafts of the diagram. The work here was really very close to very familiar mathematical work, when one strives to grasp graphically, in as striking a way as possible, a more or less complex set of relationships (given for example by "applications" , represented by arrows) between a certain number of "sets" or "categories", appearing as "summits" of the "diagram" that we are trying to construct.

Here too, requirements of an essentially aesthetic nature, of symmetry and structural transparency in particular, frequently lead to the introduction (and, if necessary, therefore, to

(or even to invent) “arrows” or links that we had not thought of at the start, and sometimes even new “summits”. Still, after five or six successive drafts, I ended up with a diagram, vaguely in the shape of a Christmas tree, which temporarily satisfied me - especially since it was really beginning getting prohibitively late!

I went to bed happy, I felt that I hadn't wasted my time, even if my grades hadn't improved a bit(*). But I had put myself back in contact with decidedly juicy things - each of these groups was rich in weight and mystery, and each of the yin-yang couples which were supposed to constitute it (but which rather, all together, designate it, without in no way exhaust it) - — each of these couples has something delicate and important to tell me about the nature of this world in which I live, and often about my own nature. I rediscovered with new strength this feeling which was already present five years ago: that the delicate play of yin and yang, of “feminine” and “male” in all things, is an incomparable common thread towards a understanding of the world and oneself. It leads us straight to the essential questions. Often also, the very “yoga” of yin and yang, the simple fact, I mean, of paying attention to the aspect of things and events which is expressed in terms of yin-yang balance and imbalance, provides a first key to a better understanding of these questions, and towards an answer.

I apologize if for some readers I must give the impression, for a page or two, of talking about the sex of angels, whereas they would not even really see what these famous yin - yang “couples” of which I am talking are , and even less these “groups” in which some come together, which groups ultimately would be supposed to assemble in a “diagram” (maths are still useful!). I should give here at least one of these groups - and I want to take the one with which I spontaneously started yesterday, the one also which ended up appearing during the reflection as the “primitive” group (*), from which all the others seem to gradually emerge, through a sort of successive “filiation” (continuing on my famous diagram on eight “generations”...). Here is the list of “couples” that I noted, constituting this primitive group (which we could name by the first of these couples,

(*) As compensation, I could file a patent on the invention of a new poetic form, namely the poem says “non-linear”, or “diagrammatic”.

namely “the action – inaction group”).

Action - inaction

activity - passivity

wakefulness - sleep

subject -

object generate - design(*)

execution - conception(*)

dynamism - balance

momentum - sitting

ardor - perseverance

ardor - patience

passion - serenity

tenacity - detachment.

I would also add the following two couples, among around ten “latecomers” who came to me again this morning, following on from my thoughts yesterday:

know - know

explain-understand.

Is it necessary to specify that in these couples, it is the term “yang” or “masculine” which is put first, following the usage of our patriarchal society, where the man gives the name to the couple?

On the other hand, while traditional Chinese society is considerably more patriarchal than ours, when we follow Chinese usage to talk about the relationship of yin and yang,

(*) (November 6) In fact, there is an even more primitive group, which we can call the “father - mother” group. See, on the subject of this “forgetfulness”, the note “Our Mother Death - or the Act and the taboo” (nǚ 113). The couples “generate - conceive” and “execution-conception”, which I have included below in the (so-called “primitive”) action-inaction group, visibly fit more naturally into the “group mother” formed around the “father-mother” couple.

we always put the yin ("feminine") first, when speaking p. ex. of "yin-yang balance" (instead of yang-yin). The meaning of this usage is surely in the archetypal intuition that it is yang which is born from yin, which is the "more primitive" principle of the two, and not the other way around...

This is not the place to comment on any of these couples. For the reader who "feels nothing" when seeing them, it would be wasted effort in any case; and the one who feels challenged by them, who feels (even if obscurely) that each of them has something to tell him about the world and about himself - about balance and imbalance, about the internal dynamics of beings and things..., he can do without detailed comments, and take this questioning as a starting point for his own reflection.

(¹¹¹) There is only one point that I would like to emphasize here, common to all yin-yang "couples" without exception. This is also the most crucial thing of all, it seems to me, for an understanding of the nature of the relationship between yin and yang, and hence, of the nature of each of these two principles (or energies, or aspects, or forces...) in the Universe.

It is this: each of the two terms of one of these pairs, such action-inaction, in the absence(*) of the other term, constitutes a state of serious imbalance, and at the limit (when "the absence" in question is almost complete, and prolonged) a state which leads to the destruction of the thing (or being) in which this imbalance takes place, or even of him and his entourage.

Thus, a state of uninterrupted action, which does not alternate with sufficient periods of inaction and rest, leads to exhaustion, illness and (ultimately) death - something which has been more current lately, for me!(**) But conversely, a state of excessive inaction leads to a weakening and sclerosis of the capacities and functions of the body or the psyche (depending on the case), and ultimately, to the destruction. In the case of my "illness incident" moreover, I have a simultaneous example of the two imbalances: action

(*) (October 16) In fact, this "absence" is never total it seems to me — in no thing is yin nor yang present in its pure state, without the simultaneous presence of its complementary, however small it may be. The "imbalance" I am talking about is therefore characterized, not by the total absence of one of the two complementary terms (something that has never been achieved), but by a state of excessive weakness of this term. Another type of imbalance, or morbidity, occurs when both terms are "absent", or more precisely, are present but very weakly. Thus, in the case of the "action-inaction" couple, a state of agitation, which does not "act" strictly speaking (except to perpetuate itself, to maintain confusion), while dispersing energy, can arguably be considered such a "default" imbalance (of yin and yang).

(**) See on this subject the first two notes (n° 98, 99) of Cortège XI, "The deceased (still not deceased...)".

excessiveness of the mind, inaction of the body (and sufficient rest for neither...).

This “explanation”, in this specific case, of the balance-imbalance “philosophy” of yin and yang, remains superficial, in the sense that it does not touch on a cultural bias inveterate, valuing the term yang, action, by opposing it to the term yin, inaction. This one is felt as a “negative” thing, not productive or interesting from any point of view, admitted strictly as a last resort, which unfortunately imposes itself even on the best will of the world, since you still have to rest from time to time to be able to continue invest in action (under penalty, as I have just explained, of overwork and God knows what else...). In short, inaction is seen as the humble servant of action, indispensable alas but apart from that unworthy of attention or esteem.

Of course, such an “official” valuation of action to the detriment of inaction has immediately as a consequence of setting in motion in the person mechanisms of resistance (which often remain occult or at least very unclear), expressing themselves through an opposite valorization: the action, as a result) appears as what is imposed by the harsh necessities of existence, like work in short, annoying as possible, in the office or in the factory or even even in the fields, and exhausting in any case even if it's not too annoying. The real reason for action is to earn a living and a home (that is essential), and beyond of that and above all, to have fun leisure activities (during one's working life), and a nice retirement and pleasant permanent leisure activities later, when we are exempt from the regrettable “work” obligation. This time, it is inaction (aka “leisure”) which is valued more or less less conscious, and it is action which is its humble servant. There is therefore a reversal roles, but always with the same imbalance: that which consists of established antagonism by the person concerned (under the influence of cultural conditioning) between two aspects or poles essential to his life; antagonism which is expressed and perpetuated by a state of preponderance despotic in one of its aspects, and servitude in the other.

It seems to me that most often, the two attitudes and valuations overlap in the same person, one dominating the pavement at the conscious level, the other at the unconscious level. From the superposition of these two opposite imbalances, visibly, does not arise the balance ! This, on the other hand, arises naturally from an understanding of the true nature of action and inaction (even when such understanding remains purely “in-stinctive”, manifesting itself directly through balanced behavior, and by no means “knowledge” verbalized). In action in the full sense of the term, there is also inaction — it is there

in the very moment I mean, and not just “after”, because you have to rest after the action! This “inaction” in “action”, the “yin in the yang” therefore, is like a deep calm which serves as a basis for a movement which would take place on the surface. It manifests itself, for example, in the impression of perfect relaxation that emerges from a feline in movement, whether it is the first alley cat that comes along, or a lioness with a powerful build...

And likewise in true inaction, even if it is total, there is action. Thus sleep is rich in its dreams which speak to us about ourselves, through which we live another life more intense and more delicate, which we are often too sleepy or too pusillanimous to live in waking life. And it is enough to contemplate a sleeping baby, or even to be awakened from a deep sleep, to feel that even without dreams, truly good sleep is work in its own way; something which absorbs us completely, to “replenish” in short an energy which had been dispersed and which we come to draw back from its source... This is, once again, the “yang in the yin”, without which yin itself would be destructive.

Reflections along the same lines could surely also develop for waking inaction, outside of sleep time. All we have to do is observe on the evidence, attentively, this or that state that we perceive as “inaction”. We will realize that in inaction, there is action, even if it is the sterile cackling of a thought which continues to go around in circles even though it has stopped working. But in truth, it is improper to call “action” this movement, purely mechanical, which continues by the sole effect of inertia — by the inability to stop the machine! And it’s certainly not that. inner agitation which will bring to “inaction” a yin-yang harmony which makes it beneficial. On the other hand, this can be the case for various activities intended to fill one's leisure time (when these are nevertheless experienced as a state of inaction). But even in the state of complete rest or a state of convalescence let's say, there can be action, without which this rest or “inaction” becomes a slouch, certainly not conducive to convalescence (that is to say precisely, to the restoration of a disturbed balance!). For example, this state of rest can give rise to attention to one's own body and to one's immediate surroundings (which constitutes it like a second skin...), an awareness and therefore even a communion, which in itself has an authentic “action” character; because there is no doubt that learning is indeed an act (since it has an undeniable effect: the appearance of knowledge...).

By examining one by one the fourteen couples that I included in the action-inaction group

(and surely we could find many others that fit naturally), we see that for all except perhaps one, it is the first term, the “masculine” term, which is invested with prestige, with “value”, according to the reflex attitudes conveyed by our culture and instilled since childhood. It is the sign of always this same inveterate imbalance in our culture, the imbalance marked by the exclusive valorization of yang, to which I happened to allude previously (*). The same observation can be made for almost all of the yin-yang couples that I came across - this is a really very striking thing, which I had never previously taken the leisure to verify in such a detailed manner.

Among the couples written earlier, the only one that seems to me to be an exception is the passion-serenity couple, given that in current usage, the word “passion” is often associated with the image of an outburst, of a violence, or otherwise a carelessness, annoyingly close to the cloud of associations surrounding a word like “turpitude”. As if by chance, carelessness and turpitude designate states of psychological imbalance characterized by an excessive yin, feminine preponderance! And symmetrically, following the same push-button mechanisms (which reveal our current conditioning, and in no way the nature of a thing like “serenity”), the word “serenity” is associated (as opposed to “passion”) with the image of self-control — of a quality which, of course, is of a masculine essence. (In fact, the yin counterpart of “control” is not “passion” at all, but “surrender.”)

What is happening here is that as a result of a general confusion in people's minds about the nature of certain things, expressed by an equal confusion in the use of certain words, supposed to designate them, there is a confusion of the yang-yin “passion-serenity” couple with all of the two notions

relaxation - control,

whose terms are yin-yang (without constituting a “couple”, the two terms present having no desire to marry each other!). It therefore seems to me that the so-called “exception” to the rule (of the systematic valorization of yang) is on the contrary a particularly interesting confirmation! And I would not be surprised if it was the same with the other examples that I noted, where in a yang-yin couple, it is the term yin which seems to be valued.

I am by no means sure that this distortion in the vision of the world that I

(*) See the note “Yang buries yin (1) — or the muscle and the gut”, n° 106.

observed in so-called “Western” civilization, coming from this systematic bias in favor of the masculine, opposed to the feminine - that this distortion, this imbalance is so much less in the Chinese tradition, or even in the Chinese world (or more generally the “oriental” world of today. No sign, at the level of everyday life, could make me suppose this, neither through my oriental friends, nor through the echoes which may have reached me from tradition and from today's life. hui in China or other countries of the Far East — quite the contrary. It seems to me rather that a fine perception of the yin-yang dynamism has been confined almost exclusively to the practice of certain arts - such as calligraphy, poetry, culinary art and, of course, medical art (*).

It is the latter especially, under the name of “Chinese medicine” and through certain spectacular successes of acupuncture, which ended up over the past twenty years acquiring the right of citizenship among us, and being invested of prestige. However, there are still many people who are unaware that in Chinese medicine, the alpha and omega of the apprehension of the body, of the circulation of energy in the body and of its disturbances (which constitute the morbid states that we call “diseases”), is precisely in a very fine dialectic of yin and yang. The fact that this dialectic “works”, since “Chinese medicine” based on it is effective (including in many cases which escape the means of the Western panoply), can be considered as a kind of “proof” of reality. “principles” or “aspects” or “modes” (of apprehension, or of existence) yin and yang — that these are not pure speculations taken out of the hats of certain philosophers and other poets (not to mention humbugs) .

One may wonder, it is true, what is the meaning of such proofs, and even of any “proof” whatsoever of the validity of this or that vision of the world. Even assuming that the proof has convinced (that is to say, that the person concerned was willing to be convinced), and even and on top of that, that the vision in question is profound and therefore beneficial -

(*) (October 21) I forgot among the number the art of divination, in the I Ching or “book of exchanges”, which enjoys one today. great popularity in certain circles both in Europe and America. The 64 “hexagrams” which constitute the basic “words” of the divinatory language of the I Ching, are none other than the 26 possible combinations of sequences of six “signed” yin and yang, from pure yin (six repetitions of yin) to pure yang (six repetitions of yang). There seems to be there a kind of alchemy of great finesse of combinations of yin and yang, which (it seems) had fascinated Jung. The interest of this alchemy (as a “collection of archetypes” in particular) seems to me a priori independent of its use in divinatory art, and of the credit that we are willing to give to such a use.

the best proof in the world is Powerless, however, to communicate a vision, and even less a vision of the world. It makes you feel good to be stubbornly “convinced” of a vision that remains foreign, misunderstood. To put it bluntly, it doesn't even make sense - or more precisely, the true meaning of his “conviction” is no more understood by the person concerned than this vision that he pretends to incorporate into his heavy cultural baggage.

When the vision is understood and assimilated, the very question of “proof” appears strangely preposterous — a bit like proving that the sky is blue when you can clearly see that it is blue, or that the scent of a flower that 'we love is good...

(112) (October 17) My first thoughts on the dual “feminine” and “masculine” aspects came from a reflection on myself. It was around the beginning of 1979, at a time when I was still unaware of the Chinese words “yin” and “yang”, and the existence of a sort of subtle “philosophy” of the incessant play of yin and yang, in Chinese cultural tradition. I learned this towards the end. of the same year I believe, by my daughter and especially by my son-in-law Ahmed, who was then beginning to be interested in Chinese medicine, on which he became strongly attached in the following years. Most of what he told me matched and confirmed the vision I had arrived at, something which had nothing to surprise me. If there was any surprise, it was more in the few cases of “couples” where the “natural” yin-yang role seemed to me to be reversed, in Chinese tradition. My reflex (strongly “yang” in this case!) had been — a skin-deep conviction that this “reversal” must be due to a cultural deformation, without actually looking too closely(*) — it was at a time when my past ranges on the feminine-masculine seemed very distant to me, while I was engaged in a much more personal meditation on the life of my parents and on my childhood. It was only months or years later, I believe, that through a certain number of cross-checks, I realized that in certain cases my apprehension of

(*) This reaction of peremptory assurance, vis-à-vis a thousand-year-old tradition which could have encouraged me to be more cautious, is the same one which, as a child, made me reject the (very complicated) formula my faith!) $\pi = 3.14...$ taught by books, in favor of $\pi = 3$ of which I had convinced myself by my own means. (See the note “Squaring the circle”, n° 69.) It is true that for this story of yin and yang, I had ample opportunity to realize to what extent the apprehension of the nature of “feminine” and “masculine”, and their interrelations, is distorted by inveterate cultural distortions of considerable force. I did not yet realize, on the other hand, to what extent a precise and delicate apprehension of these relationships was essential in the practice of certain traditional Chinese arts, and taken to a degree of great finesse.

yin and yang roles in this or that “couple” had remained a tad superficial; that I had put in the same bag, a little hastily, situations of a different nature that the Chinese yin-yang dialectic took great care to distinguish (112). Now, I realize that the apprehension of yin and yang still remains relatively crude and static for me, especially if we compare it to the finesse required for the exercise of certain traditional Chinese arts such as medicine (closely linked also in dietetics and the culinary art), where this apprehension ends up becoming second nature.

I have had the impression more than once that among the practitioners and practitioners of these arts, whether Eastern or European, this finesse of apprehension remains fragmentary, in the sense that it remains, in a very broad measure, carefully confined to the exercise of this art. In everyday life, it would act rather like ordinary “knowledge”, superimposing itself purely and simply on the “knowledge” of cultural (and other) conditioning, and remaining more or less a dead letter in relation to it. This. To put it another way, I had the impression that the vision of the world and of oneself, and the mechanisms of repression in the perception of reality, are in no way different in these people. “warned”, than among ordinary mortals.

This impression overlaps with another, which I had while reading two or three texts, written by Europeans supposedly “in the know”, which aim to give an overview of the traditional Chinese philosophy of yin and yang. (One of the authors is a well-known French orientalist, whose name escapes me now.) The thing that struck me is that in these texts, yin and yang are presented as principles “opposed” (or “contraries”) or even antagonistic (this last term comes up several times in one of these texts), rather than complementary. This “opposition” or “antagonism” would have its typical expression in that which would take place between woman and man within human society, and within the couple established by society.

Antagonism in the husband-wife couple is indeed a reality, both in the East and in the West. It is deeply rooted in culture, so much so that it can sometimes seem like one of the aspects (sometimes confusing!) of the human condition, or even as the root of the conflict in man or in human society. The reality of this antagonism is undeniable, and it certainly goes beyond the common clichés that try to exorcise it as best they can. This “social” reality is the product of immemorial conditioning, which very early takes root in the “me” in formation and structures it. However, beyond

This reality is a deeper reality, coming from much further back, which is determining in the love impulse itself. It is the reality of a deep, essential complementarity of the sexes, where there is no room for any "antagonism".

It is also the reality which is clearly manifested in all living species, with the sole exception of ours, where it is obscured to a large extent by cultural antagonism, therefore by a state of division specific to man. and to human society.

The current romantic clichés, "We Two" style, which dominate a large part of literature and the media, also highlight a shoddy "complementarity", while throwing a modest veil over the troubling antagonistic male aspect. -woman, or (at best) by treating it as a sort of slightly spicy accident, welcome to add some spice to a meal that is otherwise a little too dull or syrupy. As soon as we go beyond this type of reassuring cliché, we immediately see ourselves confronted with the reality of this male-female antagonism - a seemingly universal reality, and what's more, an unfailing tenacity, a tenacity of couch potato! But starting from this omnipresent and irrefutable reality, to establish a sort of cosmic antagonism of yin and yang, of "feminine" and "masculine", is to project onto the entire Universe the state of tearing, of deep division of human society and the person, a disease therefore specific to our species. It is also to perpetuate one's own ignorance of another reality within oneself (joining this cosmic reality of the harmony of complementaries), of a reality just as tenacious (or, to put it better, indestructible), but more hidden. This reality goes against the conditioning that tacitly establishes a de facto antagonism both between woman and man, wife and husband, and between that in ourselves which is "woman" and that which is "man".

To tell the truth, this dualistic or warlike vision of the Universe, where one aspect of things finds itself in constant war with an equally essential "symmetrical" aspect — this vision is in no way the fruit of a reflection, which would "leave " (as I wrote just now) of the reality of the conflict in the human couple and in human society, to then "deduce" it (or "institute" it, as I wrote more correctly) in the Cosmos whole. It is neither more nor less than the faithful expression, automatic one might say, of cultural conditioning, and goes in the direction of an essential function of this conditioning: the maintenance of conflict, of division in the person himself. Obviously, maintaining this antagonism established between the "woman" and the "man" in me would be an impossible thing, or rather, this antagonism would already be resolved, from the moment I took the leisure to contemplate the Universe with these eyes. rec

my birth, and where I notice that everywhere, except (apparently...) in myself and among my peers, the "feminine" and the "masculine" are the indissoluble complements of each other; that it is from their marriages and their union that harmony, creative force and living beauty are born in all. living and "dead" things of Creation. On the other hand, if I claim to "see" everywhere in the Universe "oppositions" and "antagonisms" where they are not (and even though in doing so I would follow a venerable tradition, several thousand years old), this would in no way be that I will have used my eyes, but that I will have limited myself rather to repeating (like everyone else) what has been repeated from generation to generation since perhaps the dawn of ages; and in any case, to obey the silent and imperative injunction of the cultural consensus - the very one which has firmly established in my person a division, a conflict which I would claim to rationalize (and which by this I would perpetuate) as a "cosmic necessity".

There is certainly a lot to say about antagonism in couples, and more generally about female-male antagonism — and I trust my peers that much has been written on this subject, including relevant things. This is not the place to dwell on this most interesting theme, particularly on the particular form that this antagonism takes in our patriarchal society. It seems to me that among those who have seen its existence clearly, many are those who hold the structure of society, reflecting and concretizing the preponderance of men over women, as responsible for this antagonism. They are surely right — and I suspect that in a society with a pronounced matriarchal tendency, we must find a similar antagonism, manifesting itself in a more or less symmetrical way.

What I would only like to add is that this causality nevertheless appears to me to be indirect, that it seems to me to be exerted through a more hidden causality, touched upon in today's reflection. This more hidden and more essential cause of division in the couple is the state of division within the person, both woman and man, with regard to his own impulses (and in particular those of the sex) and of his own faculties. I see there the real root of the antagonism between man and woman, as well as their mutual dependence on a spiritual level, I understand the lack of interior autonomy of both.

This division within oneself consists of the intimate and secret conviction, in both, of being only one half. One of the signs of this conviction is this diffuse and insidious feeling, never examined, of cracking, of mutilation perhaps, from which only the partner of the other sex could deliver us, temporarily at least. Behind the air of circumstance

“macho” or “Circe” (and many others), everyone, man and woman alike, finds themselves in the position of a beggar towards their potential or real partner, of someone who expects (more or less)) good will from the other an ephemeral deliverance, which he wishes complete and which always turns out to be lame, from his pitiful state of a cracked pot, not to say broken - a half of a pot in short, which is looking for another to get back to her as best he can (and rather badly than well, we guess...).

This feeling of fracture, or even this ignorance of our true nature, of our fundamental unity beyond the physiological specificity linked to our sex - this deep division in us seems to me to be the product of social conditioning alone. In any case, we do not see a trace of it in the first days and months of the infant. This conditioning is in no way reduced to the valorization of the “masculine” to the detriment of the “feminine”, or vice versa. After all, if I feel, and accept myself and am accepted, as being both “man” and “woman”, with a “background note” which can vary from one facet of my person to another, and which is in no way limited to the dominant (very important certainly) which prevails at the level of the genitals - it is therefore no longer so important if around me, it is the “masculine” or the “feminine” which is valued. In terms of my sexual drive, my personal “valorization” would in any case tend to be towards the sex opposite to mine (sorry, complementary I meant), without feeling myself as inferior (no more than superior) in front of this different being in his body, towards which an imperious and deep impulse draws me. Moreover, whether it is a question of valorization linked to sex or any other, the importance taken by “value” or prestige attributed by social consent (to oneself or to others) are relatively secondary. , not to say minimal, in a person who is not (or little) affected by this feeling of “crack” of which I speak — in a person therefore in whom lives this spontaneous assurance which is neither arrogance nor facade, but manifestation of an intact knowledge of one's own nature.

One sign among others that the “crack” or division(*) in the person is not only the product of a valorization, it is that this division is rife in men as well as in women, in the one therefore who is supposed to be the “beneficiary” of this consensus which claims the

(*) I refrain from using here the rather fashionable expression “castration”, a term of great violence (superyang for once!), which has the additional disadvantage of suggesting the image of an irremediable, irreversible mutilation, and thereby, to stimulate reactions of dismay, revolt or resignation capable of reinforcing a state of blockage, rather than encouraging its evolution in the direction of a progressive resolution.

“valorize”, while (in a certain sense) it breaks the backs of both him and his partner. We see that this division is all the more acute, all the more violent, as the repression of one sex for the “benefit” of the other is stronger, more ruthless. We could say that the principle followed by “Society” (source and instrument of repression) in setting up repressive mechanisms is: “divide and conquer”! But this “division” created by the Consensus to break and enslave both men and women, is played out on two fronts at the same time. The most visible picture is that of the division in the couple, obtained (**) by establishing a more or less tyrannical preponderance of one sex over the other - of man over woman, or vice versa. One is supposed to rule over the other — and both find themselves slaves(***). For when the wife or the husband is despised, it is both of them who are subjected to contempt - contempt by others sometimes, but more deeply and above all, contempt by themselves.

And here we come to the more hidden “second table” of the game of division. It is the division in the person himself, the hidden spring of the division of the couple. It is accentuated by the latter, without however being reduced to it, and it is in no way produced by the sole valorization of one sex to the detriment of the other. It is rather the product of a silent and incessant constraint, exercised on us by those around us from our earliest years. This constraint pushes us to deny, under penalty of finding ourselves rejected, an entire “side” of our person (the “yin” side, or the “yang” side (*)) rejected as ridiculous or unseemly, and in any case, as unacceptable.

(¹¹²)(**) Thus, in the womb-embryo and vagina-penis pairs, the distribution of roles

(**) (October 21) In appearance at least. But as suggested above, by going deeper into the matter, we realize that this division in the couple, maintained by the preponderance of the man over the woman, has a deeper “root”, to which I will return a few times. lines further.

(***) Slaves, moreover, who for nothing in the world would part with their chains, which are dearer to them than life...

(*) In principle and barring accidents, the sense of constraint pushes man to deny his yin side, and woman to deny her yang side. The situation is more delicate for the woman, who is supposed to deny the traits in her, precisely, coated with prestige by social consensus, and which she would therefore feel encouraged to want to cultivate. It thus finds itself subject to two pressures in opposite directions, and the task for the unconscious of structuring an “operational” identity becomes even more complicated.

(**) This note comes from a footnote to the previous note (see reference in the first paragraph thereof).

yin-yang is beyond doubt, and the term yin surrounds and contains the term yang. This made me hastily conclude that in the container-content couple it was the “content” which was yang, without being warned by the form-content, exterior-interior, periphery-center couples (where as I felt correctly, the first term is indeed yang, while being the “content”). In fact, in matrix-embryo and vagina-penis pairs, I had wrongly emphasized the “geometric” or configurational aspect of the relationship of the two terms present, a secondary aspect however in front of the main aspect, which determines in this case the distribution of roles: what nourishes is yin in relation to what is nourished which is yang, and what penetrates is yang in relation to what is penetrated which is yin (similarly what gives in relation to that which receives).

My reflections on yin and yang, however limited they may be, founded an intimate conviction in me that beyond the differences in individual apprehension on the distribution of yin-yang roles (or also, on the “note background” yin or yang in a given person we say), apprehension highly subject to “cultural distortion”, such a “natural” distribution (or “background note”) does indeed exist. It has a reality that is just as irrefutable, “cos-mic”, and immutable (with regard to the distribution of roles in couples of a universal nature, like those discussed so far), as a physical law, or a mathematical relationship, even if it cannot be “established” either by experiment (in the sense in which we understand this term in the practice of natural sciences), nor by a “proof” or even a “demonstration”. This reality of yin and yang is understood through direct perception, which can be developed and refined (among other things) through sufficiently in-depth reflection.

It seems to me that one of the main effects of such reflection is precisely to make us go beyond the cliché reflexes, programmed in us by the surrounding culture, to rediscover contact with reality itself. This, it seems to me, is already present in deep layers of the psyche, like a sort of archetypal knowledge, beyond the reach of cultural conditioning. The role of reflection is to allow us to reconnect with this knowledge already present, and to carefully separate it from the superficial “knowledge”, that is to say, from cultural conditioning.

The work that I began in this direction was important for my understanding of the world and of myself, and thereby, in my daily “doing” and in the conduct of my life. This work (as on many other occasions) seems to me like a first

pierced, like a door that I have just pushed and which opens onto a vast panorama, which I still have to explore. I have everything I need to do it — but I don't know if I will ever do it(*). Even putting aside mathematics, there is no shortage of themes for reflection that are just as “juicy”, and more personal and even more burning, which will undoubtedly be given preference first to the deepening of a more general reflection on the yin and yang...

(113) (October 21) Three days passed without writing any notes. My days were consumed with other tasks and events. One of these was the visit of Pierre, in the company of his granddaughter Nathalie, who arrived yesterday evening. He plans to stay until tomorrow evening, and before then read what is written about the Funeral. It might be a little short, for a text that took me almost three months to write...

The time I was able to devote to reflection, I spent continuing to play with the yin-yang “couples” and the groups they form. The subject has something to fascinate, combining the very particular flavor with the investigation of a mathematical “structure”, the nature of which gradually becomes clearer during the work, and that of a reflection on the world and on existence . Each of the main yin-yang couples represents a kind of “keyhole” (among an infinite number of others), revealing a certain aspect of the world, or a corner of the world. The “groups” of couples that I have noted so far seem to correspond rather to different modes of possible apprehension of things in the Universe, like so many doors which would open onto it and show it to us in so many ways. different angles.

Each of these “doors” has a large number of keyholes, perhaps an unlimited number, to look through — perhaps waiting to simply push the door? For the moment I limited myself to detecting a good number of these holes (I found well over two hundred), to sticking my eye to each one if only for a few moments, while takes into account every time that there would be something to look at for a good while without wasting time, quite the contrary 1 But my impatience is greater to first go and take a look at this and that other hole through which look again, and also to go around all these doors and to orient myself as best I can how they are arranged one

(*) Just as I don't know if the kind of work I see here opening up before me has ever been done. (The study, in short, of a sort of local and global “map” of the qualities of things in the Universe and their modes of apprehension, in the light of the harmony of yin-yang complements.) c This is, moreover, a completely secondary question, given that it is not a question of presenting a doctoral thesis on this or that, but of deepening an understanding of the world and of oneself, which cannot be only the fruit of personal work.

in relation to the others, and perhaps also according to what "patterns" are arranged in one or the other of these holes which had revealed their existence...

Finally, the eighteen "doors" that I had detected, a little over a week ago, were increased by three more, which makes twenty-one, arranged in a diagram (which I had described as "vaguely shaped like a Christmas tree"), now comprising a "trunk" of nine "vertices" (or "doors", or "groups", or "angles"), connected by vertical "edges" or "links", with on each side of the trunk six other vertices connected to it and to each other, so as to form the "branches" (*).

Quite funny thing, among the three "new" groups which have appeared in recent days, one is the one which was the most obvious, the most primordial or primitive of all: it is the one which corresponds to the very first intuition of the in and yang like "feminine" or "female", and "masculine" or "male". It seems to me to be expressed in the most striking way by the archetypal couple "father - mother" (in preference to "man-woman", which is part of this same group). This group is strongly loaded with sexual connotations, appearing in couples like "beget - conceive" or "penis - vagina", themselves part of the cloud of associations around the act par excellence, the archetypal Act: the creative embrace that

(*) (October 24) I would be very embarrassed to predict whether or not there will end up appearing yin-yang couples which do not fit naturally into any of the groups that I have noted so far, it is that is, if there are still other groups or yin-yang "doors" opening to the world, or even an unlimited number?

The fact that I would not find another would in no way mean that there cannot exist an infinity of others, perhaps even an infinity of others which escape human experience, our means of perceiving the Universe. This reminds me that more than once in recent years, I have been struck by this intuition that, from the ant or the tiny aphid, to the mammals already very close to us, each animal species has means of perception. and apprehension of the Universe which escape any other species, certainly including ours; so that as far as the richness of the modes of sensory apprehension (let's say) of what surrounds us is concerned, our species does not "cover" or "contain" any other, any more than any other contains us.

The "no more than", which I have just ventured into, seems hasty to me, even pretentious, given that at the level of the richness and finesse of purely sensory perception, the evolution of our species would tend to go in the opposite direction, to regress. It is only at the level of the intellect, the finesse of mental images, and those particularly linked to language, that we excel over other species, it seems to me. It is no coincidence that most. yin-yang couples that spontaneously presented themselves to my attention fall into this specifically "human" register, while only a handful have (among others) an obvious sensory connotation, such as light-shadow, cold- hot, low-high, and a few others.

transforms (potentially at least) the woman into a mother and the man into a father, through the appearance of the child, the Work resulting from the Act.

These connotations linked to the love impulse were constantly at the forefront of my thinking five years ago. They were also entitled to an almost uninterrupted lyrical emphasis throughout the 130 or so pages of the famous “poetic work” in which the reflection was then condensed, which produces a tiring effect even on the best-disposed reader. It is surely a reaction of annoyance towards this double poetic and erotic “deliberate remark” (*) in my only reference text for my reflection in recent days, which I have purely and simply “forgotten”, among the famous groups of yin-yang couples, the one who of course opened the procession (and rightly what is more) in this text of misfortune.

The title of the work in question, “In Praise of Incest”, was also a bit provocative, and likely to give a false idea of its intentions and its “message”. These have also evolved quite significantly while writing - the poetic straitjacket has not prevented in-depth work from continuing, and a decantation from taking place. A first and main purpose had been to probe a certain aspect (which I felt profound and essential) of the love drive, as it was known to me through my own experience. It was therefore above all a question of the erotic drive in man, or more precisely: the “yang” drive, which corresponds to the “masculine role” in play and in the amorous act, but which is present with a force variable (*) in both women and men. For a long time, perhaps forever, I knew that this impulse, by its very nature, is “incestuous”: it is also the impulse to return to the original Giron. This great return is “staged” and relived during the love game, to culminate and be accomplished in an annihilation, an extinction of being, a death. Experiencing the act of love in its fullness is also experiencing “return to the Mother” .

(*) (October 24) This deliberate statement in form reflected an inner attitude, the choice of a certain role — a role of apostle of a message. On this subject, see the end of the section “The Guru-not-Guru — or the three-legged horse” (nỹ 45), and the note nỹ 43 which relates to it.

(*) (October 24) This presence is often hidden more or less completely by very forceful repression mechanisms. I have the impression that in men, this yang drive tends to be predominant over the complementary yin drive, and that the opposite occurs in women. But cultural conditioning, and the various modes of internalization of these, both “positive” and “negative”, interfere in such a drastic (and often complex) way with the play of original impulses that it is sometimes difficult to detect these, behind sporadic, furtive and often degraded manifestations.

own death, like a “reverse birth” making us return to the maternal fold. (**)

But it also means transgressing two taboos of considerable power at the same time: the incest taboo, which excludes “The Mother” as an object of romantic desire, and also the one which (in our culture at least) separates and opposes, like irreconcilable enemies, life and death, being born and dying. Yet I already knew well that the amorous act is both a death, accomplished in the orgasmic spasm, and a birth, a renewal of being, resulting from this death... like a new shoot. delicately springs out of the nourishing earth, itself formed from the creative decomposition of the myriad beings who have lost themselves in it...

It was during this reflection on the meaning of the loving act, five years ago, that I finally understood that “death” and “life” were the wife and husband of a same couple closely entwined(*), that life was eternally born from death, to be eternally lost in it. Or to put it better, that life eternally sinks into Death, to be eternally reborn from Her, the Mother, fertile and nourishing - Herself constantly nourished and renewed by the eternal return to Her of the innumerable bodies of Her children.

And the human couple of wife and husband, lover and lover, when it fully experiences the impulse that attracts one to the other, is like a parable of these endless marriages of life and death: at the end of each night of love the lover sinks and dies in the lover, to be reborn with her from this death in their common embrace...

At the beginning of this same reflection, I visualized an essential aspect of division in

(**) I am convinced, moreover, that this content of the yang love impulse is present in all living species and even beyond; that it corresponds to the same deep dynamic of all things in the Universe: that every creative process (or “act”) is an embrace of yin and yang, of “the Mother” and Eros the Child, re -turning and sinking into her. From this “death” (or “reverse birth”) of the child returning to the Mother, emerges, as if from a nourishing womb, the fruit. of the act, “the work”. It is the appearance of the “child”, of the new thing, through the act of death and renewal of the “old” which gives birth to it. In this cosmic dimension, the original sex drive has been present at all times, well before the appearance of the human species and even before the appearance of life (in the biological sense) on our planet.

(*) (October 24) It is therefore strange that among the yin-yang couples that I noted a few weeks later, the couple “death — life” does not appear. Perhaps this is because of a confusion with the related pair “death – birth” (or better, “dying-born”) which appears there, so that the first could seem to duplicate the latter.

the person, as a sort of “cut”, a “horizontal” cut: that established by the incest taboo which “cuts” the child from the mother, as it cuts the life of its mother Death, and as it also cuts off a generation from the one that precedes it.

If I saw this cut first, it is undoubtedly because it is precisely the one from which I was exempt. However, my life, like everyone's, has been deeply marked by this other great break, which I saw later during the reflection and which I called the “vertical cut”: that, which separates, to oppose one to the other, the two “halves” of the feminine and the masculine in each being, tolerating in each only one to the exclusion of the other. This is precisely what was discussed during this long digression on yin and yang, in which I have been engaged for a week or two.

It now seems to me that this division (“vertical”) is even more crucial than the other (“horizontal”), that in a certain sense it implies or “contains” it. After all, to separate the child from the mother, and life from death; associating with death, as with the impulse which connects the child to the mother, a feeling of defilement, repulsion or shame - it is also to cut one off from the other, to oppose one to the other. the other, the husband and the wife in these two indissoluble and primordial cosmic couples: the mother - the child, death - life(*).

(*) I have written the couples here in the “natural” yin-yang order, starting with the yin term, the “original” term.

Regarding the couple “the mother - the child”, we note that the term “the mother” also appears in a second important archetypal couple, mentioned previously, the primitive couple of all “mother - father”, giving its name to the group which he describes. (The group of the “mother-child” couple is different, it is the one that I call by the name of the “cause-effect” couple.) Moreover, the term yang “child”, from 'this same “mother-child” couple, is also part of another archetypal “old man-child” couple, neighboring the very interesting “maturity-innocence” couple. These two couples fit into the group that I call “high-low”, which is the richest (if only numerically) of all those that I have detected so far. It contains many other noteworthy couples, such as decline, die - birth, destruction - creation, forget - learn, end - beginning...

In listing these few couples, I had to do almost violence to name them in yin-yang order, against inveterate habits. At first glance, the new order had a somewhat wacky, even preposterous appearance - the world turned upside down in short. 1 Looking more closely, however, we realize that this unusual order reveals to us another aspect of the relationship of the two terms, a complementary aspect to the usual aspect where (for example) “to be born” precedes “to die” – whereas we have just seen that “to die”, in a deeper sense, precedes “to be born”.

It is the same for the overall name of my reflection, “Harvests and sowing”, which constitutes a yin-yang couple without a doubt (which I am discovering just now!). It is again named in a reverse order from the usual yang-yin order, the harvests being supposed to follow the sowing, and not the other way around. However, the name is

Interestingly enough, these last two couples are not among those I noted in the "Elog". The "still-birth" couple on the other hand(**), more directly linked to my love experience, appears there. The "mother - child" and "death - life" couples only appeared during my reflection over the last few days, among many others that had until then escaped my attention. One of the most interesting of these is "evil - good". This is one of: couples (like "death-life") that we can call "difficult", in the sense that very powerful conditioning makes us understand the two terms as antagonistic "opposites", rather than as complementary; sociable. Obviously, these conditionings were stronger in me five years ago when writing the Eulogy than today. However, there were already a good number of "difficult couples" in the Eulogy, including the "chaos-order" and "destruction-creation" couples...

In retrospect, a somewhat in-depth(*) understanding of the nature of the different yin-yang couples, as forming a harmonious entity of inseparable complements, now appears to me as so many "thresholds" to cross in our journey to discover the world. and of ourselves. Such a "threshold" is all the more notable as the couple in question is more "difficult"; that is also to say, that his apprehension as a "couple" comes up against stronger internal resistance, an expression of cultural conditioning.

(114) (October 26)

Yesterday's reflection(**) was a bit painful to start. This is undoubtedly due to the numerous interruptions in recent days. However, since the day before, there had been one thing

imposed on me without any ambiguity, and without at any time even the idea appearing that this name could be the opposite, "Sowing and Harvesting". It was being confronted with unwelcome harvests, which each time ended up drawing my attention to the sowing from which they came; as if the deep meaning and function of the harvest had been to bring me stubbornly back to those long-forgotten sowings of my hand...

(**) Please note that in this "still-birth" couple, the term "death" does not have the same meaning as in the "death-life" couple: in the first it designates an act (synonymous with "death"), in the second a state. In German, there are two different words "Sterben" (without the somewhat cavalier connotation of "trépas") and "Todt". In French, it seems preferable to me to designate the couple by "dying-born", which eliminates the ambiguity on the meaning of the term "death".

(*) I mean, an understanding which does not remain purely intellectual, which is manifested concretely by a changed relationship to others, to the world or to ourselves, through changed ways of being.

(**) This is the reflection in the note from the day before (n° 116) which I placed after today's.

still warm within me that I was eager to commit to paper, if only with a few lines. I was very sheepish afterwards when I noticed that she had gotten lost on the way, ousted by everyone! Today I could not bring myself to part with it prematurely, as if by misunderstanding, even before having really got to know it, in other words.

I had leafed through the recent reissue of "Zupfgeigenhansl"(**), this classic of old German folk song, compiled and published around the beginning of the century. It had apparently become impossible to find, but German friends passing through my home brought me a copy. This day (the day before yesterday) I took a quick look at it before getting to work, a bit like shaking hands with an old friend. I came across the song "Wohl heute noch und morgen", which I played through without really stopping, at the same time in a hurry to finally get back to the work that was waiting for me. However, that didn't prevent something from tilting. I felt that these words, so simple and seemingly naive, delicately touched something deep within me - something, moreover, very close to what I had tried as best I could to evoke three days before. I was just about to rewrite my notes on this subject. Perhaps I vaguely felt that the stanzas I had just read were more faithful and more convincing messengers of what I would have liked to communicate, than my notes of peremptory brevity, written in the wake of something else, as in passing, while the emotion of an immediate experience remained absent.

This morning when I got up I tried to translate into French these stanzas, the tune of which I did not know and which had nevertheless continued to sing within me for two days. Surely this was a way to better rediscover them, to better let their flavor and their melody penetrate into me. To my surprise, I did not have too much difficulty finding in another language, which at first seemed reluctant, a bit of the rhythm and music of the German text, while remaining very close to the literal meaning. Here are these seven stanzas, reproduced as best as I could(*).

(**) In the Wilhelm Goldmann Verlag (1981).

(*) (October 29) The following version is a version revised over the following three days. In the evening we sang and I was able to learn the tune of the song. Most of the changes to the initial version were made to accommodate the requirements of rhythm and tonic accent in the sung text. If necessary, even if it means properly distributing the syllables between the notes of the tune, it can be sung with the French text, without at any time having to do violence to the tonic accent (as is unfortunately common in certain French songs). recent vintage).

"This day again and tomorrow
will be with you but as
soon as the third day comes I will leave."

"But when will you come back again my
love, my sweet beloved?"

"When will red rosés snow and when
will fresh wine rain!"

"Do not snow the roses and do
not rain wine like this, my
love, my sweet beloved, you will not
come back!"

Au jardin de mon père me
couchai, et y dormant me vint un
joli rêvelet neige blanche
sur moi neigeant.

And when I wake up, here is pure
emptiness, pure nothingness
- it was the pretty red roses blooming
above me...

The boy comes back and passes, all sweet
into the beautiful garden,
carrying a crown of roses and a
goblet of wine.

With his foot he stumbled, softly on
the pretty mound fell -
and snow rose also rained fresh
wine...

There was a joy, a happiness in me, while I groped my way to restore what I was reading, which over the course of moments became like a part of me. There was this spare and gentle beauty, both calm and poignant, a serious beauty made of joy and sadness intimately intertwined. I believe that there are few people who are not touched more or less by a song like this, even though they would defend themselves from it - as so often we defend ourselves from an emotion arising unexpectedly, when something deep within us and that we were unaware of, suddenly resonates and speaks to us silently about what we would prefer to ignore.

It is the dream, before anything else, which has the power to resonate in us that which must remain hidden, ignored, that which must remain silent. Only the language of dreams, perhaps, has the power to touch these secret strings within us and make them sing in spite of ourselves. And when, for a moment, you allow them to sing, even if it is a song of pain or heavy sorrow, you suddenly feel light and like new - washed with great water, as if abundant water had passed through your being and had dissolved and taken away all that within you which is knotted and hard and old...

When the poet prepares to resonate one of these strings whose song triggers the interior waters, he instinctively borrows the language of dreams, both limpid and full of mystery - a language of images and parables, which disconcerts reason by its apparent absurdity, and by its secret evidence goes straight to where it wants to hit!

There is no need here for the word "death" to be pronounced, or any other which for awakened reason relates to it. Yet she is present, and her misty face is that of the Beloved. The sleeping and distant Beloved whom you left a long time ago, and very close at the same time - both snow, and rose which falls in snow and is born from the snow... The force that draws you into Her is like a very deep and powerful wave, a wave coming from the One who calls and leading back to Her. And the call is poignant sadness and the return is joy which sings in a very low voice and joy and sadness are one and are this wave which carries you in the Beloved, with the unanswerable force of childbirth.

And there was no need to evoke, even in a word, this yearning and the surge of desire for you, the child - for the "boy" that the Beloved calls into Her. It was enough for a dream to speak of She who sleeps in her father's garden, dreaming of snow and waking up to roses, for this long-forgotten wave to also awaken in you, responding to the languishing of She who dreams and wake up, call and wait...

(¹¹⁴) This old Silesian song is one among many old and not so old love songs, singing this mysterious and poignant amalgamation of the beloved and death. The one I have just transcribed is perhaps exceptional for the profusion of images loaded with meaning, and for the richness of the associations it arouses. It is not my intention here to pursue them one by one, after having mentioned one or two which affected me the most. When yesterday and the day before yesterday my thoughts returned to these hastily read stanzas, it was not then in the sense of the deepening of an emotion, which at first remained epidermal. This rather reminded my attention to the extent to which the themes of love and death, or of the beloved and death, appear linked, as if by some mysterious spell! And beyond the theme of death in the face of the beloved, they join that of birth - of awakening-roses out of sleep-snows, both mysteriously united in the poignant image of roses falling into snow, on She who at the same time dreams and wakes up, asleep in her father's garden.

The taboo may well inculcate the repulsion of death, its incompatibility with life as well as with love! We must believe that it goes against a deeply rooted knowledge, or an impulse as powerful as it is secret, so that with such tenacity what must be separated at all costs seems to want to come together. , for this purpose taking the circuitous paths of symbol and dream, through songs and myths transmitted from generation to generation, from century to century.

There is no doubt that numerous and learned volumes have been written on the subject of these disturbing amalgams, in order to exorcise them as best we can. Notwithstanding such efforts, surely also, "somewhere" in each of us, the deep meaning of these tenacious associations is well and truly perceived — in those moments, at least, when we do not deliberately close ourselves off to emotion by we who welcome these messengers, speaking to us about ourselves in the elusive and powerful language of dreams.

This "deep meaning" is revealed to us again, directly and with an elemental force, through the love experience, as long as we dare to live it fully and listen to its obvious message. She then speaks to us of the mystery of death and birth, indissolubly linked in the Act which transmits life and renews lovers.

Without doubt I am not the first, in whom this "deeply rooted knowledge" has come back from the obscure depths where it was long exiled, to become fully conscious and permeate all the more strongly my relationship with death and life. , At

world and myself. However, I have the impression that written and published testimonies, testifying to such knowledge on a conscious level, must be rare. The only ones I have been aware of so far are three or four stanzas from Lao Tzu's Tao Te Ching(*).

On the other hand (and a little paradoxically), I also have the impression that the “love-death” amalgam must have, at one point, ended up becoming a sort of romantic cliché, a “pie in the very sure cream to draw a complacent tear from even the most reluctant eyes. It is a fact that the process, over time, has ended up being discredited - so much so, unfortunately, that even among people with delicate sensibilities, there is a tendency sometimes to confuse gold pure with its crude tin counterfeits. There are some who see old-fashioned or even ridiculous looks, even where there is a lively and fine perception of a hidden reality, and a delicate expression, foreign to any “fashion”. A consensus of “good taste” here comes to the aid of all-round internal resistance, which automatically screens the irruption of any lively and authentic emotion, whether joy or pain, enjoyment or torment, coming to disrupt the train- familiar train.

It is also the same mechanism which so often blocks the original strength of the game

(*) (October 30) I came across these passages from the Tao Te Ching towards the end of 1978. It was a striking, entirely unexpected confirmation of things that I had felt strongly about (some for a long time, others recently. ..), and that I seemed to be the only one who felt this way. This “meeting” was experienced as a great joy, a silent exultation. This joy, this exultation led to the gestation and writing of *In Praise of Incest* over the following six or seven months. The design was done in the days or weeks following this meeting. On a more modest or more humble pitch, I have felt a similar joy in recent days, “recognizing” the emotion that animated an anonymous poet (dead for centuries) when he sang of these roses falling in snow, born absurdly, miraculously from the “lautre Nichts” — from “pure emptiness, pure nothingness”; or to put it better, by rediscovering through my own intimate experience, this same emotion, a sign of the same knowledge. It is the same one that we also find in the Tao Te Ching, over more than four millennia - with the difference that in the Chinese text, this knowledge is expressed in the language of imagery, but in no way symbolic of a highly awakened consciousness, and not in the language of dreams (which is also the code language of the deep layers of the psyche).

The content that I recognized in these few stanzas of the Tao Te Ching has also visibly escaped the translators of the five or six different versions (in French, German and English) that I have had in my hands. I'm not surprised. Such messages, expressions of an understanding going against age-old conditioning, communicate their true meaning (beyond the words and images used to express it) only to those who already know it through this. that they have been able to assimilate from their own experience, or to those in whom the work of assimilation continues and who are already very close...

of love and its orgasmic outcome. Fortunately, the mere fact of remaining hidden, banished from the field of consciousness, in no way prevents the archetypes which animate the amorous impulse from nevertheless being present - from causing to vanish and disappear what must disappear, to that the meaning of the game of love is expressed and accomplished, and that the final act is a creative act, a renewal. But often also a secret fear blocks the very "pleasure" that we think we are looking for, frightened as we are by the very close presence of an unknown and formidable force, which risks (if we are not careful...) to sweep away like straw the One in us who at all costs wants to keep "control". Such fear cannot tolerate that pleasure never approaches this threshold of poignant intensity where it is both pleasure and torment, united to each other in a long and intolerable embrace which seeks deliverance, to finally resolve and sink into orgasmic nothingness...(*)

(October 27) I believe I have understood the secret message of songs and dreams like "This day again and tomorrow...", in the essentials that are common to them. The question then remains: what is this force that pushes with such insistence to give voice to this "deeply rooted knowledge", undoubtedly older than our species; to express it against all, refusing the vigilance of the surly and narrow-minded Censor, taking the key to the fields and giving free rein to the symbolic language of dreams, with unlimited resources?

If myths, songs and dreams never tire of whispering the same message to countless faces, it is also true that the prisoner to whom they are addressed never tires of hearing them! He is certainly a voluntary prisoner, and he is careful not to listen. He is frustrated by air, space and light, and yet reassured by the four walls which surround an existence without great surprises or mysteries, except perhaps death which is at the end, infinitely distant. His prison protects him from the Unknown who is beyond these walls and whom he pretends to ignore. She both frightens and fascinates him. It's because the Beyond its walls frightens it,

(*) (October 28) It is this same fear, manifesting itself as a sort of refusal of pleasure, which pushes at the same time to isolate pleasure from the whole of the love experience, to reduce it to it and make it the purpose (sometimes tacit, sometimes clearly expressed). "Love" is then reduced to a "search for pleasure" — to an exchange of good practices, in short, between two partners, like inviting each other to dinner in four-star restaurants. , when not at the Folies Bergère. This "pleasure" fearfully kept on a leash is just as foreign to the original impulse as chips of dry paint, scraped from a picture painted by the Master's hand, would be to the board; or that a hairdryer is foreign to the strong offshore wind, loaded with the scents of the sea and the earth...

that his prison-refuge is dearer to him than life. And yet it fascinates and attracts him, reluctantly, as the messengers who from far and far come to talk to him about it attract and fascinate him. And sometimes he gives in to this unusual attraction, as long as it is in secret from the Censor - General Supervisor: while casually lending an ear, he is "thumb" nevertheless - he has heard nothing and above all, listened to nothing!

The question I was asking myself just now seems to have disappeared, hidden away by a convincing image. It reappears, as soon as I remember the effect of the message — this emotion which comes to the forefront of the message, and the benefit of this emotion.

But truth be told, any emotion that touches a deep chord is a messenger from beyond the four walls, a messenger from the Wide. Even though we would strive the next moment to erase all traces of it, it is beneficial, it has already left its mark, like a delicate perfume - as if these sullen walls had parted however little; or as if through some unsuspected opening reached us, in a sanitized air, some whiff, however tiny, of the scents of the bowls and fields.

(October 28) It is somewhat against my will that, for the past fortnight, reflection has been moving in a direction that was in no way anticipated, with no very apparent link with the theme of the Burial, nor even (could it be seem) with my own person. I know deep down that this is not the case, that I continue to be involved in these notes as much and more than ever. This does not prevent me from being torn between the desire to "finish it", and that of delving into what is glimpsed from day to day, of following the most compelling associations - a desire which joins the concern, also, of not doing anything. let slip that is likely to shed light on my "investigation" into the Burial. What seems the most distant is sometimes also the most intimately close...

Still, for the past two weeks, if not already since the resumption of notes after the illness incident, I have the impression (a little painful sometimes) of doing things "in stride", hastily ; as if each new note was one more parenthesis that I opened (in front of an imaginary reader who would cry for mercy) and that I had to close as quickly as possible! It is surely these dispositions, even more perhaps than the unusual visits of quite a number of friends to my house in recent weeks, which are responsible for writing that is also hasty, a little messy at times. I had to go over the majority of the notes written recently, retyping them clearly. This still has

helped to slow down the progress, and to keep in suspense my impatience to see the work progress!

It is also true that these themes that I sometimes pretend to want to treat immediately, as “well-known” that I would take the trouble to explain out of conscience only and for the benefit of a reader who “would just land” — these themes are both too delicate, and too far-reaching, to support such casual dispositions.

I couldn't help but notice this as I read the pages, and to “rectify the situation”, I mean to readjust my inner attitude, under the pressure of the weight, so to speak, of what I pretended to be able to approach on the run!

This reminds me that this long reflection on yin and yang, in which I have been engaged for almost four weeks and which is by no means finished yet, in short only explains an instantaneous intuition, which seemed to me quite what is simple, not to say obvious; an intuition that came “in a flash” the day after May 12, when I had just written the first note on a certain “Eulogy”. When I took up the rest of this note, a month ago (*), preparing to follow this association of ideas, in preference to others which seemed to me of less interest, I anticipated that This was going to involve me in five or six additional pages, breaking everything. There, I passed the sixty mark...

Yesterday I stopped on the question of the meaning of the symbolic evocation of the links between love and death, or between death and birth, or life and death - and of the meaning, too, of emotion that such an evocation arouses in us. What is the force at work in the myth, or the song or the dream, which pushes them to “breath tirelessly the same message to innumerable faces” — and what is the force in us, voluntary prisoners of reassuring prisons, who so often respond to them with this emotion, going to the front of the evocation and showing that it “hit the mark”, that it touched where it wanted to touch? And also: where does this strange power of the language of dreams come from - the language which evokes without naming, which communicates what no other language knows how to communicate?

Pursuing these questions also means probing further the role of the love impulse like that of dreams, and the deep links that connect them; each nourishing the other and nourished by him, each expressing himself, and communicating with the other, by a language which is common to them and which escapes the Censor. It is also about probing further the role of archetypes and

(*) In the note “The muscle and the guts (yang buries yin (1))”, n° 106.

symbols in the love drive, and that of the “symbolic” satisfactions of the drive.

Certainly, all this takes me far beyond the limits of what I can reasonably hope to “fit” into this “digression” on yin and yang, continuing (it would be time for me to remember this) right in the middle of ‘a certain Funeral Ceremony! It seems time to leave this new “thread” there, and to return to another “thread” left unresolved three days ago(*), which then brought me back to my own person.

(115) (October 30) For a day or two a few lines have been running through my head, from a poem written three years ago. I wrote it first in German, and resumed it the next day in French. It was the first two verses that came back - the third and last seemed erased from memory, apart from the first line “Ein Kreis schliesst sich”

— “A circle is perfected”. (And also apart from the last line, which repeated that of the first stanza.) When I woke up that night my thoughts returned to it again, I ended up getting up to rummage through my papers. I found the poem without difficulty - something tidy is good! Here it is.

Ripe and
heavy dense
fruit my life bends
for the return to
Her

The sweet and thick juices
impregnated me
and bloomed
fragile milk flowers
become fruit and wine

A circle is perfected - from
my lap sweetness
rises

(*) In the note “Paradise lost” (nǚ 116), placed after this note nǚ 114).

describes her
muted orbs and leans
back into Elle...

This is, I believe, the only poem I have written where the thought of death(*) is clearly present. Here she appears under the name "Elle". In the primitive version of the day before, it was evoked by the German word "Erde", earth. The "translation" of the three stanzas into German is far from being literal; the first came like this:

Full and heavy
ripe fruit
my life is coming to an
end
Towards the earth

The sweet juices
that soak me
soft flowers
have bloomed
and become fruit and wine

A circle closes from my
womb
Sweetness
rises,
circles and leans
towards
the end of the earth...

(*) I should rather write: the thought of my death. Two poems (of a few lines each) written in 1957, the year of my mother's death, are imbued with the presentiment of this death.

Finally, just now rewriting the original version in German, I couldn't help but write it to the end, so much so that the following two stanzas seemed to flow spontaneously from the first! These three stanzas are for me a love poem (I have hardly written any poems other than love poems). If this is addressed to anyone other than myself, it is to Her — to She who silently waits, ready to welcome me...

That same day, I wrote two other poems, one before and one after. They were speaking to a “beloved” in flesh and blood, Angela, “the Angel” — a tall, blonde, slender girl, all that was alive, met the week before, on the road vibrating with summer heat, where she hitchhiked. In an hour or two we had time to say a lot to each other, and we left with that. I would have liked to give her these poems that she had inspired, including another written the very evening of the day I met her, and then another still (always in German, our common language), which came on the day after “three (almost) at once”. And I would also have liked us to love each other... But I lost track of her, as she must have lost mine.

A common point in the poems sparked by this encounter is that each one is either very strongly “yang” or very strongly “yin”. They are among the most intense that I have written, and each came in one go, almost without retouching - as if they had been there already ready and had only waited for the signal of this meeting to take shape in tangible words.

At first glance it may seem strange to find among these poems charged with intense erotic tension, this other poem in autumn tones, preparing to enter the long sleep of winter. But this can only surprise someone who does not feel the deep connection that unites erotic impulses and the feeling of death. There was, in those days of solitude, an intense perception of life, amplified by erotic emotion and by the profusion of archetypal images which underlie it — and at the same time, the serene detachment of a life fully experience approaching its end, ready to “return to Her”.

Such dispositions of communion with death, our silent Mother, felt as a friend and very close, are surely favored by a state of great fatigue of the body, bringing us back to simple and essential things: our body, love, death. ..

There, I was coming out of a “long period of mathematical frenzy”, which I already spoke about in the introduction to *Récoltes et Semailles*(^{*}). I was just starting to move up a state

(^{*}) See “Dream and achievement”, in particular page (iii). The “period of frenzy” in question extends from February to June 1981. It is also that of the “long march through Galois theory” (see the section

of physical exhaustion which this somewhat insane period had left me with. It had just ended (as suddenly as it had come) under the impact of a dream-parable of lapidary force, whose message I was then willing to listen to (**). These were days of availability, of listening — a “sensitive period” of an in-between wave: behind me a long and ample “mathematical” wave, and in front of me a no less ample “meditation” wave which was already announced... It would take its momentum around ten days later, with this other dream whose story opens the introduction to *Récoltes et Semailles*, this vision of myself “as I am”.

These were weeks of intense inner work, of silent gestation, of change. And these love poems, with a different tone from all those I had previously written, are a fruit and a testimony of this intensity, of this fullness.

These are also the last love poems I wrote. Perhaps there was in me a foreknowledge that this was the last time that I would be in love, and that the great fireworks of songs for my beloved would unfold! A foreknowledge that these poems addressed to an unknown girl, whose beauty I felt intensely without having known her, display at the same time a farewell to the songs of love and to the women I had loved - a farewell to my passion for the love which finished consuming itself in this sparkling spray, and which was going to leave me. And, more secretly and more deeply still, that it was a farewell (or goodbye, perhaps...) to all women, merging and becoming One under a new face. A more distant face perhaps, drowned in mists, at the other end of the path - but at the same time very close, and very gentle...

(116) (October 25)(*) Once again three days passed without me finding the time to

“The legacy of Galois”, n° 7). It leads to a long period of meditation on my relationship to mathematics (see the sections “The spoilsport boss — or the pressure cooker” and “The Guru-not-Guru — or the three-legged horse”, n° s 43 and 45). This goes from July 19 to December 1981. The poems to Angela (and the poem to “Elle”) are from July 8 and 9 (except the very first, dated July 1).

(**) See the beginning of note n° 45, cited in the previous footnote. (*)

(November 1) This note is prior to the two previous ones, written between October 26 and 30, which form a direct continuation and deepening of the one which immediately precedes them, “The Act” (n° 113, of 21st of October). This note is rather linked to the end of the note of October 17 (n° 112) which precedes the latter, namely “The half and the whole — or the crack”. From this, the reflection was therefore split into two parallel paths: one, (on the feeling of death and its link to the love impulse) continuing in the three notes (presented as consecutive) 113 , 114, 115, and the other initiated with this note n°

follow my lead. The first day, Monday, was mainly taken up by Pierre's visit with his two-year-old daughter Nathalie, whom I accompanied late in the evening to take the night train to Orange. There will still be time in a few days to take stock of what this visit brought me — a visit on which I was no longer counting... For the moment I prefer to continue the thread of my reflection at random on the yin and the yang.

This reflection may seem like a philosophical digression, suddenly bursting into a certain investigation where it would have nothing to do - except that it emerged without announcing itself from some vague associations of ideas around a certain Eulogy...

However, I feel that it is precisely with this “digression” that I begin to go beyond the stage of bringing to light all of the “raw facts” which constitute the Burial (**), to approach finally, somewhat, forces at work, behind acts and behaviors that seem strangely aberrant... It is surely not a coincidence that it is precisely through this “digression” that I was led also, without having planned it, to involve myself in a more profound way than at any other moment of *Récoltes et Semailles*. This is one of the unexpected fruits of the recent illness episode, which occurred at a time when I was preparing to nimbly bring the investigation pursued over the past seven weeks to its very close conclusion...

This “digression” therefore, in which some will see a sort of intimate confession, and others a metaphysical speculative, is located for me (more than any other part of *Récoltes et Semailles*) at the very heart of the Burial, at the heart of the conflict. It is only the optics that have changed, the “point of view” from which the thing is looked at – but suddenly, changed in such a drastic way that the thing we had just examined suddenly seems to have disappeared! We will not be long, I believe, in rediscovering the contact which might have seemed lost along the way, with the “news item” the Funeral.

But we can also forget the news item, the main merit of which will then have been to provoke the “digression”...

Part of the day yesterday was spent retyping the draft of the previous note, written four days ago, which I finally named “Our Mother Death — or the Act”. A

116.

(**) (November 14) This statement made “in the process” is not carefully considered, and is only partially founded. For a more detailed and nuanced overview, see the note “Retrospective of a meditation — or the three parts”, of a painting “, n° 127.

a good part of this draft was quite heavily crossed out, a sign that the formulation had remained a little confused, while certain important and delicate themes had been introduced into the reflection a little “by the band”, in the process of moving towards something else. To tell the truth, when I started this note I was mainly preparing to pick up the thread of the previous note, called “The half and the whole - or the crack”, written just a week ago. But ultimately this thread still remains unresolved, and it would finally be time for me to pick it up again.

For this note also, I had to retype a good part of the text, for essentially the same reasons, correcting blunders and obscurities along the way. It is the beginning of a reflection on the division in the couple, intimately linked to the division in the person, and more precisely to what I called (in the note “the Act” four years ago days) the “vertical cut”: it which “cuts”, or subtracts, one of the yin or yang “halves” of the original “whole”

in U.S.

At a level which now remains that of an intuitive, non-verbalized understanding, I “understand”, it is “clear” to me, that it is the division in the person himself (division created from scratch). , it seems, by conditioning) which is the root cause of the omnipresent conflict in human society; whether it is the conflict within the couple or the family, or the conflict within larger groups or that pitting such groups against each other, up to the armed confrontation of the largest peoples and nations. against each other. The conflict in the couple, which pits two typical antagonists against each other, distinct and easily recognizable as such, could not without reason appear as the fundamental parable, as the elementary, irreducible case, of the conflict in the human society. The “point” of the reflection “The crack” was above all to reduce the case of conflict in the couple to this other more fundamental, more “elementary” still: that of the conflict in each person themselves, which opposes a “party” from itself to another part.

In light of this reflection from seven days ago, it was natural to think first of the conflict between the yin and yang “parts” within us — one of the two being accepted and duly emphasized and inflated , the other rejected and repressed more or less completely. I had in mind, however, that there were other antagonisms in the person still linked to other taboos than that of the univocity of sex. It is true that this last taboo, just as strong as that of incest, is even more insidious because of the aspect of evidence with which it is clothed, which seems to dispense with the care of even formulating or naming it, so much so that it seems Obvious ! Without having yet taken the care to ensure this step by step, I have the impression (since the

reflection of the Eulogy) that this taboo is the most crucial of all; that the division or "cut" that it institutes in the person is the ultimate root of each of the multiple aspects of the inveterate division in the human person. Carefully clarifying the extent to which this is indeed the case would surely be a most attractive starting point for a "journey to the discovery of conflict". However, this is not the place to embark on it - not to mention that as for the journeys that are before me, destined for me, I see starting points more burning than this...

By retyping the text of this note "The half and the whole - or the crack", I realized moreover that I did not think when writing it to explain even a little, why I saw in the conflict in the person the root cause of conflict in the couple, and of conflict in society. This is something which, as I said earlier, is one of the things that I "understood" (without ever having until now had to "explain" them to myself), which were taught to me and confirmed by the silent and eloquent language of a thousand little daily facts, over the days and years(*). I am not saying that it is without interest to explain or "explain" here the "why" and the "how", whether in a few pages, or in imposing volumes perhaps. And undoubtedly a few pages on this subject, here, would be neither more nor less "out of place" than any other page on yin and yang and on conflict, which has already found its place in these notes. Surely I would learn lots of things there, as I would also learn by pursuing this other theme of reflection, on the conflict established in us between yin and yang as the ultimate cause of the division in us.

(*) This "understanding" or belief is not really contradicted. It seems to me, from this observation that I have been able to make many times, that the division in the couple formed by the mother and the father, and the antagonistic attitudes which express it, leave a deep mark on the child, and often dominate adult attitudes and behavior. It is surely justified to say that to a large extent at least, the division within us is the mark and legacy of the division which, in the days of our childhood, pitted our mother against our father.

Also, the question of deciding if the division in the person is more fundamental or "elementary" than that in the couple, or vice versa, can seem a bit like knowing whether the chicken comes out of the egg or the egg comes out of the chicken!

However, I am convinced that in a couple where one of the spouses would be "one", not in conflict with himself, and even if his spouse maintains an antagonistic attitude towards him, the conflict would not be transmitted to the children of the couple. The reason I believe for this belief is that the child in this case would be totally accepted by one of his parents. The appearance of division in the young child seems to me to be neither more nor less than the effect of the rejection of a part of his being by those around him, and first of all, by his two parents.

One of these themes visibly extends the other, which makes them both even more attractive! However, this is not the direction I want to pursue now, however little it may be. This is not the “thread” that for a week already I have been wanting to pick up again, and which still remains unresolved.

Ending the reflection in this note (*), a week ago, I suddenly felt very happy and exhilarated: the reflection had unexpectedly found contact with something important, which I had somewhat lost view in the preceding days: acceptance. It is through negative means that this contact was reestablished, by the virtue of the word which ends this reflection like an unexpected high point — the word “unacceptable”. This is due to the fact that an entire “side” of our person is rejected as “unacceptable” by those around us, and first and foremost, by our parents who set the tone (or by those who take its place, when parents are failing) — it is through this non-acceptance that conflict arises within us. The conflict, the division within us is nothing other than our abdication of a part of ourselves, repudiated — the abdication of our undivided nature. This abdication is the price that we pay, that we must pay, to be “accepted” as best we can by those around us.

This “acceptance” is not, moreover, an acceptance in the full sense of the term, an acceptance therefore of who we really are. It is, rather, the reward for our submission to certain norms, for having conformed and molded ourselves according to them - the reward in short for a deformation, a mutilation of our being, like that suffered since their youth. age by those around us.

In the reflection of the previous notes, acceptance was mentioned twice, and both times acceptance appeared to be a crucial thing. The first time was in the note “Innocence (the marriages of y in and yang)” (nÿ 107), where I take up an observation which dates back to a meditation four years ago: that the The emergence and full development of an undivided force within me was able to take place in the context of a family torn apart by conflict and latent hatred, simply because I was fully accepted by my parents and those around me. . The conflict only took hold in my being later, after the age of five, in a much more “peaceful” environment than my birth family. The conflict between relatives was certainly far from reaching (in my time at least) such heightened intensity (even if it was veiled) as in my family of origin. However, in

this one my own person had remained outside the conflict. Even though I happened to take sides, this was not a tear, it was the spontaneous expression of an undivided being, who had never known the sting of rejection by his own, and the fear of rejection.

I realize now, with half a century of hindsight, that in my new environment again, this force of innocence in me exerted a radiance, a sort of fascination I would say; like that of a lost paradise, infinitely distant, for which we would be nostalgic for a lifetime and which, suddenly, calls to you through the voice and gaze of a child. She then attracted me to strong and lasting affections, which followed me into my adult life and until the death of those who loved me in this way(*). But at the same time, it went without saying that this force could not be tolerated - any more than we tolerate it in a pleasure garden drawn with a line, in such a vigorous and exuberant tree or bush, which we believe love while stubbornly carving it into the shape of a cube, cone or sphere...

According to my reconstruction of events(**), this force held on for perhaps two, two and a half years, before plunging deep, relegated to the underground, after I finally decided to be and do like everyone else: all muscle, all brain, as you can imagine, and too bad for the gut — and to have peace! I ended up following suit, I rejected and denied (by ignoring it) everything that should be rejected and ignored, by the unfailing consensus of all the adults around me. And by the consensus also of my parents themselves, who had ended up almost stopping giving any sign of life, living the great love as far away as possible from their children...

(¹¹⁶) (November 1) I am resuming the thread interrupted exactly a week ago, when I unexpectedly (on October 26) launched into a sort of “poetic digression” on the feeling of death in love and in life. love song.

I have just reread the previous pages from October 25 and retyped the last one clearly. It seems to me that I see a circle closing, the outline of which began two weeks ago, with the note “Blooming of force — or the nuptials” (nŷ 107). This outline ends with the preceding pages, which take up and amplify the final “point of organ” of the note of October 17, “The half and the whole — or the crack” (nŷ 112). This high point, or “final word”, which closes the reflection of that day, is summed up in the categorical imperative of the final word, the

(*) I see seven people who gave me their affection in this way, only one of whom is still alive today.

(**) I made this reconstruction of the significant events of my childhood in March 1980.

word “unacceptable”.

This fine word seems to me to perfectly identify, among the disconcerting multitude of conditions of all kinds which have shaped our lives, the determining cause of the division in us: it is the non-acceptance, the rejection of our person, in the first years of our lives(*). It takes the form of non-acceptance, of the rejection of certain forces and impulses within us, which are an essential part of our being, of our power to know and create. Their repression, taken up on our own account by the care of a worried and implacable internal Censor, is a mutilation of this power in us. Often its effect is that of a real paralysis of our creative faculties (**). This unacceptable power, or these “faculties”, are also nothing other than the humble capacity to be ourselves. It also means living our own life, through the humble and full use of our own faculties, rather than a stereotypical, programmed life, driven above all (and often exclusively) by reflexes of repetition and imitation. These enclose us and isolate us like a heavy shell, stiff and impermeable, from which we will not separate at any time (*).

The shell was formed in our young years, becoming thicker over the years. Its initial function was undoubtedly above all that of protecting us from aggression (often well-intentioned) by our loved ones, ensuring a more or less benevolent tolerance from them. But this shell, however, does not only protect us from the outside world - it also has, and more profoundly and more essentially perhaps, the function of isolating us, of protecting us from ourselves: from this knowledge and this force. in us, declared “unacceptable”, having no reason to exist, by the silent consensus which is law around us. It was in our childhood, and has become more and more over the years, a shell with two faces, one “outer”, the other “inner”. They protect the “me”, the “Boss”, on the one hand from the attacks he fears from the outside world (and he tends to become more fearful from year to year!), and on the other hand and above all, the disturbing and unacceptable fantasies and incongruities of the “Worker”; a bad kid to put it better, unpredictable as possible, still worrying even though he is kept at bay by a triple layer of horn

(*) My own case was exceptional in this respect, given that I was only exposed to such attitudes from those in my immediate circle from the age of six. (**) (November 2)

Often also and more ostentatiously, it manifests itself through “flocking” effects — the inability both to “function” in a given situation in which we are engaged, and to disengage from this situation No Exit...

(*) Apart from the hours of sleep and dreams, when the shell lightens and sometimes even disappears...

thick, guaranteed fire and water resistant...

(November 2) After the note "Innocence" (nǚ 107), highlighting the role that my acceptance by my immediate entourage had played during my first years, there was still a second moment when "acceptance" and "non-acceptance" were at the center of the reflection. It was in "Acceptance or the yang in the yin" (note nǚ 110), where I make a partial assessment of the changes that have taken place in me since the day of the "reunion" with the child in me. They go in the direction of a gradual "return" to a "childhood state".

This return is in no way a "regression" to a previous state, which would have the effect of erasing the traces in me, the traveler, of the path that was mine. It is only through maturation, the fruit of inner work, that we can regain contact with an innocence that seemed to have disappeared, with a child in us that seemed long dead and buried. And there is no maturation which is not also a return in some way - a return to the child, and to the simplicity, to the innocence of the child. This is how a life fully lived is like a circle that is still being "perfected"; it is old age rediscovering childhood, it is maturity rediscovering innocence - and ending in a death, perhaps, which prepares a new birth, as a winter prepares a new spring...

In this sort of "assessment" of a path of return which is not completed, it appeared that the "final word" was acceptance, just like the final word of my path of rupture, of the path from the start, was that of non-acceptance, rejection, refusal. My maturation was nothing other than the process, the inner work, through which I gradually accepted, welcomed, the things in me that for a long time I had refused, eliminated as best I could, ignored.

This is in no way a "turnaround", a path traveled once I would travel again in the opposite direction; a "regression" therefore, to use the expression from earlier. It is rather like the upper arc of a cycle, extending and continuing the lower line already traced, emerging from it, becoming its nourishing foundation, and the springboard for a new momentum...

(November 3) Yesterday's notes ended with an unexpected image, which emerged from reflection without my calling for it. I welcomed it with a certain reluctance at first, out of concern that the vision of reality that the image in turn immediately suggested was artificial; that the image does not "force my hand" and make me say things that would be "pulled by

the hair". But once the last lines were written and I stopped there for a few moments, I knew that I had just put my finger on an unexpected and important aspect of a certain reality; an aspect that is perhaps known to me, but without being fully assimilated, an aspect that I tend to neglect, or forget.

I have had a tendency for many years (118) to value what goes in the direction of "acceptance", and on the contrary to see in a mainly negative light what goes in the direction of "refusal". Without the thing always being clearly expressed perhaps, I felt these two types of attitudes, acceptance and refusal, as being "contraries", "opposites", one of which would be "good" for me -same and for all, and the other "bad".

In this unformulated way of apprehending things, I remained a prisoner (without realizing it of course) of the eternal "dualist" vision of things, the one that I had also previously called the "warrior" vision, which opposes antagonists of things that a deeper vision reveals to us as complementary and inseparable aspects of the same reality. At the time of beginning (October 25, ten days ago) this reflection on acceptance and refusal, I had just realized that these are indeed the wife and husband of one of these famous "couples" yin-yang or "cosmic" couples, which have been discussed for a month – since the beginning of this "digression" on yin and yang.

So I anticipated that the reflection would focus on this aspect of things. It could have seemed for two days that she was moving away from it. But now the lines which end yesterday's reflection, with the image of the two arcs of the same cycle which extend one another, have just unexpectedly brought me back to this initial intuition, which had remained unexpressed.

I have tended to see the rejections that dominated my life, from my eighth to my forty-eighth years, in a mostly (if not exclusively) negative light: as a sometimes crushing weight that I carried around for forty years of my life. life, and which I have finally gotten rid of (or rather, started to get rid of) over the past eight years. This "day" began to reveal itself to me after the discovery of meditation and after the "reunion" with the "child" in me. So it was precisely the moment when I began to discover the process of refusal in my life, expressing itself through a sort of "superyang conformism". This aspect of things is in no way imaginary. To perceive it where before there was a "white", a total void, was one of the fruits of the maturation which continued during these eight years. This does not prevent the fact that there is another aspect of the same reality, no less real and important, the "positive" aspect of "powerful principle of action". This aspect appears for

the first time (and very discreetly) in the meditation of October 5 “Yang buries yin — or the Superfather” (nǚ 108), when I write:

“The “I will be like them” (and not “like soft”) also meant: I will “bet” on “the head”, no worse at home than at anyone else after all, and beat “them” with their own weapons ;' It is this motivation

which was like the driving force of my disproportionate investment in mathematics, from 1945 to 1969 - the force which fueled a surge of discovery for a quarter of a century (*). Whether one chooses to see such an investment in a “positive” or “negative” light, what is clear is that there has indeed been momentum, intense action. On the learning side of life, there was this “sometimes overwhelming weight”, never examined, if not total stagnation – and this same “weight” at the same moment nevertheless fueled a surge of knowledge, gave it its living force. .

Since my “departure” in 1970, I have tended to minimize, and sometimes to deny the “value” that should be given to such an impulse, in the direction of discovery and communication. -so-called “scientific” understanding of the outside world. I tried several times, during *Récoltes et Semailles*, to identify the common aspects between such a discovery and the discovery of oneself, and also in what way they differ (**). It is surely justified to say that the impulse for discovery in a scientific direction (be it biology, or “psychology”...) distances us from ourselves and from an understanding of ourselves. When the role of such an understanding is fully understood, we could therefore be tempted to see in the impulse of scientific discovery (and in any other which would “distance us from ourselves”) an “evil”, or at least , an “obstacle” to maturation, and thereby, to the full development of ourselves. (At least in the case, which was mine for a long time, where this impulse mobilizes the greatest part, even all of the psychic energy.) However, it is also true that everything we experience is raw material for our learning about life and ourselves. It is a material that it is up to us to let transform into knowledge, allowing a work of maturation to begin and continue within us. This is also why I do not regret anything that I have experienced, ultimately seeing that “everything is good, and there is nothing to throw away”; including also the deserts of long periods of stagnation-

(*) It was, more precisely, the ego component of this impulse, the ego “factor” of this “living force”.

(**) See in particular the sections “Desire and meditation”, “The forbidden fruit”, “The solitary adventure”, nos . 36, 46, 47.

spiritual vision, which displays the price that I paid without skimping (and with my eyes closed...) for my disproportionate investments in a devouring passion. Now I see that these very deserts had something to teach me, that perhaps only they could teach. I could not have done without it - at most perhaps I could have already, after a few years, initiated this "second arc" of the cycle, the end of which I postponed for several decades.

It is on this day, also, that it appears that the acceptance of myself and others, which was born and developed in the years of my maturity, was "nourished" by refusal which had marked the longest part of my life - this "lower arc" of the cycle mentioned yesterday, and its "nourishing base". Certainly, in the first six years of my life, there was in me a total acceptance of myself, which had in no way needed previous "refusals" to be, and to unfold and assert itself. On the contrary, its development was possible precisely because it was not opposed, not cut by the scissors of a certain refusal.

But this "acceptance" that was in me in my childhood is not "the same" as that of my mature age. It lacked a dimension, which the mere acceptance of me, by those who had surrounded my childhood, could not have given it. It was a knowledge of refusal, of the rejection of myself (or a part of myself) by others, or by myself.

This knowledge came to me through the experience of refusal, and also through that of contempt, which is one of its many faces.

Perhaps some are born with a knowledge, an understanding of refusal, which allows them to remain one, innocent and knowing, despite the refusals to which their childhood is exposed. I know very well that this was not my case. I could not avoid the experience of refusal and contempt by others and by myself, as a breeding ground for the blossoming of an understanding (however imperfect it may be) of refusal and contempt.

(117) I have just probed an unexpected aspect of the relationship between refusal and acceptance in my own life, which appeared unexpectedly in yesterday's reflection. The "refusal" in question here is, however, not a refusal in the full sense of the term; I hear, a fully assumed refusal — far from it. This refusal was also a long flight from the thing refused. It consisted of not seeing it, of ignoring it, and thereby, to a certain extent, of making it disappear from the field of my conscious apprehension and also, from the field visible to others. It was the cause and result of a state of disharmony, of imbalance — in this case, a "superyang" imbalance, which

marked my adulthood, and some crucial mechanisms of which remain in action even today. This “refusal” therefore does not appear here in any way in a role of symmetry, or even of yang-yin complementarity, in the face of “acceptance” (of myself and others) which was discussed earlier. . This, on the contrary, is part of the work of getting to know myself, and goes towards the reestablishment of a disturbed harmony. This is therefore an acceptance “in full knowledge of the facts”, an acceptance in the full sense of the term – and in no way another flight, in the opposite direction to the flight sometimes called “refusal”.

There is, however, a more obvious relationship between “refusal” and “acceptance” than the one surveyed earlier. It appears when both are taken “in the full sense of the term”. These are then simultaneous and complementary aspects of the same harmony, of the same fully assumed attitude. (Whereas sometimes it was a question of two consecutive aspects of a journey or progression, passing through a state of imbalance, of disharmony, to move towards a renewed balance.) From this perspective, there is no “true” acceptance, which would exclude refusal, which would close itself to it. And there is no “real” refusal which is not born from acceptance, which is not a tangible manifestation of it; which is not one of the two “faces” — the “yang” face — of the same indivisible thing which has two, and whose “yin” or “mother” face is acceptance (*).

An “acceptance” which excludes refusal is not an acceptance, but a complacency (to others or oneself, or both), or complicity or connivance (when it comes to “acceptance” of others). Completely accepting a being, whether oneself or another, in no way means unconditional approval of their actions, habits and inclinations. Such unconditional approval is in itself an escape, a refusal to acknowledge a (often eloquent) reality, and in no way an acceptance.

Far from creating a “field of force” conducive to renewal, or a resumption of contact

(*) It is interesting to note that this “natural” distribution of yinyang roles in the acceptance-refusal couple (distribution expressed in French by the feminine and masculine gender of one and the other term of the couple) is reversed in the image that had spontaneously presented itself to me at the end of the reflection the day before. That there can be such inversions is not surprising - just as in a lover-lover couple, whose romantic relationship is not fixed, there cannot fail to be moments when in the game lovers the roles are reversed, to give free rein to the erotic “yang” impulses which live in the lover, and to the erotic “yin” impulses which live in the lover. I also talk about the importance of such occasional role reversals, in the note “Acceptance (the yang in the yin)” (n° 110, last paragraph of the first part of this note).

with a forgotten unity, it reinforces inertia, and contributes to maintaining a rut.

A refusal which is not at the same time an opening, which is also like a hand (or “a pole”) extended to others, or like a start which marks a point of rupture and renewal in one's relationship with oneself- even — such a “refusal” is truly a cut, which “cuts” and isolates both the one who refuses and the one who is refused. It is another escape, from a reality felt to be unpleasant, even disturbing, fraught with threats to our well-established life, to our comforts - a reality from which we believe we are escaping with a blow of the ax: “this is not happening to be”... And yet, it is! And our imperative “refusal” in no way prevents things from being what they are, even at the risk of displeasing us. On the contrary, just like the complacency of automatic approval, such a refusal reinforces the inertia against creative change, it is like a verdict: unacceptable you are, and such you will remain...

I do not claim to achieve in my person the harmony of fully assumed acceptance and refusal. On the contrary, I know that this is not the case - and I am not sure that I have met a being who would achieve this harmony. To realize it is also to have resolved, in one's own person, the great enigma of “evil”: of iniquity, of lies, of wickedness, of spinelessness, of contempt — and of the suffering of those who are stricken and speechless. It is also, surely, to have fully understood the “good” which is in what an inner surge so often designates us as “evil”.

Refuse war, while seeing and accepting that it is everywhere and in everyone; that the very ones I love carry it within themselves and propagate it, just as I myself took it up, carried it, propagated it and transmitted it. Refuse war, while accepting that it is, while loving its countless and blind soldiers. It is this and nothing else, surely, which also means: to have come out of the war, to have come out of the conflict - to have stopped spreading the war.

(118) (November 4) (*) The appearance of this “trend” (**) took place in the early 1970s, therefore in the years following my “departure” from the mathematical scene. Under the influence of an environment and friends very different from those before, there was a drastic shift in the set of “values” that I claimed. Looking back, I can describe this shift as a shift from one “superyang” or “patriarchal” value system to another.

(*) This note comes from a footnote to the note “the cycle” (n° 116). See the reference at the beginning of the November 3 notes.

(**) The tendency to value “acceptance”, opposing it to “refusal”.

almost opposite, with a strong “yin” dominance — a “matriarchal” system. Among the influences which played in this reversal, there are also some sporadic readings of Krishnamurti - see on this subject the note “Krishnamurti - or liberation become hindrance” (nŷ 41).

If I then let these influences come into play, which would lead me towards such an “ideological” turn, it is undoubtedly (without realizing it at the time) that there was in me a deep and urgent need to renewal, and first and foremost, the need for liberation from the weight of inveterate “superyang” attitudes. This same need had surely already come into play in 1969, when in the midst of intense and fruitful mathematical activity, I suddenly “dropped out” of math to become interested in biology (**); then the following year, leaving (without thinking of returning) the mathematical scene and even scientific research. There was then a sudden and drastic change of environment and activities, to which I had occasion to allude several times during “Fatuity and Renewal” (the first part of *Récoltes et Semailles*).

However, it would be inaccurate, or only partially true, to consider these spectacular changes in environment, activities and finally “values”, as a “renewal”, a “liberation”. I already express myself quite clearly on this subject in the section “Meeting with Claude Chevalley — or freedom and good feelings” (nŷ 11). In the more penetrating light of the present reflection on yin and yang, I can say that the change which undoubtedly appears to be the most significant of all, that of yang values being evacuated (even before having been spotted in myself, and even less examined) in favor of yin values - this change however in no way modified the structure (superyang) of the “me”, and at most somewhat tempered the attitudes and behaviors that resulted from it. It is true that my understanding of the outside world had been considerably transformed, in the sense of a sudden broadening - but this transformation remained fragmentary, limited almost exclusively to the intellectual level, that of “options”. It could not be otherwise, as long as this transformation was limited to my vision of the “external world”, in which my own person did not figure, or only figured incidentally or superficially, through my “social role”. “above all and its ambiguities and contradictions.

No more than in the past, I had not the slightest suspicion that in my own person there could be ambiguities and contradictions! On the contrary, I was driven by an unshakeable conviction that my person was free from any contradiction (while

(**) I was first interested in the “molecular biology” part, under the influence of my biologist friend Mircea Dumitrescu, who had introduced me to this fascinating world.

However, I began to discern the contradictions in others, almost everywhere around me); and in particular, that there was a perfect agreement between my conscious desires and my conscious knowledge of things on the one hand, and my unconscious (if there was one in my case, if not is a simple carbon copy of my conscious...).

The first crack in this conviction only appeared in the spring of 1974, when I finally understood that something must be wrong with me too, and not just with others, as the cause of this inexorable deterioration in my relationships with all my loved ones (to which then my life seemed to have reduced, throughout my adult life). The effects of this salutary crack then remain limited, in the absence of a real curiosity with regard to myself, who would have made a joy of going and sticking in there, of looking at what he was behind, and to see in the process collapse a heavy edifice, made of absurd and never-examined illusions...

This tenacious blockage of a natural curiosity came above all, surely, from the fact that I had never yet encountered such curiosity in others, which could have made me suspect that in life as in mathematics, each time 'a problem presents itself, there is something to look at and, in doing so, learn lots of unexpected and very useful things - in other words: that there was such a thing as self-discovery

I had then read Krishnamurti, and was able to realize that some of the things he said were true, deep and important. So I tended to take it at face value across the board. More or less, I had tacitly adopted the Krishnamurtian worldview (*). At the time I am speaking about, this baggage has indeed acted as an "impediment" to a true liberation, to a renewal in the full sense of the term.

I also explain myself on this subject in the note already cited (which I have just reread) v where I endeavor to identify what was the role of the "Teachings" (of Krishnamurti) in my own itinerary.

The first "awakening" in the full sense of the term took place only two and a half years later,

(*) (November 5) The effect in my life of this "adoption" of a vision, becoming a sort of cultural baggage, remained very limited. My attention was drawn to certain aspects of reality which had entirely escaped me previously, but without thereby triggering an in-depth work of sorting and assimilation, having the power of renewal. If between 1970 and 1976 (between my "departure" from the mathematical scene, and the discovery of meditation) Krishnamurti was important in my journey, it is much less because of the "baggage" that I borrowed from him, than because that he had become (unbeknownst to me, of course) a tacit model, to which I conformed without wanting to appear so - the model in short of the "Guru-not-Guru", of the Master who defends himself from be.

with the discovery of meditation. It was also the discovery of self-discovery; that there exists an unknown thing which is "me", and that I have the power to penetrate this thing, to know it. This crucial discovery was made at a time when all teaching (with or without capital letters) was forgotten. It was also the moment when, for the first time, the "edifice", constructed of received ideas and "teachings" of all kinds, held together by an immense inertia, collapsed – and the moment also when the appearance an active curiosity, often mischievous, and always benevolent.

It was after this turning point, with the blossoming in me of a curiosity about my own person first and about "life" in addition and as a natural fruit, that I was able to see with new eyes to both Krishnamurti, and his message. I was able, with hindsight, to appreciate the richness of the message, and at the same time discern its limits and deficiencies, as well as certain fundamental contradictions in the Master ("the Teacher", for his disciples and followers). The heaviest of these deficiencies and contradictions seems to me to be the one that I just came across again earlier: it is the absence of any curiosity in the Master himself. Nothing in his writings allows us to suspect that in distant days, this vision was born in a person - a person caught, like you and me, in the net of ready-made ideas and contradictions never spotted; that the vision is decanted from error during intense, sometimes painful work, going against immense forces of inertia; that the stages of this work, or the "thresholds" crossed during this work, were so many unexpected discoveries, each overturning a whole set of inveterate ideas, perpetuated by the universal mechanisms of imitation, of repetition (*).

All these things, the child one day knew them, and even knew them, having experienced them intensely. But the Master has forgotten them, and is careful not to remember them. Rather than being a child, who passionately discovers and learns and by discovering is transformed, he wanted to be the immutable Master who knows, of immutable infused science, and who devotes his life to spreading his Teachings, for the benefit of common mortals. . He made himself who his followers and disciples, those who believed in him, wanted him to be: the incarnation of a static message,

(*) (November 5) These mechanisms are clearly part of the basic mechanisms of the psyche, in humans as in animals. They pre-exist all conditioning, all learning (such as that of language by the young child, and that of almost all the actions of daily life), which could not be established and take place without them. They were no less present and less effective in the young future Master than in anyone else.

repetitive and thereby reassuring, the apostle of a new ideology. A Guru-not-Guru in short, like myself (emulating his example, perhaps (**)) once was...

(November 15) I named the preceding note (from November 4) "Yang plays the y in — or the Master". As it should be in a meditation on myself, the main name of the note concerns myself, referring to a certain "game" that I played a few years, however, after my departure from the scientific world, in 1970 (***). As for the second name "The Master", it can be interpreted indifferently as relating to my person, by a designation of the role or the pose that I held in this game of "yang playing the yin", or to that of Krishnamurti, who served as a tacit model for me.

In fact, the values that emerge from Krishnamurti's books are almost exclusively yin values. At the time of my first reading of Krishnamurti (in 1970 or 1971), it was for the first time that I saw such values put forward, and the limits and flaws of the yang vision of the world which was the mine (and that of "everyone", with variations). This is surely the reason for the very strong impression that this reading of a few chapters had made on me. Six or seven years later I also had the opportunity to read the beautiful biography of Krishnamurti by Ms. Luytens. This confirmed a certain impression of his person which already emerges from his books (notwithstanding the fact that he never appears in them in person). Today I would express it by saying that the basic tone in his temperament is strongly yin. It is added that through all his writings, we see, as a constant Leitmotif, the highlighting of qualities, attitudes and values with a yin coloring, and the devaluation (explicit or by omission) of qualities, attitudes and values yang tone.

The life and teachings of Krishnamurti therefore realize the rather exceptional attitude of "yin buries yang", which goes in the opposite direction to that of by far the most common, that of "yang buries yin", including my own life (until at least in my forty-eighth year) offers an equally extreme illustration. Krishnamurti's "superyin" options (*) have

(**) (November 5) Clearly, the doubtful nuance of this "perhaps" is not appropriate! See about it the penultimate footnote written today.

(***) The moment of the discovery of meditation, in October 1976, also marked a sudden decline in this game, which continued as best it could, on a more discreet register, until 1981, when it is finally detected and defused. See on this subject the section already cited "The Guru-not-Guru — or the three-legged horse", n^o 45.

the great merit of going against the basic values of the surrounding culture. This does not prevent them from appearing to me to be no less repressive (of one part of his person by another part) than mine were.

There is, however, a very pronounced and striking “yang” aspect in the life of Krishnamurti, which was undoubtedly first imposed on him by the role of figurehead, of (future) “spiritual master”, decided by his prestigious Theosophist tutors while he was still a child. Subsequently, after the great turning point in his life marked by discoveries which completely changed his vision of things (discoveries which subsequently became “The Teachings”), this role of “master”, or “guide” was (it seems) entirely internalized, taken on board with the propagation of a doctrine that was personal to him, and not taken from his theosophist masters. This propagation represents an intense, even exhausting, activity. It hardly seems to go in the direction of a balance of yin and yang, but rather appears to me as a constraint imposed on an eminently contemplative temperament, by a “me” as strong and pervasive in the master as in anyone else. . Seen in this light, the present note “Yang plays yin”, where it is mainly a question of Krishnamurti, could also be called “Yin plays yang”.

Thus, on two occasions and in two different ways, I have played “games” in my life which happen to be like an inversion of attitudes which dominated the life of the one who, in a certain period of my journey, had to become the tacit model of my Brand Image (just as tacit), and of certain attitudes and poses in soft terms. But through styles of expression that are the opposite of each other, I recognize today an obvious relationship. One is in the presence of repression (unconscious, of course), generating a disruption of the natural balance of yin and yang (*). The other is found in the choice of a role, and in the weight of this role, its braking or even blocking effect in development, in maturation, in the progression of understanding or knowledge. . This role (or this pose) was the same for me as for the one who served as my model, from whom I perhaps limited myself to borrowing it as is. This is the role of the Master.

(119) (November 5) I've been wanting to talk about yin and yang in mathematics for a while. The two aspects yin and yang in mathematical work, or in a

(*) These “options” undoubtedly date back to his childhood, and more precisely, to his first contacts with his theosophist tutors.

(*) In this relationship, we are certainly in very numerous company!

approach to mathematics, only appeared to me during the reflection of recent weeks on yin and yang. I anticipated that to probe a little in these notes this double aspect, would be the most natural way of "getting back to my sheep", in these notes which are supposed to constitute a retrospective on "a mathematician's past".

What was very clear to me from my first thoughts on yin and yang (five years ago) is that "doing math" is perhaps the most yang, the most "masculine" of all. human activities known to date. To tell the truth, any entirely intellectual activity, such as scientific research in particular and, more generally, any activity commonly described as "research", is an activity with a very strong predominance of yang.

I was going to write: "marked by a strong yang imbalance", and this is indeed the case when this activity absorbs almost all of a person's energy. This yang predominance (or imbalance) appears through the evocation of a good number of yin-yang couples, for which it is clear that it is the term yang above all, if not exclusively, which is "present" in intellectual work. I limit myself to highlighting a few of them, which are all part of the same "group" (or the same "door to the world"), which I call the group "the vague — the precise". (NB in this last couple and those which follow, it is the term yin which appears first.) sensitivity
- reason (or intellect) instinct - reflection intuition - logic inspiration - method vision - coherence

the concrete - the abstract

the complex - the simple the

vague - the precise

dream - reality

the indefinite - the defined

the unexpressed - the expressed

informs it - the formed

the infinite - the finite

the unlimited - the limited

the whole (totality) - the part

the global - the local (or the fragmentary).

I have just gone through my yin-yang repertoire, and noted a good number of other couples which demonstrate the superyang character of pure intellectual activity. I will only mention the first of all those that I had already thought of earlier: the body-mind couple.

This seen, it seems to me that among the various types of intellectual activity, it is mathematical work that represents the "ultimate extreme-yang. This is undoubtedly due above all to its character of extreme abstraction, due to the fact that it is, to a very large extent, independent of any "support" through a sensory experience and a reasoned observation of the external world, of that where we live I hear and where our bodies move. This extreme character in abstraction distinguishes mathematics from any other science, and mathematical work from any other intellectual work, to make it a science or a work "of pure reason". Unlike the experimental sciences and the sciences, observation is also the only science whose results are established by demonstrations in the most rigorous sense of the term, proceeding following a rigorously codified and in principle infallible method, the method called "logic", to arrive at certainties which leave no room for any doubt or reservation, or for the possibility of exceptions which would have escaped the cases observed until now.

These are so many extreme-yang traits brought together in mathematical work, and in this work only.

Certainly these traits had something to attract me from childhood, even though I had opted completely for "the head" and for extreme yang! (*) Especially after the experience of the war and the concentration camp, facing discrimination and prejudices which seemed to defy even the most rudimentary reason, which fascinated me especially in mathematical activity (because of the little I I was able to know some in my high school years), it was this power that it gave, by virtue of a simple demonstration, to win even the most reluctant support, to force the assent of others in short, whether he is well disposed or not — as long as he accepts the mathematical "rules of the game" with me. These rules, from my first contacts with school mathematics, in 1940 at the Mende high school (where I was able to go, while being interned at the Rieucros camp five or six kilometers away), it would have seemed that I knew them ,
THE

(*) Apart from the military and warlike variant, parades, uniforms, attention. to the torso bombed, and impeccably organized massacres and mass graves...

felt the instinct, as if I had always known them (*). Surely, I felt them better than the teacher himself, who recited to us without conviction the commonplaces then in use on the difference between a “postulate” (in this case, that of Euclid, the only one of which he and we have had the good fortune to hear about...) and an “axiom”, or “the demonstration” of the three “cases of equality of triangles”, following the class book as a first communion student would follow his breviary.

Five years later, seduced by the sudden prestige of atomic physics, it was nevertheless to study physics that I first enrolled at the University of Montpellier, with the idea of introducing myself to the mysteries of the structure of matter and the nature of energy. But I quickly understood that if I wanted to initiate myself into mysteries, it was not by following university courses that I would get there, but by working on my own, alone, with or without books. As I did not have the flair, nor the equipment, to learn physics in that way; I postponed the thing until more favorable times. I then started doing math, while following a few courses “from afar”, none of which could satisfy me, nor bring me anything beyond what I could find in current textbooks. But it was still necessary to pass my exams...

(120) (November 6) By just going through yesterday's notes, I was able to ensure that I had been careful not to fall back into a certain confusion between mathematical work, an activity with a very strong yang dominance, and “mathematics”. It is surely no coincidence that in French as in German, the word which designates it is of the feminine gender, just like “science”, which includes it, or the even broader term “knowledge” (*), or also “the substance”. For the mathematician in the literal sense of the term, I mean for the one who “does mathematics” (as he would “make love”), There is in fact no ambiguity on the distribution of roles in his relationship to mathematical, the unknown substance therefore of which he becomes acquainted, which he knows by penetrating it. Mathematics is then as “woman” as any woman he has ever known or even desired — whose mysterious power he has felt, attracting him into her, with this force that is both very gentle and unanswerable.

(*) These first contacts took place shortly after my childish reflections on the squaring of the circle, which is discussed in note n° 69.

(*) On the other hand, “knowledge” is masculine, and it is “the husband” in fact in the yin-yang couple “knowledge — knowledge”. The German is less clear here, since the two terms “Kennen”, “Wissen” are neutral (as substantivised verbs).

I realized for the first time the deep identity between the impulse which attracted me towards “woman”, and that which attracted me towards “mathematics”, a few months before the encounter with the stanzas of the Tao Te Ching which would trigger me for the In Praise of Incest (and along the way, for my first systematic reflection on the “feminine” and “masculine”, whose Chinese names “yin” and “yang” I was still unaware of). It was six years ago, when writing a two-page text, entitled “As a program”, implied: for the course (of C 4) of “initiation to Research”, of which this text constituted an introduction, or more precisely a declaration of intentions about the spirit of this “course”. After writing this text, which came to my pen most spontaneously, I was struck by the abundance of Images emerging from each other, loaded with erotic connotations. I realized that this was neither a coincidence nor the result of a simple deliberate literary intention - that it was an unequivocal sign of a deep relationship between the two passions which had dominated my life as a child. adult. Without thinking then of delving deeper into the matter through a systematic reflection (which only appeared a few months later, during the writing of the Eulogy), nor even (I believe) of clearly formulating to myself what was suddenly perceived, I think I can say that in this moment I learned, without fanfare, something important — I had “discovered” something (**), something which had entirely escaped me Before.

Of course, like everyone else, I had heard about Freud and sublimation of the libido and all that, but that has nothing to do with it. Even tons of psychoanalysis books and everything else we want cannot avoid such moments, when all theory, all “baggage” is forgotten, and when suddenly something “tilts”. it is in these moments that our knowledge of things is renewed. It has nothing to do with reading books, listening to presentations, that is to say: increasing knowledge (*).

(**) It was then a “discovery” in the “yin”, “feminine” mode - which is made by the reception in us of new knowledge, in dispositions of silent openness to what comes in We. Such moments have been rare in my life, I believe. In any case, the moments of discovery that I remember are almost all of a yang, “masculine” tone.

(**) This observation is not contradicted by the fact that it is quite possible, and even probable, that this “awareness” (the passage to the conscious level of a thing perceived in the unconscious) has been facilitated by the existence of the Freudian consensus, which I had heard about without it really bothering me. Knowledge can promote the hatching of knowledge, but it is much more common, it seems to me, that it stifles any attempt at hatching in the bud - in the same way as the ready-made “answers” which stifle in L the hatching of a (good) question...

When I think of “mathematics”, it is surely not the totality of knowledge that can be described as “mathematics”, recorded from antiquity to the present day, in publications, preprints or manuscripts and correspondence. . Even eliminating repetitions, that must probably be a few million pages of compact text; maybe ten tons of books, or even a few thousand thick volumes, enough to fill a spacious library: nothing to get you horny, that's for sure, quite the contrary! Talking about “mathematics” has little meaning except in the context of a vision, an understanding – and these are essentially personal things, in no way collective. There are as many “mathematicians” as there are mathematicians, each of whom has a certain personal experience of it, more or less vast or limited, one of the fruits of which is his own understanding, his own vision of “mathematics”. ” (the one he knew), always more or less piecemeal. It's a bit like “woman”, which can seem to some as a simple abstraction, or as an empty formula and which nevertheless has a deep, powerful, undeniable “reality” (for me at least), each of which woman encountered or known is an incarnation and represents one aspect and the same woman in the experience of another undoubtedly represents yet another Incarnation, yet another aspect.

My purpose here is in no way to confront the difficulty of “integrating” this vast multiplicity of experiences, understandings, visions of “mathematics” into a totality, a unity — and this, moreover, in an era where we are witnessing (it seems to me) a sort of frenzied “divergence” of mathematical production, and where no mathematician can undoubtedly pride himself on knowing, even if only in broad terms, the totality or the essence of what has been substantially accomplished in our science. My point was rather

It is a remarkable thing, when “everyone has heard” somewhat of the role of the erotic drive in creativity (artistic or scientific, let's say), that there was no trace of it in the consensus which had courses in the environments that I have been part of at one time or another. However, there was no shortage of striking facts that could have alerted me a long time ago. Thus, until three years ago, periods of intense creativity in my life, and especially periods of inner renewal, were also marked by a powerful influx of erotic energy. However, my mathematical activity was never accompanied by conscious erotic images or associations. But I remember being a little disconcerted, in the 1950s, during a work session of the Bourbaki group, by a colleague and friend who mentioned to me, like the most common thing in the world, a particularity in his mathematical work: when he had reached the end of a difficult task, he felt an imperative desire to make love (with or without a partner) - and this was all the more strongly the more satisfied he was with what he had just done.

to examine a little the play of yin and yang in mathematical work, that is to say also, in the relationship of the mathematician (or such mathematician, starting with myself) to “mathematics”. The thing examined is therefore “the mathematician” or “such mathematician” (in its relation to mathematics), rather than “mathematics” itself.

(121) (November 7) At the level of our intellectual faculties, of reason, “knowing” a thing is, before anything else, “understanding” it. And in a work of discovery which is placed in this register of our faculties, the impulse of knowledge which animates the child in us (independently of the motivations specific to the “me”, to the “Boss”) is the desire to understand - *comprendre*. This is perhaps the main difference which distinguishes the drive for intellectual knowledge from its older sister, the love drive. This desire to understand pre-exists any “method”, scientific or otherwise. This is a tool, shaped by desire to serve its purposes: penetrating the unknown accessible to reason, in order to understand. Knowledge is born from the desire to know, therefore from the desire to understand when it is reason that wants to know. The method, instrument of desire, is in itself powerless to give birth to knowledge - any more than the doctor's forceps, nor even the expert hands of a midwife, give birth. But sometimes they usefully assist the birth of the newborn, when the time is ripe and they know how to come at the right time...

Many high school and university students, if not all, must feel the rigor in mathematics, which has been drilled into them by sullen masters, as a sort of a priori entirely external to their humble person, incomprehensible and arbitrary, dictated by a peremptory and merciless God to a Euclid promoted to Great Chief Censor, with the mission of making countless generations of schoolchildren pale in comparison, ingesting as best they could Culture with a capital C. I must have been one of the rare ones not to have gone through this stage in my relationship with school mathematics - to have felt instinctively, from the first meeting and within the narrow framework of a class maths book sixth, the original function and meaning of rigor: that it was a flexible and astonishingly effective instrument, at the service of an understanding of things called “mathematical” — things that reason alone can fully know. This “rigor” is also like the soul and the nerve of what I called, in the reflection the day before yesterday, “the rules of the mathematical game”, and what I earlier called “the method”. Having only glimpsed them, it was as if I had always known them - as if it was my own desire which had shaped them delicately, lovingly,

like a key that had the power to open up an unknown, mysterious world for me. whose anticipated wealth would prove to be inexhaustible... And it was indeed my own desire which continued to refine this tool throughout my high school and university years, before any encounter could yet make me suspect that it There existed some kind of people somewhere - people who, like me, found pleasure in probing the unknown that this key, apparently unknown to everyone (including my teachers), alone had the power to make open. (*).

(122) (November 8) It has been three days since my reflection focused, in principle, “on the yin and yang in mathematics”, and I have the impression that it is never ending, while I am partially absorbed in other occupations and tasks. By dint of preliminaries, I still haven't come to the point I wanted to get to from the start: that in my own mathematical work, it is the yin, “feminine” note, which dominates!

I noticed this a few weeks ago, on the sidelines of the present reflection on the y in and the yang, and in relation to this “association of ideas sparked by the Eulogy in three parts”, which was the starting point of this long digression. (See the beginning of the note “Yang buries yin (1) - or the muscle and the guts”.) To be honest, this association of ideas (to which I will have the opportunity to return) was based more or less on the intuition that my approach to mathematics was strongly yang dominant. This intuition was quite natural, since it was my superyang options which motivated my long-term investment in mathematics. That doesn't mean that this intuition, or more precisely this Idea, was false - it was enough for me to take the time to examine it a little to realize that the opposite is true.

For a surprise, it was a surprise! I did not talk about it “on the fly” in my notes, so as not to interrupt the thread of reflection, at the moment when I tried to identify the way in which I perceived the yin and the yang and the philosophy which — stood out for me. But we

(*) However, the little math that I had learned in high school and at college could still have been enough to make me understand that in the past at least, there must have been people like me, those in fact who were called “mathematicians”. Mr. Soûla (one of my professors at the University) had also spoken to me about Lebesgue, who would have solved the last open problems in mathematics, including in the theory of measurement (on which I had been working since I was left high school in 1945). But in those years (1945–48) my desire to clarify by my own means the questions that I myself had asked myself was so exclusive that it excluded any kind of curiosity about existence, about work or person of mathematicians of the past or present.

here it is finally!

This misconception about the nature of my approach to mathematics must have crept into me, unexamined and taken for granted, from the time I began to pay attention to the yin-yang aspect of things. , five or six years ago. It must be a residue of my yang, virile Brand Image - residue which continued to hang around there, by pure inertia, because of me not having taken the trouble to sweep that corner...

Perhaps the reader will have the impression that I am leading him for a ride, given that just three days ago I explained at length that mathematical work was the most superyang of superyang activities - that in the relationship to mathematics it figured as "the woman", and the mathematician as an enterprising lover - and now all of a sudden I raise the question if in the case from my modest person, my work or my "approach" is yin or yang, to conclude (as the most natural thing in the world) that it is yin, who would have believed it!

If there is any apparent confusion, it comes from a lack of understanding of this universal fact: that in everything, whether it is the most yin or the most yang in the world, the dynamic of yin and yang is at play, the wedding of the two original forces. Thus fire, the most yang of all things and the very symbol of yang, is yin in certain of its aspects (it is the "yin in the yang"); and conversely water, which is the very symbol of yin, is yang in certain of its aspects and functions (it is the "yang in the yin"). There is no need to develop these two examples here, which are particularly instructive - surely, the reader intrigued by these observations (which will perhaps seem peremptory or cryptic to him) will only have to follow for himself the associations of ideas which are linked to the fire, and water, to discover for himself in these two cases the reality of yin in yang, and yang in yin. And if he is a mathematician, or if he is only familiar with intellectual work (even though he would not be a mathematician, nor even a scientist), he will have no difficulty in discerning the existence of modes of approach complementary yin and yang with respect to any kind of intellectual work, however "yang" it may be in comparison with other types of less fragmented activity.

A possible starting point would be to return to the fifteen or so yin-yang couples pointed out at the start of the reflection three days ago (*), when I noted that for each of these couples, it was the predominance of yang term which took place in intellectual work (and this particularly in the case of mathematical work), when we compare such

(*) See "The most macho of the arts", note nŷ 119.

work on other types of activity, such as making love, singing, painting (a painting, or a wall, that doesn't matter), gardening, etc. This does not prevent the fact that if we remain within a specific activity like that of doing math, let's say (anything yang is an understood thing), we can distinguish a balance (or sometimes, an imbalance) of either yin or yang traits, varying from one mathematician to another and sometimes also, within the same mathematician, from one work to another.

For example, in some works it is the logical structure of the developed theory that is highlighted, in others it will be the intuitive aspects. There is an imbalance, manifesting itself in the reader or listener by a very familiar feeling of unease (and sometimes in the author too), when one of its essential aspects is grossly neglected, for "profit" the other. (When both are grossly neglected, we throw the book in the trash, or we leave the room by slamming the door!) When each of the two aspects is strongly present, whether explicitly or between the lines, this manifests itself as a also a very familiar feeling of harmony, beauty, balance, satisfaction. This is so, independently of the "basic tone" which dominates the approach followed, whether this tone is in the "logical" or "intuition" direction (or also "structure", or "substance"). It is probably useless to develop this instructive example, to describe for example where the problem lies (that is to say, to identify the "discomfort" mentioned earlier), when one or the other of the two aspects is neglected; the reader already does this through his own experience! Observations in the same direction cannot fail to emerge for most of the yin-yang couples considered three days ago. Perhaps even for all, even if some are more delicate and will undoubtedly require a more in-depth examination to be fully understood, than the intuition-logic couple.

I should now try to explain this fact a little, or rather "get it across" — that in my way of doing math, it is my yin, "feminine" traits, more than my "masculine" traits, which lead the dance. If it were a question here of going to the end of this impression, by testing it in as many aspects as possible, the natural idea (which had indeed occurred to me yesterday) would be to review, among the yin-yang couples known to me, those which can represent (among others) an aspect or mode of apprehension of intellectual work (there must be around fifty of them I suppose), and see for each of them them which of the two "spouses" of the couple predominates in my home. I anticipate that in all cases, there will be one of the two which, on examination, will prove to be predominant.

Thus, in the intuition-logic couple, I note at first sight that the two aspects

are strongly present in my mathematical work. This is therefore the sign of balance, of harmony, among other signs which go in the same direction. As it should be for a yin-yang couple, for me (in my work I mean), the two spouses are truly inseparable — the logical structure of a theory develops step by step and jointly with the deepening of an understanding of the things it deals with, that is to say also, jointly with the development of an increasingly fine and complete intuition of it. Perhaps in my published works, in accordance with the canons of the mathematician profession, it is the yang aspect, the “structure” or “logic” or “method” aspect, which is the most apparent, the most obvious for the reader. However, I know well that what leads and dominates in my work, what is its soul and reason for being, are the mental Images that are formed during the work to understand the reality of mathematical things.

Certainly, I have never skimped on being able to identify as meticulously as possible, using mathematical language, these images and the apprehension they give. It is in this continual effort to formulate the unformulated, to specify what is still vague, that the dynamic particular to mathematical work (and perhaps also to all creative intellectual work) is perhaps found - in a dialectic continual between the more or less formless image, and the language which gives it a form and along the way gives rise to new more or less blurred images which deepen the previous one, and which also call for a formulation to give them form in turn ... It is moreover this perpetual work of identifying through language, as precisely, as perfectly as possible, what first presents itself as an indefinable and formless “presentiment”, like an unformulated “feeling”. , like an image drowned in mists... it is this work which since my childhood and still today is what fascinates me the most in the work of mathematical discovery. But if the “effort” here always seems to be on the “language” side, therefore on the formulation, structure, logic side, which form the key ingredients of the mathematical method; and if (by the force of circumstances) it is there above all that we also find the visible aspect of a mathematical text supposed to restore mathematical work (or at least its fruits), all this does not prevent that (at me at least) it is not in this aspect that the soul of an understanding of mathematical things is found, nor the living force or motivation at work in mathematical work. I believe that among my works, very few must be those where this relationship would have been reversed, where I would have developed a “formalism” by allowing myself to be guided solely, or above all, by its internal logic alone, by desiderata of coherence, or other aspects of formalism

itself, rather than by a content, by a substance, manifesting itself by images, intuitions of a “geometric” nature. In any case, all my life I have been incapable of reading a mathematical text, however innocuous or simplistic it may be, when I am unable to give this text a “meaning” in terms of my experience of mathematical things. , that is to say when this text does not arouse in me mental images, intuitions which would give it life, as a living flesh of muscles and organs gives life to a body, which without it re- would lead to a skeleton. This incapacity also distinguishes me from most of my mathematician colleagues, and (as I have had the opportunity to mention) it is this which has often made it difficult for me to integrate into collective work at the within the Bourbaki group, during joint readings in particular, where I often found myself being left behind for hours while everyone else followed at ease.

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I have just followed some associations of ideas on my mathematical work, linked to the “intuition-logical” couple, and to some neighboring couples which introduced themselves in the wake of that one: the unformed — the formed , the indefinite — the defined, the unformulated — the formulated, the vague — the precise, inspiration — method, vision — coherence... It would surely be instructive to go through it one by one (as I had thought) all the possible and imaginable “couples” in relation to intellectual work and probe for each in what way and to what extent one and the other of the two spouses is present in my mathematical work, and whether or not the one of the two seems to “set the tone”, and which one. Even beyond a more delicate apprehension of the particular nature of my mathematical work, such “work on pieces” will surely not fail to make me also deepen my understanding of the nature of mathematical work in general, and also my apprehension of each of the couples reviewed in this way. But such systematic work would obviously take me too far, and would go beyond the reasonable limits of this reflection. It seems more natural to me to try to find here, and to “transmit” if possible, the associations of ideas and images which convinced me (without having to go further) than in my mathematical work, this are indeed the “feminine” traits of my being which tend surreptitiously to set the tone, and thus to find a sort of unforeseen “revenge” (where one would have least expected it!) for the repression they had to suffer in other areas of my life.

Take for example the task of proving a theorem which remains hypothetical (to which, for some, mathematical work would seem to be reduced). I see two extreme approaches to going about it. One is that of the hammer and the chisel, when the problem posed is seen as a large nut, hard and smooth, the interior of which must be reached, the nourishing flesh protected by the shell. The principle is simple: place the edge of the chisel against the hull, and hit hard. If necessary, we start again in several different places, until the shell breaks — and we are happy. This approach is especially tempting when the hull has roughness or protuberances, where you can “grab” it. In some cases, such “ends” from which to take the nut are obvious, in other cases, it is necessary to turn it carefully in all directions, to explore it carefully, before finding a point of attack.

The most difficult case is that where the shell is perfectly rounded and hard and uniform in shape. No matter how hard you hit, the edge of the chisel slips and barely scratches the surface — you end up getting tired of the task. Sometimes we end up getting there, through strength and endurance.

I could illustrate the second approach, keeping the image of the nut that needs to be opened. The first parable that came to mind earlier was that we immerse the nut in a stirring liquid, just water why not, from time to time we rub so that it penetrates better, for the rest we let time take its course. The shell softens over the weeks and months - when the time is ripe, a squeeze of the hand is enough, the shell opens like that of a ripe avocado! Or, we leave the nut to ripen under the sun and in the rain and perhaps also under the frost of winter. When the time is ripe, it is a delicate shoot emerging from the substantial flesh which will have pierced the shell, as if playing - or to put it better, the shell will have opened of itself, to allow it passage.

The image that came to me a few weeks ago was different again. The unknown thing that needs to be known reappeared like some expanse of earth or compact marl, reluctant to allow itself to be penetrated. You can get started with picks or crowbars or even jackhammers: this is the first approach, that of the “chisel” (with or without a hammer). The other is that of the sea. The sea advances imperceptibly and without noise, nothing seems to happen nothing moves the water is so far away we can barely hear it... Yet it ends up surrounding the restive substance, this little by little becomes a peninsula, then an island, then an islet, which ends up being submerged in turn, as if it had finally dissolved in the ocean extending as far as the eye can see ...

The reader who is even slightly familiar with some of my work will have no difficulty in recognizing which of these two modes of approach is “mine” — and I already had the opportunity in the first part of *Récoltes et Semences* to explain to me on this subject, in a somewhat different context (*). It is “the approach to the sea”, by submersion, absorption, dissolution — the one where, when one is not very attentive, nothing seems to happen at any moment: everything at every moment is so obvious, and above all, so natural, that we often almost scruple to write it down in black and white, for fear of appearing to bomb, instead of tapping on a chisel like everyone else... Yet it is there the approach that I have practiced instinctively since a young age, without ever really having to learn it.

It was also, basically, Bourbaki's approach, and my meeting with the Bourbaki group was providential in this respect, by confirming me, by encouraging me in this “style” which was spontaneously mine, and in which otherwise I risked finding myself more or less alone of my species (*). It is true that this was a situation (being alone of my species) which had been familiar to me for a long time, and which did not bother me so much. As for knowing if my instinctive approach to mathematical work was going to be “effective”, that is to say above all (according to the criteria in force, and especially to judge a beginning mathematician) if I was going to be able to solve “open questions” to which no one had yet been able to answer, I could not know in advance, and I was not overly concerned about it. My natural approach led me to ask myself my own questions, rather than wanting to resolve those that others had asked. And it is indeed through the discovery above all of new questions, and that of new notions as well, or even through new points of view or even new “worlds”, that my mathematical work has proven fruitful, even more than by the “solutions” that I was able to provide to questions already asked. This very strong impulse which leads me towards the discovery of good questions, rather than towards that of answers, and towards the discovery of good notions and good statements, much more than towards that of demonstrations, are moreover all “yin” traits ” strongly marked, in my approach to mathematics (**). This is also why, no doubt, I left-

(*) See the section “Dream and demonstration”, n° 8.

(*) In this extreme-yin approach, I tended to go further than most born friends in Bourbaki were willing to go, which is probably one of the reasons why I ended up leaving the group, towards the end of the 1950s.

(**) I also have the impression that it is no different for any other research work at home, and in particular for what I call “meditation”.

particularly sensitive, when I see what I was able to bring to the best in mathematics, treated with casualness or with disdain by some of those who were my students, that is to say by those very people who were the very first beneficiaries.

In any case, it was only retrospectively that I was able to realize that my natural approach to mathematics also “worked” when I felt attracted, inspired by a question that others had asked. — when, in short, it had “clicked” and the question at the same time had become “mine”. If I tried to make a more or less exhaustive list of such cases, I suspect it would be quite long. At a glance, there are four such situations which seem to me to “stand out from the crowd” in terms of their scope (**). In all four cases, the hypothetical theorem ended up being proven, essentially, by the “rising sea” approach, submerged and dissolved by some more or less broad theory, going well beyond the results that it was first a question of establishing. I was also able to note that the ideas, notions, formulas, methods that I had developed in these situations (or in others as well), have long since entered the domain of the mathematical “well-known”, that “everyone” knows and uses them galore, without worrying about their origin (*).

(123) (November 9) There is another point common to the four cases mentioned yesterday, of open questions which found themselves resolved (or rather, “dissolved”) by “the approach of the rising sea”. This is the role played by JP Serre in each of these four cases. This has been before

(**) The questions I am thinking of here are, in chronological order of their solution, the following:

- 1) Validity of the Riemann-Roch-Hirzebruch formula in any characteristic.
- 2) Structure of the fundamental group “prime to the characteristic” of an algebraic curve on a body algebraically closed with any characteristic.
- 3) Rationality of functions L of finite type schemes on a finite body (which constitutes part of the “conjectures of Weil”, and an important step towards the demonstration of these conjectures, completed by Deligne).
- 4) Semi-stable reduction of abelian varieties defined on the field of fractions of a ring of discrete valuation.

(*) I myself have often practiced this carelessness about the origin of the “well-known” that I used, except in the cases however where I knew this origin first hand, having more or less witnessed the birth, or when I was the father myself. As I have observed many times over the past years and especially during my reflection on the Burial, this elementary delicacy has often been lacking in some of those who were my students or close friends in the mathematical world, even when it came to things that they learned from none other than me, and whose origin they know without possibility of doubt. See on this subject the reflection in the note “The Gravedigger — or the entire Congregation”, n° 97.

a whole role of “detonator”, to get me “started” on these questions, to use the expressions of a footnote in the introduction mentioning this role (see “The end of a secret”, section 8 of the introduction). In fact (as I then noted) it appears that Serre played such a role in the genesis of the main ideas and major tasks that I developed between 1955 and 1970, that is to say between the moment where I left functional analysis for geometry, and that of my departure from the mathematical world.

I could say, barely exaggerating, that between the beginning of the fifties until around 1966, so for around fifteen years, everything I learned in “geometry” (in a very broad sense, encompassing algebraic or analytical geometry, topology and arithmetic), I learned it, from Serre, when I did not learn it by myself in my mathematical work. It was in 1952, I believe, when Serre came to Nancy (where I stayed until 1953), that he began to become a privileged interlocutor for me - and for years, he was even my only interlocutor for themes outside functional analysis. The first thing I think he spoke to me about was the Tor and the Ext, of which I made a world and yet, look, as simple as pie..., and the magic of injective and projective resolutions and functors derivatives and satellites, at a time when Cartan-Eilenberg's “diplodocus” had not yet been published. What attracted me to cohomology from that moment on were the “theorems A and B” that he had just developed with Cartan, on Stein's analytical spaces — I had already heard of them, I think, but it was through one or two tête-à-têtes with Serre that I felt all the power, the geometric richness contained in these very simple cohomological statements. They had completely gone over my head at first, before he spoke to me about them, at a time when I did not yet “feel” the geometric substance in the bundle cohomology of a space. I was delighted to the point that for years I intended to work on analytical spaces, as soon as I had successfully completed the work that I still had in progress in functional analysis, where I definitely did not I wasn't going to last forever! If I did not really follow these intentions, it is because Serre had in the meantime turned to algebraic geometry and had written his famous foundations article “FAC”, which made understandable and highly attractive what had previously been to me appeared as forbidding as possible - so attractive even that I could not resist these charms, and then moved towards algebraic geometry, rather than towards analytical spaces.

If I didn't hold back, I would have left there, one thing leading to another, writing the story of my relationship with

Serre, which would hardly be anything other than the history of my mathematical interests, from 1952 to 1970. This is not the place. I would only add that, of course, it was from Serre that I was put “into the deep end” of the four questions mentioned above. This was not, of course, a matter of pointing out the precise wording of the question, that’s all. The essential thing was that Serre each time felt strongly the rich substance behind a statement which, outright, would probably have made me neither hot nor cold - and that he managed to “get across” this perception of a rich, tangible, mysterious substance — this perception which is at the same time a desire to know this substance, to penetrate it. This is perhaps the most crucial moment of all in a work of discovery, the moment when “it clicks”, when we nevertheless have no idea, even vague as it may be, of where to take the unknown, how to enter it. This is truly the moment of “conception” — the moment from which work of gestation can be done, and is done if the circumstances are propitious...

If Serre played an important role in my work and in my mathematical work, it is even more, it seems to me, in the appearance of these crucial moments, when the spark passes and obscure and invisible things are triggered. labors, only by the technical means unknown to me that he happened to provide me with at the right time or by the ideas that I borrowed from him, in later stages of my work.

One of the reasons, undoubtedly, for the particular role played by Serre, is my lack of interest in finding out about current mathematics by reading, nor even in learning the ABC of such a “well-known” theory by reading, in the books or memoirs that deal with it. As far as possible, I like to inform myself through the living words of people who are “in the know”. I was lucky, from my first contacts with a mathematical environment (in 1948) until my departure in 1970, to never lack a competent and well-disposed interlocutor to keep me informed of things that could help me. to interest. This perhaps created a dependence on these interlocutors, but I never felt that way (*). To tell the truth, the question of “dependence” could hardly arise, as long as my interlocutor and I

(*) The first and only exception occurred in 1981, so long after my “departure” from the mathematics world. It was when I addressed Deligne, as the ideal interlocutor for my Anabelian reflections, after my “Long walk through the theory of Galois”. I then clearly felt the intention to take advantage of this situation as a single interlocutor, to make myself “go crazy” — and I then ceased all relationships on the mathematical level, until today. See, regarding this episode, the note “Two turning points”, n° 66.

We were equally interested in what he was teaching me. Teaching to those who are eager to know is beneficial for both, and is an opportunity for the “teacher” to learn, at the same time as for the one he teaches.

The “reason” given earlier explains the importance of interlocutors in my past as a mathematician, but not the exceptional role played by Serre, who seems to me to far exceed that of all my other “interlocutors” combined! What is certain is that Serre and I complemented each other wonderfully. We had strong and numerous common interests, and I felt in him the same demands, the same rigor that I put into my work. Apart from that, our work was done in very different “styles”. I have the impression that our approaches to mathematics and our work complemented each other, without really ever encroaching on one another. The kind of work I did (and the way I did it) was very different from the kind of work Serre did. He happened to lay the first foundations of a theory in a text of around fifty pages, or even to spend a year writing a medium-sized book elegantly and concisely exposing a subject that inspired him - but certainly not to spend the better part of five years of one's life, or even ten years or more, to develop at length and in length and in volumes of volumes a whole new language (which we had done very well without until then), to found a new and fertile approach to algebraic geometry, let's say.

He introduced many new and fruitful ideas and notions without getting carried away to “carry” them to term, to the end. More than once, on the other hand, these ideas and notions served as a starting point for a work of vast dimensions which suited me wonderfully, and for which only Serre himself could have been involved. launches into it.

An association comes to me irresistibly here. In light of the reflection of recent days, I see my relationship to mathematical work and to my “works” more as “maternal”, than as “paternal”. The moment of conception, however crucial it may be, represents for me a tiny portion of the “work” during which the thing in gestation, the “child” to come, grows and develops. This work is much like that of pregnancy in a pregnant woman, work which begins when the child is conceived, and continues over nine long months... the time it takes to bring to term what was a fetus and to give birth — that is to say, to give birth to a child, a living and complete child, not just a head or a torso or a skeleton of a baby or whatever. This role of mother, visibly, is very different from that of the father (even the best, father in the world...), who is more or less content

to sow a seed, then leaves and goes about other things.

Obviously, Serre's mathematical work, his approach to mathematics, is predominantly yang, "masculine". His approach to a difficulty would rather be that of the chisel and the hammer, very rarely that of the sea which rises and submerges, or that of the water which soaks and dissolves. And he seems content to throw a seed, without worrying too much where it will fall, or if it will trigger conception and labors, or even if the child who could be born from it will be in his likeness or will bear his name.

An image can help us understand an important aspect of a certain reality, but it does not exhaust reality. This is always more complex, richer than any image that would express it, this is the case with the images that came to me, without having sought them, to express two different approaches to mathematics - that of Serre, and mine .

It happened in Serre to complete work that required breathing, just as I happened to sow ideas, some of which germinated and were brought to fruition by others than me. No more than in my approach to mathematics do I lack "manliness" (while the base note is "feminine"), any more than Serre lacks "femininity" in his, balancing his note of "virile" background.

It could not be otherwise in a creative approach to an unknown substance, whether mathematical or otherwise: there is no discovery, no knowledge, no renewal, except through the joint and inseparable action of the energies and original yin and yang impulses in the same being. It is in the intimate fusion of the two that the beauty of a being, or of a work, resides - this delicate, elusive quality, which is signaled to us by this particular feeling of harmony, of satisfaction. This quality is present in all of Serre's works that I have known, whether orally or through the texts he wrote. I have known few mathematicians where it is present in such a constant way, and with this force.

(124) (November 10) The reflections of yesterday and the day before yesterday are far from exhausting all the characters strongly marked in my mathematical work, which are of a yin nature. Probing it further, building on the momentum of this reflection on yin and yang in mathematics, would also be an excellent opportunity for me to deepen an understanding of the nature of mathematical work in general. This theme of yin and yang in mathematics, which I thought I would cover in a day of reflection, and on which I have already spent five consecutive days with the impression of having barely begun, has just been reveal as one of

these numerous seemingly innocuous themes, which become broader and deeper as we approach and enter into them. There is definitely no question of me exhausting this juicy theme on the run (or even that I just “go around it”, at a run), in the middle of a Funeral Ceremony that I do not I wouldn't want to drag it out beyond all measure!

I would only like to point out again (without comments, I promise!) two of these “strongly marked characters” in my mathematical work, which go in the “yin”, feminine direction. One is a predilection for the general, rather than for the particular (which makes a “pair” or “couple” with it). The other trait seems to me even stronger, or to put it better, more essential, more neuralgic, and broader too (in the sense that it contains the first). If there is a “quest” which has crossed my entire life as a mathematician, from the age of seventeen (fresh from high school) until today, an incessant quest which has marked all my work (published or unpublished) since its beginnings, it is that of unity, through the infinite multiplicity of mathematical things and possible approaches towards these things. Detect, discover this unity beyond diversity, of an often disconcerting richness (without amputating anything from this richness), recognize the common traits beyond the differences and dissimilarities, and go to the root of the analogies and resemblances to discover deep kinship - this has been my passion, throughout my life. Even the differences, expression of an unlimited and elusive diversity, ended up appearing like the branches and the branches, ramifying infinitely, of the same tree with the vast foliage, where each, and each branch and each branch, show me the path to the trunk which is common to them. Instinctively and by nature, my path has been that of water, which always tends to descend, the path towards this trunk, towards These roots. And if I liked to linger along the way, it was rarely at the summit to explore the leaves and delicate twigs, but especially at the large branches, the trunk and the main roots, to know their texture and feel through the bark the rising flow of nourishing sap. (*)

(*) I believe I discern in this quest for unity through diversity, a distinct trait common to the three passions that have marked my life, including therefore love passion, and meditation. Perhaps even, outside of all passion, this is for me a mode of apprehension of reality, where I tend to see above all, and to attach my attention and give weight, to the common traits and relationships, rather than differences (without being tempted to gloss over them). I noticed that by far the most common tendency was the opposite tendency, the yang tendency therefore. It often goes to the point of ignoring or denying deep kinships. (Superyang tendency, characteristic of our culture. It is often accompanied by the reflex

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To tell the truth, I still don't really know what to do with this new fact recently discovered, how to situate it - that in my approach to mathematics, in my way of "doing math", the basic tone for me is strongly yin , "feminine". This goes in the direction of a certain intuition to which I have already alluded — that the basic tone of my deep being, I hear from the "child" in me or from the "Worker", it that is to say of what is creative and beyond conditioning (that is to say beyond the "me", the "Boss") – that this basic tone is also "feminine" rather than virile. Perhaps I have everything in hand right now to clarify what really is, by carefully examining all the signs that go either in one direction or the other (*), to recognize the significance of each , and what emerges from them as a whole. And if through such work I do not arrive at the tangible result of a "yes" or a "no", surely it will not have been useless for all that, in order to better understand my ignorance, which at this moment still remains vague, not located, for lack of having meditated on it. Perhaps I will do this work, once the work on Récoltes et Semailles is finished, and... still building on this one. But again, this is not the place.

But if I was led to this reflection on yin and yang, it was during a reflection where I especially tried to understand certain relationships, between me and others (among those who were my students , notably). It is therefore the possible repercussions of the "fact

wanting to level out differences, to align everything on the same supposedly "perfect" or "superior" model, for the benefit of an artificial "unity", which is excessive impoverishment at the same time as violence.) These differences of accent between an interlocutor and word have often been the cause of deaf dialogues, where two parallel monologues are developed which never come together...

(*) Several of my strongly marked yang traits seem to me to be acquired traits, coming from conditioning, and more precisely, from the superyang brand image dating back to my childhood. Among these traits is an inordinate investment in action; the very strong projection towards the future, that is to say towards the accomplishment of my tasks; the predilection for primarily intellectual work of discovery and the pervasive role of thought; dispositions of closure with regard to what does not appear directly linked to my tasks of the moment, and in particular my inattention to landscapes, seasons etc. There is, however, a yang trait that seems innate to me and not acquired, it is the very strong relationship of affinity that links me to fire, unlike my relationship to water, which is definitely not "my element". It also seems that my astrological chart is marked by a very strong yang imbalance, all the signs that enter it being "fire signs", to the exclusion of any water sign.

new" which has just appeared, on my relationship to others and that of others to me, which I am especially interested in here. And this is also where my difficulty lies in "placing", in exploiting this fact. Perhaps it is because probably no one except me has ever noticed such a thing — not on a conscious level, at least on a formulated level. In any case, I have never received any echo that I could interpret in this sense, as far as I can remember - no more (with one exception) than I remember any echo that would send me back of myself a "yin" image, whereas the character I have played since my early childhood (if not early childhood) has been strongly yang; to the point that even now, this "manly" character seems like second (?) nature, which continues to dominate my life in many ways.

It is true that the mere fact that a trait in someone (me in this case) is not perceived at the conscious level does not necessarily prevent it from acting on the relationship with others. And that this trait is indeed perceived in the mathematical world, among mathematicians more or less familiar with my work, and that this perception has "spread" among a mathematical public much wider than that one. — there is no doubt in my mind. When I wrote, in "The Funeral Eulogy (1) — or the compliments" that "the anonymous pen which took care here of my funeral eulogy has gratified me superabundantly with what today is given over to disdain", I would not yet have been able to pinpoint in a concise formula what exactly was "today delivered to disdain" by mathematical fashion, among the things to which I attach value. But the next day, through this "association of ideas" to which I will have to return (*), I had felt (without perhaps having formulated it to myself, and without it still appearing as clearly as now), that "this something" was none other than everything that was recognized (at an often unspoken level) as being a "yin", "feminine" way of doing mathematics — a way tacitly assimilated to "bombinage", of "nonsense" (to repeat the compliment of my student and friend Pierre Deligne, with regard to the text at the basis of all his work), of "crank", "ease" etc.

Certainly, in the Funeral Eulogy (pronounced by this same friend Pierre), including in the passage where I am quoted in one breath with him (**), the compliment was in order! It was not a question of nonsense or bombast, but of a "titanesque aspect", of "twenty volumes",

(*) See the beginning of the note "The muscle and the guts" (n° 106), where this association is mentioned for the first time.

(**) See the note "The Funeral Eulogy (2) — or strength and halo", n° 105.

“uncovered essential problems”, “greater natural generality” (sic), school “nourished by the generosity with which he communicated his ideas”, “theories of legendary depth”, “renewed foundations”, “opened new applications”, notions “so natural that it is difficult for us to imagine the effort they cost” (not to say that they were “easy” — but I took care of that myself specify it (**)), “great attention to terminology” (not to say “bombinage”), “ancestors of algebraic K-theory”, “introduced topos... on a body of general basis”, “analogies suggested by Grothendieck”, “conjectures... always so unapproachable...”, “such as Grothendieck had dreamed of it”...

I have underlined the key words in these quotes — these are all words that denote a yin approach to things. The “perfect touch” in this burial by the “well-measured compliment” consisted in the systematic use of hyperbole with regard to these qualities which, on the one hand are “delivered to disdain”, and on the other hand are real and are of great price to me; and this while passing a complete and radical brush on the complementary aspects, which today have the exclusivity of honors, the “manly” aspects, as strongly present in my work as in that of anyone else, very little with few exceptions.

Moreover, it is these “manly” aspects and values, to the exclusion of the slightest “feminine” note, which are highlighted on the other hand in the text on Pierre Deligne, both by the choice of the few epithets (“proverbial difficulty”, “surprising result”, “makes -adic cohomology a powerful tool”, “first step”, “surprisingly useful”, “rapidity”, “penetration” “illuminating and constructive reactions to each question”, “brilliant discoveries”), only by the detailed enumeration of tangible results (while not a single result of mine is mentioned in my minute portrait, nor is it suggested that these results could have played a role for those of Deligne).

I don't regret having taken the trouble to make this quick compilation of epithets — the effect is truly striking! If at the level of structured knowledge, there are still few — those who have some notion of yin and yang, we must believe that in the unconscious of my friend Pierre as in the one who served as his scribe, there is a perception of flawless security. It is put here at the service of a certain cause: to deliver to disdain those who should be delivered to disdain, and to designate a hero to the admiration of the crowd.

I also doubt that these three short texts that I have just reviewed had very many readers. But whether there was more or less seems to me to be an incidental question. For

(**) See note “The trap — or ease and exhaustion” n° 99.

For me, these texts were addressed, not to hypothetical potential patrons (after all, it is not my friend Pierre's concern to find patrons to finance his institution), but to the "entire Congregation", appeared in the reflection during the note of the same name (aka "The Gravedigger" n° 97). The message they carry is like a striking and masterful shortcut of countless messages in the same direction, coming from my friend Pierre and others among those who were my friends or my students, and others still perhaps, messages captured and approved by this same Congregation. If there is a collective unconscious (and I would be quite inclined to believe it now), there is no doubt that in that of this Congregation (allas "mathematical community"), just as in that of the Grand Officiant at my solemn Funeral, it there is this same flawless perception of what is yin (fed up!), and what is yang (hats off!).

And these Funerals suddenly appear to me in a new, unexpected light, where my person herself has become accessory, where she becomes a symbol of what must be "delivered to disdain". It is no longer the funeral of a person, nor of a work, nor even of an unacceptable dissidence, but the funeral of the "mathematical feminine" – and even more deeply, perhaps, in each of the many participants. applauding at the Eulogy, the funeral of the disowned woman who lives within himself.

(125) (November 11) Exceptionally (once is not usual...) I woke up early this morning, after sleeping barely four or five hours. The unexpected outcome of yesterday's reflection immediately set in motion intense work, to "place" and assimilate this new fact which had just appeared, time to heat up a copious soup and have a snack before going to bed. , at three o'clock in the morning. And early on, this same work woke me from sleep, then from bed...

If I speak of an "unexpected" outcome and a "new" fact, it must nevertheless be added that since the very beginnings of this endless "digression" on yin and yang, there was in fact a contained expectation of a "denouement", or at least the expectation of a "junction" which was to take place with a certain procession, which was assembled in a Funeral Ceremony. It might seem that I was moving further and further away from the funeral scene, or even that it was definitely forgotten - and yet no, it was always there, as if muted or hidden. I never really left them. Their silent presence was manifested by this discreet and constant waiting, this feeling of tension,

of suspense, which carried me towards this point, still nebulous, where the "junction" should finally take place. I could sense the approximate location of this junction point — it was around a certain "association of ideas" (mentioned more than once, but still not formulated) which had been the starting point, the initial motivation for this unplanned journey through the yin and the yang and through my life. This journey was going to be in short like another big cycle, returning (more or less...) to its starting point; or rather like a turn in a downward spiral, bringing me a notch deeper into the thing being probed, "to the very heart" (if my presentiment was not misleading me) of these Funerals.

But while I am just beginning to prepare myself to "land", and at the turn of a final paragraph of a "note" still all that there is "digression" or even "rehash", here I am disembarking suddenly in the middle of the funeral ceremony and indeed in the heart of it, a bit like an extraterrestrial who had catapulted himself there right in front of the priest in a chasuble and in front of the congregation of the faithful; or even worse, like a deceased person thought dead and (almost already) buried who suddenly lifts the lid (and crowns and touching epitaphs fly out!) and there he is in person, in a white shroud and with a sparkling eye, like an imp everything that There are living things coming out of their boxes when we least expect them!

Thus, the outcome of yesterday's reflection was at the same time the outcome of this suspense of which I spoke, a very particular suspense and which is very familiar to me in the work "like the sea which spreads out ", whether it concerns mathematical work or any other. But in the very wake of this relaxation of a long suspense, a perplexity immediately appeared. It is she above all who has absorbed me since then, I believe, and who, at odd hours, lured me from bed to the typewriter. That there is perplexity is not surprising - it is like this, more or less, each time a situation suddenly appears in a new light, which at first sight would therefore seem to contradict an old vision. The very first work which is then necessary is to carefully probe these contradictions, to examine to what extent they are real, or only apparent, that is to say expressions of an inertia of the the mind that is reluctant to recognize the "same" thing in two different lights. This essential work is completed, when all the dissonances have been resolved in a new harmony (even if it itself is still provisional), in a vision which therefore encompasses and brings together the previous partial visions, correcting or adjusting them as necessary, and eliminating those which would prove to be fundamentally false. In such a renewed vision, the "old" which gave birth to it, that is to say the more fragmented visions which unite in it, itself acquires a

new meaning (*).

Coming back to my “perplexity”, here it is. The “denouement” or “new day” consisted of an Image suddenly appearing — that of the Burial with great pomp of the “symbol” of the “mathematical feminine”, embodied in my person, and projection at the same time of “the woman disowned” in each of the participants in the funeral; or to put it another way, it is the image of the symbolic Burial of a sort of Super-Mother, as an expiatory victim in short and in place of the woman-but-rarely-mother who vegetates in the dark underground of each of the participants who came to applaud at the Funeral. This image seems to contradict another, opposite, still vague, which had gradually formed during the reflection before June (culminating in the note “The Gravedigger — or the entire congregation”): that of a Super- Father both admired and feared, both attractive and hated, “massacred” by his children, whose mutilated remains are subjected to derision during these “same” funerals. Placed side by side (if there was even a need), these images with their violent colors will seem to border on the zany and the delirious, and I can easily imagine the scalp dance that these phantasmagories will not fail to arouse on the psychoanalytic mode, assuming that there are readers who have had the breath to follow me this far!

I gladly leave them to their dance, which will add an exotic note of the best effect to this unusual funeral, and during this time I will rather follow an association which had presented itself last night, of a nature I believe to reconcile, to even loving and marrying each other, these two images or facets, supposedly antagonistic, even irreconcilable.

(126) (November 12) I had thought of continuing in my notes this association which was discussed at the end of yesterday's notes, of a nature to “reconcile” and “make love each other” the two images, apparently antagonists, which had emerged from my burial. As I prepared to begin the notes in this direction, I felt a reluctance, which I would not want to ignore.

The association concerned my mother's relationship with my father, and the sense of the destruction of the family which took place in 1933, by the will of my mother over acquiescence (reluctant and embarrassed at first, then eager and total) of my father. This crucial episode marked a sort of reversal in the couple formed by my parents, in which my father had figured

(*) Compare with the reflection in the two sections “The Child and the Good God” and “Error and Discovery”,

n° s 1 and 2

of heroic incarnation, ostentatiously adored, of virile values, and where my mother (voluntary and dominant character if ever there was one) flaunted the colors of the subjugated woman and happy to be so, over a daily life marked by the continual clashes.

The acquiescence in the sacrifice of the children marks the moment of the collapse of the God and Hero, followed by a veritable orgy of triumphant contempt in the one who, just the day before, played the swooning adulatrix, and who now took the place of the hero fallen, emasculated and happy to be so, reduced to the despised role of "woman", from which she herself at the same moment saw herself relieved.. .

What little I have said about it is so schematic, so quintessential I fear, that it risks giving rise to innumerable misunderstandings, rather than helping to understand the hidden motives of a certain burial. However, I feel that this is not the place to develop in any way what I have just outlined in a few words. To restore with a minimum of finesse a complex reality, blurred at will by the two protagonists, would require a new and long digression, of a magnitude that the context does not justify. I do not feel encouraged to delve into it now, and even less so since it is a situation which involves others than me, and where my own responsibility (as a co-actor) does not seem to me not really committed. Myself, and my sister, appear not as actors, but as instruments in the hands of my mother to bring down the ardently admired and envied Hero, in order to replace him, and make him an object of derision.

If this scenario, patiently updated five years ago (*), is the most extreme and the most violent of its kind that I have known, I have nevertheless had ample opportunity since to detect scenarios in other couples all analogous. The work done on the lives of my parents helped me a lot to open my eyes to things that previously escaped me entirely. At the time, however, I was speechless, and that was right! Today I would tend to believe that, apart from the particular violence of colors, the kind of relationship of antagonism that I discovered in the couple formed by my parents, is more or less typical of the couple relationship, or at least extremely common. Also the reader who, like me, ended up using his faculties to probe the hidden sources of couple antagonisms, or of female-male antagonism, will not otherwise be surprised (or even shocked) by the little that I said about it here.

(*) See on this subject the two notes "Surface and depth" and "Praise of writing", nos . 101 and 102.

If I try to ignore what is particular from one case to another, and to identify the common points in the female-male antagonisms that I have been able to see up close and where I have understood something thing, it comes this.

1) In women, dispositions of admiration and envy towards the man, due to a prestige (often overrated) with which he is endowed, by his situation (as a male, in particular) and qualities (real or supposed) which justify it.

2) Often there is an element of resentment, even hatred, due to an amalgamation (unconscious, of course) between the man (lover or husband for example) and the father. The relationship of antagonism between the mother and the father is taken up by the daughter, identified (more or less completely) with the mother. There are often added more direct reasons for resentment (towards the father) (the father's tyrannical attitudes, lack of affection, attention or concern, etc.). Subsequently, these "ready-to-use" feelings of antagonism (and others) are projected as such onto the partner (actual or potential), whether or not the latter is "in charge of the job" .

So when earlier (in 1st) I wrote that the dispositions of women (of admiration and envy in particular) towards men were "due to prestige etc", this is only by -partially true. It seems to me that most often, the driving force in these dispositions comes from the relationship with the father (even if the latter is long dead and buried), and that its entry into action depends only in a limited way on the particular personality of the partner.

3) In compensation for one's feelings of inferiority (entirely subjective, need it be said) and veiled antagonism, even animosity or hatred, there is a dread of exercising power over the partner (whereas it is he who, by the more or less tacit general consensus, is supposed to hold the authority). The exercise of power by the woman is done by all the means at her disposal (the most powerful are her body, and above all, the children, (*)), and it is almost always occult. The gratification that accompanies it is therefore most often unconscious, but it is no less real and Important. Often the game of power becomes all-consuming, it becomes the main content of a woman's life, the one which absorbs almost all of her energy, and to which everything else (including the romantic impulse and children) is subordinated, even sacrificed, without hesitation.

(*) The main common "means", however, are passed over in silence here, being of a more subtle nature, difficult to evoke in a few words. It consists of a certain all-purpose "tactic", examined in the later part "The claw in the velvet" (notes n^o s 137–140) of the reflection on yin and yang.

4) The most extreme, most torn case is that where admiration and envy towards the male, which is to be dominated while appearing to submit to him, is accompanied by contempt, even disgust and hatred, for what is feminine - for one's own condition as a woman. However, it is only by playing on her "femininity" that she can hope to subdue the man, or at least manipulate him as she pleases! Thus, to satisfy her strongest egoistic impulse, that of "making" the partner work (or even, to submit him, or to break him...), she sees herself forced to fully enter into a hated role, felt as contemptible, as unworthy of her. It is in this extreme case of refusal of her own condition and nature, that of a superyang and anti-yin option, that she will seek an illusory escape from the conflict that she carries within herself, by employing all these forces to achieve to a reversal of roles: herself replacing the man, the hero and master, once admired and envied and now fallen, reduced himself to the role that she had for a long time worn like an abject livery, to the role despised from which she would finally be delivered...

The sketch that I have just made is also schematic, capable at most of evoking a certain reality for those who have already perceived it here and there, without perhaps having yet tried to understand it as well as possible. badly by a summary description like this, if I wanted to give it some relief, I should at least try to specify the different levels (almost all unconscious) on which this set of mutually antagonistic feelings and desires play out. Moreover, in this tangle of inexorable egoic mechanisms, from which the love drive seems strictly absent, we must also try to locate it; see to what extent and in what way it contributes to the endless going in circles (like the force of the wind perhaps, captured by the wings of an ingenious mill to make a heavy millstone turn endlessly...), and to what extent it also happens that the cogs sometimes stop and become silent, to give free rein to something else.

And finally, I completely neglected to talk about what is at stake in him, the "partner" or pro-tagonist, as if he only existed in relation to her, as an object of attraction and repulsion. , of the admiration and envy of the one facing him. One of the reasons undoubtedly for this omission: it is indeed she, in this merry-go-round of the couple, who plays the active role, investing herself fully, often finding her true reason for being there (for lack of a better term).), while he sees nothing but fire, busy as he is elsewhere and moreover as naive as anyone (*), reacting suddenly

(*) (November 23) Of course, if the carousel is spinning, it's because (however "naive" he may be) he finds something in it just like her — and she makes it her job to watch over it! It seemed to me that the two main "hooks" by

suddenly without trying to understand, and (what's more) without understanding in fact, not even (it seems to me) at the unconscious level. At least that's the impression I've always had, ever since I started paying attention to the couple's merry-go-round! But it is also true that I know much less about the role of man, since I have only been able to observe it really closely in the case of my modest person, whereas I have had the opportunity more once, on the other hand, to know first-hand the role of the woman's side.

In any case, even if I would take great care, over ten pages or in an entire volume, to flesh out my somewhat very schematic description, it would still be wasted effort for a reader who has not yet, in this matter, "made use of his faculties" and who would never have seen or felt anything of the sort. As for the reader who is somewhat "in the know", surely the little that I have said about it, and despite the clumsiness and obscurities, will be enough to put him back into the bath of things that he had already perceived for himself, and to arouse in him images and associations no less rich than those which were present in the background, at the time of writing my concise description.

It seems to me that nothing more is needed to see the "missing link" appear between antagonism to the "Superfather" (finding its expression in the symbolic burial of the said), and the contempt, the refusal of the "Superfather" feminine", and more profoundly, the denial of "woman" in oneself (which perhaps will find expression in the symbolic "Burial" of a "Supermother", under a plethora of dithyrambic epithets with double use...) (**).

(127) (November 13) The time seems ripe now to try to outline in a few broad outlines a vision that is both clearer and more nuanced of the Burial, which (as I wrote the day before yesterday) "encompasses and unites previous partial visions, by correcting or adjusting them as necessary...". I can see three such previous visions, which must be recognized as so many partial aspects of a whole.

The first aspect that appeared, the most obvious and the most simplistic too, is the "retaliation for dissidence" aspect, which was the aspect mainly highlighted in the note "Le Fos-

by which she "holds" him (and by which she too is held...) are vanity, and a need for emotional and romantic security, guaranteed by a stable partner. And there are also

the children... (**) (November 23) This "no more is needed" turned out to be somewhat hasty, to the point that a week later, this conclusion and this "missing link" were completely forgotten! For the "missing step" to arrive at a more convincing "missing link", see yesterday's note "The reversal of yin and yang (2) — or the revolt" (nŷ 132).

silker — or the entire Congregation” (97) — the last note before the illness episode. It is also the one, among those of the processions I to

I just looked at this note again just now. The second aspect, which I could call “massacre (more than just symbolic) and burial (symbolic) of the Superfather”, does not appear there. This is perhaps because this component in the motivations for a Funeral does not really concern “The entire Congregation”, which was then the focus of my attention, but above all (if not exclusively) “those who were my students”. These, it is true, even apart from their undisputed leader, my friend Pierre, played a leading role in the implementation of the Burial, which could not have been done without the active contribution of some, and without the consent of all. (See on this subject the note “Le si-lence”, (84).) It is therefore through them, above all, that the “Superfather” aspect appears to me to be crucial for an understanding of the Burial.

The first aspect, the “retaliation” aspect, has come to my attention since the setbacks of Yves Ladegaillerie in 1976 (*); I have since tended to forget this aspect, but periodically it came back to my good memory, during the following years. It ended up going beyond the formless stage of what is “felt” without more, and by becoming the substance of a clear and nuanced understanding, in the note cited on the “Gravedigger”. The second aspect, or “Superpere” aspect, only began to appear during the reflection in Récoltes et Semailles (*), and at first (**) without connection with the Burial as such that I do not were to discover only over the following months. This aspect gradually emerges from the mists throughout the reflection on the Burial, finally taking striking form with the notes “The massacre”, “The remains...”, “... and the body” (, ,) . These notes are from May 12, 16 and 17, that of the “Gravedigger” is from May 24; the illness episode appeared on June 10, and put an end to the pursuit of notes for more than three months, which resumed on September 22. It is at least probable that if this episode (more than unwelcome I) had not appeared, at some point

(*) See the two notes “We can’t stop progress!” and “Coffin 2: the cut-outs”, n° s 50 and 94.

(*) (November 29) To tell the truth, this aspect was already present in the form of a knee-jerk intuition for many years in my relationships at Deligne, but without me ever stopping to think about it before the Récoltes et Semailles reflection.

(**) In the two sections “The Enemy Father (1)(2)”, n° s 29, 30.

where I prepared to continue with an assessment of the whole and to draw a final line, my vision of the Burial would have stopped at that which had emerged in the two weeks between May 12 and 24 - at a vision therefore in "two parts", which each remained in its own corner, without the idea coming to me of trying to put them together.

There was, however, a diffuse feeling, like a barely perceptible drizzle, that the end of the word was still not really grasped; the feeling of one who "gropes in the shadows" (the expression must have appeared once or twice during my notes on the Burial).

The final note of the Gravedigger must have had the effect of a slight gust of wind in the mists, which can give the illusion that they have dissipated, when they have only moved a little. . Or to put it another way: the aspect taken up in this note appeared there in such clarity and with such relief, that the impression (in no way illusory) of a tangible, penetrating understanding of this aspect, and the feeling of satisfaction which accompanied it (a feeling surely very apparent at the end of the note) - that this impression and this feeling created a sort of euphoria, of one who feels close to reaching the goal, and made me forget more or less the other aspect, however significant, the "Superpere" aspect, which had remained "on account"!

The third part appeared only three days ago (five months to the day after the appearance of the unfortunate illness episode). It is the "Funeral (symbolic) and Burial (very real) aspect of the "feminine", which "feminine" is visualized in a sort of "Super-mother", Herself embodied by my modest self! This aspect appeared at the end of a long, entirely unforeseen "digression" on yin and yang, in which an effort had finally materialized to be able to express in an intelligible way a certain "association of ideas" from a certain "Eulogy", which was supposed to close the Funeral ceremony. This famous "association" or "intuition" (to which I first allude at the very beginning of the note "The muscle and the guts" (yang buries yin (1))", 106) has still not been explained. — but everything is ready for, and I've been promising for a while that I'll get there!

Still, along the way a quantity of facts and intuitions appeared, some of which were new and unexpected for me, and all of which made me usefully reconnect with important aspects of my life, such as existence in general. One of these facts – that the "basic tone" of my mathematical work is "feminine" – seems moreover to contradict one of the intuitions at the basis of this association which is always awaiting its moment: the intuition that as a mathematician (as for the rest), I was a person-

swim away all that there is of yang; an intuition therefore which is linked to the “Superfather” aspect of the Burial. And this same fact, which seems to contradict this association (from which all the reflection on yin and yang comes!) also brings out in a jiffy this third part which had escaped me until then, the “Supermother” aspect. . At the same time there is also (at the end of the endings) the junction with a “Burial” which seemed forgotten for almost a hundred pages!

For the “rising sea”, it is the rising sea — we must hope that the final result, I mean this promised “vision” that I am preparing to bring out of limbo, will be up to the task. creator of the means, namely of a whole sea of philosophical-Freudian digressions on the yin and the yang... The tide was triggered (with the kick-off note “The muscle and the guts”) on the 2 October, the crucial “new fact” makes its appearance in the following days (*), while I am preparing from one day to the next to finally put in black and white this famous “association” (which appeared five months before, on May 12 or 13, after the reflection of the note “The Eulogy (1) — or the compliments”, of the same day as the crucial note “The massacre”). But this fact was only “revealed” in the notes five days ago, on November 8, after three preliminary notes on yin and yang in math (written over the previous three days). This is the note “The sea” (122). Two days later, on November 10 with the note “The funeral of the rising yin... (yang buries yin (4)” (124)), the “Supermother” makes her appearance (but the word is only stated in the next day's note, “Supermom or Superdad?” (125)). And here is the “third part” of the Funeral!

It is without deliberate intention that I committed myself, on the spur of the moment, to this retrospective of the reflection on the Burial, in the perspective of the successive appearance of the three main aspects of it (such as I see things now). Such occasional retrospectives, during a long-term meditation, have each time proven to be most useful, giving an overview of the process of reflection, and at the same time a new perspective of certain of these main “results” (*). Perhaps what will especially strike the hypothetical reader of this retrospective is that I made the

(*) I seem to remember that two days later, in the note “Innocence (the marriages of yin and yang)” (nŷ 107), the fact in question had appeared, and was one of the “various signs” which were discussed in this note (without further details about them), which “made me suspect more than once that... it is the “feminine” qualities which dominate in my being... ”.

(*) This type of retrospective seems very rare to me in mathematical work, and I have only practiced it myself since writing “Pursuing Stacks” (started in the spring of last year). A common work practice on the other hand, and which has an analogous effect, from the point of view of “new perspective” of ideas and re-

detour by such a long digression, rather than arriving immediately at this famous "as-sociation" (always to come) and that we no longer talk about it, to finally arrive at the famous "final feature" under the Burial; trait that I was so eager to draw out in the note "The Funeral Eulogy (2)" of September 29, where I was just getting back into the harness of the reflection left in suspense in June. It was also good in these With this in mind, I began the following note three days later, "The muscle and the guts", which begins with an allusion to this association, without giving any details about it.

If I did not give it then, and postponed it from day to day and from week to week for a month and ten days already, it was in no way by a deliberate intention, which would have appeared at one moment or another. other. If I try to fathom the cause, I would say that I must have felt instinctively, without even having to tell myself, that at the point where I was then, to write point blank the association -ciation in question would have made no sense; that it would have been like a simple "statement", purely formal or verbal, while the rich substance covered by words which would have come to me through a pure effect of memorization, would remain ignored, unperceived. The reader, if he is a mathematician (or a scientist, if he is not a mathematician), has surely experienced such a situation many times and the discomfort it arouses, when we are thus confronted with a statement from which we can see easily that it is perfectly precise, where moreover we know as best we can the meaning of each of the terms used, and of which we nevertheless feel that the "meaning" and the substance totally escape us. The situation is perhaps even more frequent with texts which are not of a technical nature and which nevertheless express a tangible substance, strongly perceived by the author; with this difference, however, that it is much rarer for the reader to realize even slightly clearly that the meaning of what he is reading escapes him. In the present case, there was even more - it was also for myself, who for months had no longer been "in the bath" of the Funeral Eulogy

results of mathematical work in progress, is to take up "ab ovo" all of the notions and statements of the theory that we develop, in the order that appears to be the most natural, at the point where the understanding is -sion at that moment, often such work, which may seem purely routine, leads to a substantial deepening of understanding, for example by revealing, through the requirements of internal coherence of the new ordering, notions, properties, relationships you. also "natural", which had not been seen previously. Sometimes also, by revealing the fortuitous or artificial nature of certain hypotheses, or the narrow nature of an entire initial context, the work of "restatement" leads to an unsuspected broadening of the initial proposition, which gives the theory initially developed a dimension and a new scope.

and associations which were attached to it, and which for years had no longer really “dived” into the reality of yin and yang (while brushing against it at every step...) — even for me, what I could then have written to “say” this association would have been a verbal thing, not really felt or perceived. To resolve to do so, or to put it better, to force myself to do so, would have been a purely formal way, out of conscience, of fulfilling a sort of obligation, in short “completing” a pensum while taking care to “give good weight”, not to lose along the way such “association” which (I remembered it well 1) had been juicy and steaming, and which for a long time had had time to cool and become moldy in a corner of memory!

If what I remembered should indeed serve to deepen an understanding that remained fragmentary, it is very clear to me that I could not then do without these hundred pages of “digressions”. They form the deepest part of all the reflection pursued throughout *Récoltes et Semailles*. I cannot yet predict whether the vision of the Funeral that I am about to leave in their wake will leave me with the feeling of complete satisfaction, or whether there will remain dark corners or dissonances, which I may give up. -to be clarified or resolved, at least for the moment, or in *Récoltes et Semailles*. But in any case, just as in my mathematical work, I know that each of these hundred pages, like each of the six hundred (more or less) of the text of *Récoltes et Semailles* written now, has its unique place and its message and its function, and that I could not have done without any of them (whether or not there are readers to follow me until then!). While the goal pursued was far away (if not completely forgotten...), each of these pages brought me its own harvest, which only it could bring me.

(¹²⁷) (November 17) I have just gone through four rather difficult days, with a lot of agitation around me. There could be no question of continuing on my momentum, my work on the notes was limited to a little stewardship: rereading the part of the text which must be entrusted to the clean typing, correction of that which is made. Between the “first draft” of the text of each note, re-read before moving on to the next note, and the definitive text, ready for duplication, I therefore do at least three readings, all three attentively, making expression adjustments during the first two at least. I will end up knowing the text of Harvests and Seedlings well! But above all, I do what is necessary to be sure that the text that will be entrusted to duplication will be the best that I really have to offer, including

understood in its form. Except for one of the notes from the Funeral, for all the sections and notes from Harvests and Sowing that I wrote and reread, I had a feeling of complete satisfaction at the last reading. I felt that each time I had managed to say what I had to say as clearly and as nuanced as I was capable of doing it, without hiding anything of what was clear, understood, known to me at first. time to write, nor of what remained obscure, vague, misunderstood or even entirely mysterious, unknown...

The only exception is the note "The half and the whole — or the crack" of October 17, from which the "thread" of the meditation split in two, on the two themes that I named (in subtitles in the rest of the notes "the key to yin and yang") "Our Mother Death" and "Refusal and Acceptance" (*). This is the last part of this note, namely the two, three pages where I talk about the division in the person as being the ultimate root of division and conflict in the couple, in the family and in human society. . This is an intuition which first appeared to me in the first years after my "departure" from the scientific world, and which has developed, confirmed and deepened over the years, until today. It has become so "obvious" to me (without, however, having ever taken the trouble to examine it carefully and in all its aspects), that it has entered into the reflection a bit as a matter of course. , without any effort to present it by such "end" which makes this "obvious" appear even slightly. But if reading these pages leaves me with an impression of vagueness, of dissatisfaction, it is surely not a simple question of "presentation" which would be clumsy. Rather, I feel that I wanted to jump headlong into a substantial reflection on this complex theme, a reflection for which I have the feeling of having all the elements in hand to do so, but which does not is not yet done! In the note of October 25 ("Paradise lost" ()) which is directly linked to the note of October 17 (to develop, from it, the theme "Refusal and Acceptance"), I first try as best I could to "make up" for the gaps that I had noticed in the previous note — but without ultimately saying much more than simply this: that with regard to a possible "journey to the discovery of the conflict", " It's not in that direction that I want to go

(*) The need to group together by subtitles the notes which form the "digression" on yin and yang was felt only a few days ago. This also led me to readjust the names I had given to these notes, which are therefore cited in certain places under names a little different from their final names (but with the right number, nonetheless). At the same time, the apt name for this set of notes also presented itself, namely "The key to yin and yang".

continue now", too bad, that will be for another time!

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In the previous note from four days ago, I reviewed three aspects, or "vo-lets", of the Burial painting, which have emerged so far. Afterwards, I remembered that in two moments already during the reflection on the Funeral, I had felt, and written, that I had reached the "crux" of the conflict. It was in the notes "The knot" and "The Eulogy (2) — or the strength and the halo" (65 , 105). These notes joined reflections (apparently "very general") in one of the first sections of *Récoltes et Semailles*, "Infallibility (of others) and contempt (of oneself)" (section no. 4). It is self-contempt, the recognition of the force that rests within us and which gives us the power to know and create, which is also the source of contempt for others, of the eternal reflex-compensation of "proving" one's self. value by putting oneself above others, by using (for example) the derisory power to degrade or crush, or simply to cause suffering or harm.

While writing this note, I certainly did not lack examples. The one who was most present in my mind at the time was Pierre Deligne, whom I had seen many times use his power to discourage, even to humiliate, in ways that had often seemed inexplicable to me. It was only two months after writing this note that I began to discover "the Burial in all its splendor", as evidenced by the notes of April 19 ("Remembrance of a dream - or the birth of motives" , and "The Burial — or the New Father"

(51)(52)). Gradually also, I discovered the role of my friend Pierre as Grand Officiant at my burial and at my funeral. Most of the pre-June notes on the Burial (Processes I to X) focus on his person. It is also the one on which I have incomparably richer and more personal material than for any of the other numerous participants. Also, the two moments when I had this feeling of "touching the heart of the conflict", it was him again, also the only one with whom regular contact has been maintained until today, who was at the center of my attention.

(128) (November 18) Twelve hours of sleep last night — I needed it, after several rather short nights! I feel that I have replenished an energy that was beginning to fray a bit — I am more energetic than yesterday, to return to the famous "thread"

where I left it.

In the two moments that I spoke about yesterday there was a sort of “flash” in me so clear and so strong that it would never occur to me to doubt it – I mean, to doubt that he revealed to me something real outside of myself in this case; that it was not something purely subjective, the product (let's say) of a simple deliberate intention to see the application of a certain psychological “theory” which would be close to my heart - that in short it was the “butterfly” providentially carried away in his net by the butterfly hunter (*)! To doubt such signs, whether in meditation or math or elsewhere, would simply be to abdicate my power to know and discover. I am fortunate to know this power, and if there is one thing I have complete confidence in, it is in him.

I could think of seeing in this “flash”, in what he taught me, a fourth “part” of the picture of the Burial, which would be added to the three others (reviewed in the note of November 13) . But from the outset I see him as intimately linked to the two aspects “Superfather” and “Supermother” — and this obvious link goes far beyond the person of my friend. This recognition of the “power to know and to create” in us, which I recalled yesterday, is nothing other than the ignorance of our fundamental unity, the fruit of the marriage in our being of the qualities, energies and forces “yin” and “ yang”, “feminine” and “masculine”. Because what is “man” in us, by itself, does not make us capable of knowing or creating, any more than what is “woman” in us, by itself, gives us this power. It is not an artificial and derisory half of our being which has the power to know and create, but it is the whole, the totality of our being, which has this power. He has it, not as the outcome of a quest, of a long journey, of a future, which we would travel through in a state of temporary helplessness which would little by little amass “power” along the way; but this power is ours by our nature, we received it as a free gift, from the day of our birth (**).

And this “self-contempt”, or “self-ignorance”, is also nothing other than the refusal opposed to this gift, the refusal of this fundamental unity, and of the power which is its inseparable companion. Or rather, it is like the shadow inseparable from this refusal, it is the knowledge of an impotence (*), established by this refusal; a timid knowledge certainly, confused, not assumed, which takes great care to stop at the known (very poorly known...), afraid as it is to dive deeper, to become aware of the unknown hidden power, and blocked

(*) See for this image the note “The child and the sea — or faith and doubt” n° 103.

(**) And probably even, long before our birth...

by this deliberate, cultivated impotence.

The most common form that this refusal of our unity takes, in the superyang society that is ours, is the burial day after day, hour after hour of the "yin", of the "feminine" in us. This was precisely the "Supermère section", aka "Funeral and burial of the "feminine" "and more particularly and above all, of the feminine in itself.

But I feel that there is also a direct and profound link between self-contempt, and the "Superfather aspect", aka "massacre and burial of the father". It is this strongly anticipated link that I would now like to try to identify. To put it another way, this "presentiment", this intuition: there must be a direct and profound link between the division within us, and the antagonism towards the father.

It is of course understood that this "antagonism" finds occasion to be expressed both towards the biological father, as well as towards the one who would have taken his place in childhood, or towards any other person who, at a moment or another and for one reason or another, takes the place of a more or less symbolic "replacement father", onto whom the original antagonistic impulses are projected. My purpose is therefore to identify the deep cause of these antagonistic impulses and attitudes, so common that we could sometimes be tempted to consider them universal; a cause that goes deeper than a simple set of concrete grievances, often all that is tangible certainly, that one can have against the author of his life. More than once, I have noticed that these grievances are often more in the nature of a plausible and welcome rationalization, for an antagonism whose real root, the cause of its vehemence and its tenacity, lies elsewhere.

I could formulate this intuition that I am trying to understand in a different way, in the form in which it presents itself to me spontaneously: it is that I have the intimate conviction that in the one who is "one", not divided, in the one who accepts himself in the totality of his being - in him, the conflict with the father, or the mother, is resolved. He is autonomous, "free" from either of his two parents. The umbilical cord that continues to connect us to our parents, long after childhood

(*) As I specify a line further, this knowledge is "blurred", in its essential content it remains unconscious. However, we often see a small piece emerge (like the top of an iceberg whose base remains carefully submerged...), through a sort of profession of faith of impotence, which more than once left me speechless. gaped. They are made in the tone of a peremptory and unanswerable observation, behind which we sense a sort of vehement, fierce closure - as if this impotence which is thus claimed as an intangible and sacred "fact", was the most precious good, which we would not give up at any price...

and adolescence (and most often, throughout adulthood and until death) — in him this link is broken. The moorings are broken, which until recently held us back from truly setting out, on our own journey, to discover our Mother the World (*).

This intimate conviction cannot be reduced to “wishful thinking”, it is not the projection of a wish (renamed “conviction” for the occasion). Its origin is certainly in my experience, and first and foremost in what I observed in my relationship with my own parents. I am thinking here of the profound transformation that took place in my relationship with my parents in the years following the turning point eight years ago, marked by this “awakening of the yin” in me, then by the discovery of meditation in the months that followed, and finally by the “reunion” with my childhood two days later (*). I realize that this turning point was marked by immediate autonomy, in contrast to a previous dependence on received and adopted ideas in particular. The deepest of all these dependencies was the dependence on my parents, whose values and options had shaped mine and my own view of the world, and from whom I had also taken “in

(*) It's a strange thing that in French, the notes “le monde”, “l'univers” and “le cosmos” are all masculine. The equivalent words in German, “die Welt”, “das All”, “der Kosmos”, are of the three genders feminine, neuter (which is often a kind of “super-feminine” in German), and masculine. This seems to me to correspond better to the nature of the things designated by these terms. When we speak of the “cosmos”, the connotation (apart from space cells and extraterrestrials, recently invented) is that of an order, governed by laws – ideas which correspond well to the masculine (in which way the two languages agree). On the other hand, “the world” and “the universe” suggest the idea of a whole of which we and everything else are a part; of something, more, that it is up to us to discover, to penetrate, to know. Through these aspects, which seem essential to me, these two terms designate things which are “yin”, “feminine” in nature, and particularly in relation to us. I would be hard pressed to discern why the French language nevertheless attributes the masculine gender to them.

In this regard, I point out another “anomaly”. (?) strange, this time it seems in German, where “the sun” and “the moon” are said “die Sonne”, “der Mond”. They have inverted genders compared to those practiced in French, which would seem the most “natural”. Thus, the sun is immediately associated with the idea of heat and fire, which are typically yang in nature. Perhaps this “anomaly” is common in Nordic languages, due to the fact that in cold countries, where the heat of the sun is never felt as torrid, burning, but where it is expected as a blessing, a source of life, the sun is felt (with the earth) as a kind of nourishing mother, who provides creatures with the warmth on which they “nourish” as much as with the food that comes to them from the earth...

(*) I talk about these crucial episodes in my life in the notes “The reunion (the awakening of yin (1))” and “Acceptance (the awakening of yin (2))”, n° s 109 and 110, and in the section “Desire and meditation”, n° 36.

bloc” and as is, without change in other words, the Epinal image that they had of themselves, of the couple they formed and of their relationship to their children. I had “operated” since my childhood on this set of values, options, images, which were in no way the fruits of an experience of my own life and the work of assimilating it, but a simple “baggage”. This baggage was made up largely of clichés and complacent illusions, which I had “trusted” from my parents, and which very often in my life replaced a direct and living perception, a creative perception of things around me. Me.

It is true that this “autonomy” of which I speak appeared immediately with the discovery of the power of meditation. She was total (I believe) in everything that I took care to examine. This does not prevent the fact that many preconceived ideas, and in particular and especially those coming to me from my parents, initially remained in place purely by effect. of inertia, for lack of having yet been examined. There was so much to look at, there was no way we could watch everything at once! Not to mention that after a few months of intense work, I allowed myself to be distracted by “life going on” — especially love affairs, as you can imagine (**). For almost two years that followed, my meditations were limited to some occasional reflections of very limited scope, when I saw myself confronted with some situation of acute conflict, and I urgently felt the need to see clearly, it was only after August 1979 (nearly three years after the discovery of meditation) that the “great cleansing” of ready-made ideas began, about my parents and about myself in particular. , which continued to clutter me and block my view of this fascinating world in which I live. Working on my parents' lives consumed me for seven months, until March of the following year. I was then on the eve of my fifty-two years. It is with this work that the autonomy of which I spoke, which in a sense had remained only “potential” for three years, became fully actual, complete, irreversible. It is through this work too, and through

(**) My love life, in the years following the discovery of meditation in 1976, was more intense, and also more eventful than in any other period of my life. It surely represented a dispersion, a diversion from the initial impetus of meditation, which was only to be resumed (with the magnitude due to it) in August 1979, with the long-term meditation on my parents' lives. (See on this subject the notes “Surface and depth” and “Praise of writing”, nos. 101 and 102.) However, with hindsight, I realize that I could not still do the “economy” of this dispersion — it was necessary that a certain passion, a certain hunger in me be consumed, and that along the way, I continue to learn, through those whose lover I was, what I had learned only imperfectly during my past life. At the point where I was, I doubt that meditation on this past alone could have taught me.

only him, that I was able to love my parents in the full sense of the term, that is also to say: to accept what they were, or had been, with all that that had implied (and which I then began to glimpse), and in particular, involved for me, their son.

If I felt the need to do this work (128) and if I was able to do it, it is because three years previously, I had known how to accept this gift of life received at my birth, and refused for forty years — the gift of my unity. Or to put it another way, it was because I knew how to accept my own nature. It is through acceptance, love of myself, that I was able to accept, to love my parents (*).

I can also say that it is only through this work that the conflict with my parents was “resolved” — a conflict of which I did not suspect the existence even a few years before, when my parents were both dead. the other for more than twenty years. It is true that the basic note in my attitude towards my parents since my early childhood had been an attitude of admiring respect, of valorization, of unreserved identification, and after their death, a sort of cult tacit of their person and their memory. This is not the kind of relationship we usually refer to as “conflict”, suggesting a basic note of antagonism, of enmity. In this valuation which came to them from my person, my parents of course found their account, they found that it was very good and in the order of things - and there must be few parents who would not want to be in their place, or who do not congratulate themselves when they are. It was only after this work on my parents, and even more after the work on my childhood which followed, that I was able to fully realize, with full knowledge of the facts, to what extent this idyllic relationship that had been mine with my parents had been false, artificial, not “real”. It was only able to survive by stubbornly erasing from a touching picture a quantity of things that did not “fit”, including painful periods (of acute antagonism precisely, often felt as a tear), or “blunders”. ” chronicles, which recurred in the relationship between my mother and me with the same relentless regularity (even if less frequently) as had previously been the case between her and my father. Not even counting things that had entirely escaped my knowledge on a conscious level, like this “big cross” that I had drawn on my parents at the age of eight, after two years spent in a foreign environment, with a letter hasty from my mother three or four times a year like any sign of life from one or the other...

But the deep reason, the real reason, which makes me call the relationship to

(*) This echoes the reflections at the end of the note “Acceptance (the awakening of yin (2))”, n 110.

my parents between the summer of 1933 (at the age of five) and the winter of 1979/80 (when I was fifty-one), it is not that during these forty -six years of conflicts which pitted me against one or the other or both jointly — whether these conflicts were frequent or rare, violent or latent, conscious or unconscious. It is rather that this relationship was not assumed and could not be assumed (as it was, I mean, without being profoundly transformed). It could only be experienced and seen as I experienced it and as I saw it, through the effect of a constant, tenacious repression of my faculties of knowledge and understanding; by an obstinate refusal to become aware of the true nature of this relationship, or at least of certain essential aspects of this relationship, essentially involving each of my parents as well as myself, and the image that I spoke about us. To put it another way, the form that this relationship had taken was perpetuated by an obstinate, incessant flight from a reality that was all that was tangible; reality just as obstinate in making itself known to me again and again, without ever really taking the seed of it during my parents' lifetime. The episodes, sometimes heartbreaking, of the clear and undeniable conflict opposing me to one or the other, were only some of the more or less eloquent signs of the “conflictual” nature of the relationship with my parents, it is to say of this repression and this flight which took place in my own person.

To put it another way, a “conflictual” relationship with others, in the deep sense of the term, is the relationship which is “divided”, the one which perpetuates itself equal to itself through a process of repression, of flight from reality, and which conversely contributes to perpetuating these processes in itself. The signs of “conflict”, of “division” in the relationship, can be as much in the nature of an antagonism as in that of an allegiance; it can be a deliberate statement of criticism or even disesteem or disdain, as well as a deliberate statement of approval or admiration.

And here I am, without having sought or anticipated it, returning to what we will perhaps call my philosophical hobby: that the conflict between people is only the “sign” of the conflict in each of the protagonists, or again: that the “source” of conflict in society is conflict, the division within the person. (The parents in all this ended up disappearing without a trace!).

This view of things seems to entirely neglect the more simplistic and by far the most common view: that conflict between two people is the result of “interests” or desires in both, which are “objectively” antagonistic, that is to say, such that the satisfaction

tion of one can only be to the detriment of that of the other. This is the universally accepted way of seeing, whether it concerns the conflict between two distinct people, or the inner conflict within the same person. Thus (in the first case) these incompatible "desires" can be, in both, the desire to dominate, to set the tone, to lead the boat - certainly the most common cases, including between parent and child (and just as much, between wife and husband, or between lover and lover). I do not deny any reality, any usefulness to this way of seeing, in certain cases at least. But I see that it only concerns a superficial reality, while a deeper reality escapes it entirely. To suggest an example in this sense, I point out that the desire to dominate (or to shine, or generally, to put oneself above others) has its roots precisely in this "self-contempt", in this "misconception". -birth of self" which was discussed earlier, from which we try to escape through attitudes and behavior likely to confuse and compensate for this secret self-esteem.

Thus, beyond the "objective" conflict of antagonistic desires, in this case we see the conflict emerging in the person, as the creator of desires of such a nature that they can only arouse and fuel antagonisms towards others.

Certainly, with these few comments I am not going to exhaust the delicate and important question of the relationships between the two aspects of the conflict, which I would like to qualify as a "superficial" aspect and a "deep" aspect — and this is probably not the place here. Rather, I feel the need to return to the theme of conflict with the father, or that of conflict with the parents, from which I was moving away. At one point I was able to give the impression (and even let myself be carried away by it for a few moments 1) that the conflict with a parent, or with Pierre or Paule, was the same thing. However, I know that this is not the case! I know well that the conflict with the father, the conflict with the mother, are at the heart of the conflict within ourselves.

I spoke earlier, in this sense, of my "inner conviction" (which I would also call a knowledge in myself, a thing well understood), as in the one who is not divided in himself, the conflict with parents is resolved. This knowledge, I said, comes to me above all (I believe) from the experience of conflict resolution in my relationship with my parents (*). Another way of saying this is that acceptance from our parents (that is, cessation of conflict with our parents) is part of accepting ourselves. They are (in relation to us) and our origins, and our conditioning (or a good part of them, at least). The first of these things (our origins) is inseparable from our person, whatever our path and

(*) See the following footnote on this subject,

our destiny ; the other (our conditioning) is deeply rooted in us, and as such is part of our person just like our origins. To reject the true reality of our mother or our father, whether the refusal is expressed through antagonism or allegiance, is also to challenge an essential part of ourselves and of what our life has been, as far back as we can remember...

There's more. It is through our mother and our father above all others that the conflict that was in them was transmitted to us. (This is what was expressed a few moments ago by the lapidary term "our conditionings"!) This is how they are linked to the conflict within ourselves, more closely than any other person in the world. And the first external projection of this conflict within us, and the oldest and most crucial of all, is the conflict to our mother and father. So it appears to me that the conflict in ourselves, and the conflict in either of our parents, are indissolubly linked — they are like one and the same conflict. Earlier I expressed the "inner conviction" that when the conflict within us is resolved (or at least, when it is resolved at its root, in the "yin versus yang" division), then our conflict with the parents is also resolved. ; or, to put it another way*, that the resolution of the conflict in us comes through that of the conflict in our parents. But I am convinced that the opposite is also true: that once the conflict with our parents is resolved, the conflict within us is resolved at the same time (*). This is how I see in the relationship with our parents a

(*) I can give the impression here of asking "the one who resolved the conflict within himself". It is very true that it is without any reservation that I tell my parents that the conflict is resolved, completely. It is also true that the conflict in my person continues to be felt in many ways, it has not disappeared, it is something surely very apparent in each page of *Récoltes et Semailles*, and it is also one thing which I have had more than once occasion to emphasize in one particular case or another. This would therefore seem to contradict the statement commented in this footnote, "that once the conflict in our parents is resolved, the conflict in us is resolved at the same time". However, in a certain sense (the one I had in mind when writing these lines), it is indeed true that "the conflict is resolved within me". At least, something essential in this conflict, at its very root, is indeed resolved, by this knowledge of my unity, by this acceptance of myself. If the conflict is likened to a tree with strong and deep roots, we can say that when the root is cut or has dried up, the tree is already dead, whereas through acquired inertia, the trunk and the main branches remain in place, giving time to dry out and disintegrate little by little. I clearly feel this progressive "drying up" of the conflict over the years, like a grip that was once strong and long-lived, which is gradually loosening. The writing of *Récoltes et Semailles* appears to me to be one of the stages in this process, among many others over the past eight years. Another image to try to describe this same reality is that of a deep calm which spreads little by little, like the calm of a deep sea, which is not affected by the eddies which

key role in our spiritual adventure, a unique role that does not belong to any other among our loved ones, whether it be the spouse or the child, or the friend, the teacher, or the student.

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(1281) (December 1) (*) The importance for me of “getting to know my parents” was revealed to me by a dream, which came to me on October 28, 1978. it is a dream about agony of my father. This agony stretches for days and - nights of painful struggle, surrounded by the busy indifference of those around him, while by the tacit consensus of all he is considered “already dead” — “it was like a verdict, which would have made his death effective, by cutting it short beyond all doubt.” When I woke up, I recounted the dream, but for the three months that followed I avoided any thought about it, to the point of making it sink into the darkness of half-oblivion. In short, I then “buried” the death of my father, of which this shore spoke to me, just as in this dream (which evoked a crucial aspect of my waking life) I “buried” my father while still alive. There was resistance of considerable force against the clear and penetrating message of this dream, of overwhelming beauty. They were resolved at the end of a first night of stubborn meditation on the meaning of the shore, the following January 31, followed by four other meditations in the three weeks that followed.

This dream made me understand that my relationship with my father and my mother was a frozen, “dead” relationship, cut off from a living reality whose perception was repressed — just as (in the dream) perception was repressed. of an agony declared null and void, and the spontaneous action that resulted from it: providing assistance to the one who, painfully and abandoned by everyone, struggles to live.

The first thing to put an end to this isolation in me was to get to know my parents. I had no idea then of the dimensions of the task, I imagined that “in a few hours” I would be able to reach “the heart of the subject”! The idea of getting to know myself, particularly through my childhood, did not occur to me at the time. This need was

agitate the surface. I express myself in more detail on this subject in the two notes “The reunion (the awakening of yin (1))” and “The acceptance (the awakening of yin (2))”, nŷ s 109, 110 .

(*) This note comes from a note of b. from p. to the previous note nŷ 128 “Parents — or the heart of the conflict”.

felt later, it would arise spontaneously from the journey I was about to undertake. This began only six months later, in August 1979, because of the long digression (yet by no means useless in many respects) which constituted the episode "In Praise of Incest". (See the note "The Act" (113) for this one .)

Along with the dream of October 18, 1976 (triggering the "reunion"), this dream about my father's agony is one of the two dreams that most strongly influenced the course of my life. The resistance to his message was much stronger, it seems to me. The first's message was received within hours of waking up, while the second's message was delayed for months. It only began to be accomplished nine months later, with my departure on a journey of discovery which continues to this day...

It is only in these very last days that the connection between the meaning of this dream and the reality of the Burial has come to me that I am trying to penetrate into this reflection. This funeral where I appear as the "main deceased" appeared to me previously as a "return of things" (see the note of the same name, (73)). This time, I see a "return of things" again, but from an entirely unexpected angle. In fact, in the Funeral, I appear alternately as "The Father" and as "the Mother". The idea had never occurred to me that I had ever been in the analogous position of a son, "burying" alive (even if it was symbolically, or by tacit consensus) his father or his mother, quite the contrary! And I had strong reasons in fact to be convinced of the contrary, reasons that I mention for the first time at the end of the note "the massacre" (in the context it is true of the massacre of the Father, and not of his funeral). (I come back to this in more detail in the note "Innocence (the marriages of yin and yang)" (107).) In writing these last two paragraphs concerning my early childhood, in the note "The massacre", surely I must have given the impression (and even been myself then under this impression) that my relationship with my father was free of conflict throughout my life. This is what a superficial look at this relationship could also suggest. But already in the note commented here, "Parents — or the hearts of the conflict", where I do not limit myself to such superficial impressions, it clearly appears that this is not the case, that this vision of things (which was indeed mine until January 31, 1979) was one of the illusions that I was happy to maintain for most of my adult life. This illusion appeared clearly to me, from the moment I finally took the trouble to examine the meaning of the dream about my father's agony - the most beautiful of all the dreams that life has given me. this day. This dream presents the grip of conflict on my relationship with my father with striking realism — and

it also makes me experience the resolution of this conflict. The conflict is resolved by the effect of a rupture within me with the consensus decreeing the death of my father, a rupture suddenly opening the door to someone else. thing — and by a gesture of love from my father, telling me that he had heard the cry that my tight throat could not let burst out towards him...

The deep relationship between the experience of this dream, a striking parable of a frozen relationship with my parents (which suddenly comes back to life...), and the reality of the Funeral which I have been probing for almost nine months, appears to me now with the force of evidence. It is remarkable that during all this long reflection and even until these very last days, the thought of this kinship did not cross my mind. I ended up “stumbling upon it” by the greatest chance, regarding a footnote where I intended to point out, for all practical purposes, the role that this time again (in the triggering of a reflection on my parents) had played out a certain dream, among many others over the past eight years which were like providential beacons on my path. This remark had the effect of putting me somewhat back in contact with the experience and the substance of this dream, which I am still very far from having exhausted. Once this contact was re-established, it was no longer possible, given the context, for the relationship with the Burial to become evident.

It is true that this relationship, for the moment, concerns a certain “knot” only, whereas in this dream and in the reality that it transcribes, there is the knot, and its resolution. This resolution, moreover, which the dream had made me experience, whose flavor and strength I knew from that night, it was up to me and no one else to ensure that it is a reality experienced in my waking life as well, in my relationship with my father and my mother. I was free to do it, or not to do it — and for months, it was this second alternative that was my choice! Today - five years after this resolution - it is still surely the same, in this somewhat symmetrical situation in which I am involved, while it is me who appears as the Father buried by a consensus-verdict, there where I had been the son who piously buried his father alive in flesh and blood! And perhaps this time again it is through a meditation on the meaning of my experience, in this case, on the meaning of this Burial, that this other knot in which I find myself involved will be resolved, and perhaps dissolve. yet another part of the weight of my past.

As to whether this meditation will be of any use to someone other than me - to a certain protagonist perhaps of this Funeral where I am not the only one to be buried, and where legion are the burials rushing to the Funeral — that need not be my concern; nor if

such knot that I see in others will be resolved or not. That's his job, I've had enough of mine! But if by chance it were to be resolved while I am alive, surely I will be one of the first to be informed and I will be happy...

(129) Clearly, in the previous pages (*), I have barely touched on the theme of parental conflict, and not even that of father conflict, which had been my starting point. The associations of ideas that I followed from there would seem to have distanced me from it, rather than deepening it. In what I have just said about the conflict with parents, the role of the mother and the father are interchangeable, just as it is also indifferent whether the "we" referred to in these pages designates a man or a woman. However, in our relationship with parents, the mother and father are far from playing a symmetrical role, and the role played by each of them depends crucially on whether "we" are a boy or a girl (now a man or a woman). .

In the present case, the conflict with the father (expressed by the symbolic burial of the latter, or by his massacre) interests me first and foremost in the case of those whom I know for having actively participated in my funeral, who are all men. From then on, the father, in the structuring of the self, is the one with whom we identify, on whom we model ourselves, in our relationship with others (and more particularly, with women), and in our relationship with ourselves. .

It is very rare that this identification is made without a major "blunder", and antagonism towards the father is one of the traces, tenacious if ever there was one. This is not the place to try to go over these blunders, of everything that often tends to go wrong, for the little boy, even the one best disposed to take an example from dad; nor to examine the expression that they tend to take in the relationship with the father. My own experience on this subject is moreover so atypical that I would perhaps be less well placed than anyone else to make such an inventory, while I do not feel intimately, from my own experience, the ins and outs and the particular "flavor" of any of the main cases (*). My experience here is mainly indirect, through what I have observed around me, and first and foremost in the relationships between my children and me.

Beyond the particular nature of the "blunders", and the grievances and resentments towards the father which draw from them, there is a common aspect however which I have strongly perceived on many occasions, while all talk deliberate "explanatory" was entirely absent. It's that

(*) Those of note n° 128, of which this one is an immediate continuation.

(*) Compare with the reflections at the end of the note "The Massacre", n° 87

the antagonism of the boy or man towards the father, who served him as best he could as a model and whom he reproduces, "positively" or "negatively" (by imitation, or by opposition), whether he wants it and recognizes it or not — this antagonism is nothing other than a particularly eloquent and crucial aspect of an antagonism towards himself. More precisely, it is the external sign, through the rejection (more or less clearly expressed) of the father, of the rejection of a part of himself; this, surely, by which (unbeknownst to him, or against certain conscious or unconscious options) he resembles his rejected model - his father.

Suddenly, I land on my feet - I see this foreseen link becoming clearer between "self-contempt" (or "refusal (or lack of recognition) of oneself"), and "antagonism towards the father" - but I land on one side unexpected. I prepared myself to find a more or less direct link between this antagonism to the father, and the refusal of oneself in the form of the refusal (or "burial") of the feminine in one's own person. Instead, it would seem that I fall back (although I should have expected it, in "good logic") on the refusal of the masculine. However, I know well that this refusal, less obvious and more hidden in man than the refusal of the feminine in him (which I have especially had occasion to talk about) is hardly less rare, and that it weighs on him of an equally heavy weight.

Often it is superadded to the other, so that, whatever way the self is structured, whether in yin colors or yang colors, we are sure of being unacceptable to ourselves. Or for the in other words, this refusal of the father, or the refusal of what is "masculine", "virile" in oneself and makes us resemble the father, often goes hand in hand with adoption without reservations (in the absence of a counterweight "yin", challenged) of a system of "yang", "macho" values with a bit of zinc! (*)

The idea occurs to me that this contradiction (truly appalling indeed, once said and written in black and white!) is undoubtedly also the real nerve in this merciless competition, which is one of the characteristics of our supermacho society (and this all as much in the high spheres of science as everywhere else...). Because if "climbing" and "exceeding" are superyang values par excellence, these values would undoubtedly not be internalized with such vehemence, and their putting into practice would not be done with such brutality (even if it was muffled, when it is it is about the "high spheres"...). If in the rival in a better position than us, who it is a question of overtaking or even ousting, we did not at the same time see looming before us the formidable shadow of the Father, at once admired, envied, and secretly hated — the one who was there before us, and whose sole existence, as far back as we can remember, was the great

(*) (November 29) This is at least the most frequent case among those of which I am aware.

challenge in our life.

(130) (November 19) I still felt impatient to continue the reflection where I had left off. It's been a week, in fact (since the note of November 12, "The vehement wife (the reversal of yin and yang)" (126)), that I have the feeling day after day of being on the point of getting "to the heart of the matter" — of coming to the overall picture of the Funeral that I had promised myself, which would bring together the partial "strands" that had emerged during reflection — and also a week that the "point" in question is pushed back day by day. Every day when I finish my note (since I have to stop and go to bed when the time goes by), I feel that I have done work that I could not forget to do, that I I "advanced" a notch — but at the same time I have the impression that the "point" I want to get to has moved back just as much! The obvious temptation here is to continue in one go until I get to the famous "get to the heart of the matter". But after the "health incidents" of the last three years, I also know that this is the mistake to avoid.

Besides, I know well, deep down, that I am right there, in the "live" in question. Only, I'm chomping at the bit to have gone around it. This impatience to have arrived at the end of a task, this impulse towards a certain "point" or "point of the subject", intensely perceived in front of me - very close, or still distant, it really doesn't matter - this attraction of "goal" on me which projects me forward, like an arrow rushing towards its target – this aspect which seems to me the most intensely "y ang" of my person, characterizes my way of being outside of work time. It is a striking aspect of the "pattern", of what is conditioned, acquired in me. Nothing, in what is known to me from my early childhood, could suggest this character, which appeared later in my childhood, and which has so strongly marked my entire adult life until today.

Again.

In the work itself, this aspect seems to have almost disappeared. I have the impression that the little that remains here and there is nothing more, nothing less than the sign of the occasional, discreet, it must be said, interference of the boss during the work (where, to tell the truth, he has nothing to do!). The work itself, at the discretion of the Worker who through my hands works at his own pace, is done following a completely different breath. The impatient passion gives way to a calm, peaceful and obstinate nature. There is no longer an arrow, hurrying towards a target, but a wave which extends very far and which advances we know not where, there where the moving force which animates it carries it - a wave followed by another wave, followed by yet another... There is no hesitation in this

movement, in every place and at every moment it has a direction of its own which carries it, or attracts it forward. In every moment there is a progression, we cannot say towards what, there is a “work” accomplished in a movement which ignores effort — and there is no goal. The very idea of a “goal” here seems strangely preposterous — where would we want to place it?! The goal has disappeared, just like the arrow. If there is an arrow, it is not a vibrating arrow which launches into the heart of a target to land there and sink into it - but in each place of this moving mass of waves following each other Each other there is an unequivocal movement and force, there is a direction in a progression, as precise and clear as an arrow, invisible and yet imperious which would mark this direction, this force, this movement.

So, it seems to me that in my work, I am as “yin”, as “sea and movement”, as one can be. This has been the case, I believe, with all the work of discovery in my life, with all the work in which I have launched myself with passion, and above all, with my mathematical work and the work of meditation. And now that I have unexpectedly described with an image, imperious and sudden, how I feel about this work, it seems to me that this image at the same time also describes the movement of my life, since the day of reunion with myself, and perhaps already before, perhaps from the moment of my “salutary uprooting” from a cozy fold (*). At least, that it describes the “how” of my life at the deep level, that of the “calm” of which I spoke (barely a few hours ago) in one of the footnotes of page to the note of yesterday — a calm that is unaffected by the turmoil taking place on the surface.

In this deep stillness there is movement and progression, but there is no purpose—the purpose has disappeared.

And I also remember now that it is this same image that came to me in March, where I speak of the manifestations of my two passions, meditation and mathematics, as “the moving up-and-down waves following one another, like the breaths of a vast and peaceful breath...” (**). Now, eight months later, I believe I recognize in these images the spontaneous movement of my being, in what is most spontaneous, in what is truly original in me - in what comes from the child eager to know, before the worry of appearing and the craving for becoming affects him...

(131) (November 20) Yesterday evening was spent almost entirely rereading the notes

(*) See the note of the same name, n° 42.

(**) See end of the “My passions” section, n° 35, from which these lines are taken.

from the day before, correcting them along the way, retyping a page that was decidedly too cluttered, writing the footnotes (planned the day before) — and already it was midnight! I was eager to move forward again. the same evening, however little it was, and went back to my typewriter, to resume the interrupted “thread” of the day before. And then something completely different came — the image of the arrow and the wave. For a long time I recognized myself in that of the arrow, while that of the wave seemed to me to correspond to a temperament very different from mine. It is one of the surprises, which appeared during this reflection on yin and yang, that it is nevertheless this image of the wave which expresses in the most striking way, and with the most accuracy, the “tone of base” which prevails in my being, when “the boss” is far away, or when at least he fades in front of something else. The image rose, as if it had been there ready, just waiting for the words that would finally make it take shape.

They came without haste and without hesitation, while I simply tried to describe, as faithfully as possible, without glossing over or distorting anything, what still remained in the state of a diffuse feeling.

Once the description was completed, it was around two in the morning. I reread these two pages the same night, there was no editing to be done, suffice to say. The most delicate passage was the one where I tried to describe this intuition of a continuous infinity of “arrows”, forming a sort of “field” of forces. This was an idea which presented itself with force, and which seemed reluctant to allow itself to be evoked by language. Yet I felt that this was an important aspect of the whole picture, the “yang within the yin” aspect. In the wave there is “the arrow”, there is a momentum which carries it forward, following a movement which is specific to it and which is not that of an arrow, but rather that of a whole multiplicity, of 'a continuous multiplicity which flexibly restores this movement of the wave. And I also knew that in my work I was also “sharp”; but I follow it in a different way from the one I had imagined until now, for lack of having taken the leisure to ever look at this work with any attention, to absorb it as if it were a question of 'another than me, in order to perceive the tone that is his. If I did not do it sooner, in the eight years that I have been meditating, it is undoubtedly because I have remained unwittingly the prisoner of an inveterate deliberate intention: that of identifying myself with “ boss” in me, rather than in the Worker-child; that is also to say, when I speak of “me”, to think first and foremost (perhaps even exclusively, very often) of who I am when it is the “boss” who is at the front of the table. the scene. More or less, these are also the moments outside of my work, precisely.

The necessities and hazards of teaching (among others) have nevertheless ended up, since the discovery of meditation, by drawing my attention to certain features of my work - namely, the features which I felt were of a universal nature, that they had to be present in all creative work, in all work of discovery (*). But before this reflection on yin and yang, I had not yet thought of discerning distinctive features in my own work, which make it different from that of anyone else. One of these features, which seems to me the most crucial of all, is finally identified in the note of November 8 "The rising sea..."

(122). The image first mentioned in this note, in the typical context of a conjecture that needs to be proven, is repeated in yesterday's notes, in a different light, outside of any particular context. .

I finally pick up the thread of reflection, where it left off the day before yesterday. I left (**) with the intention of trying to identify the root cause of the antagonism towards the father, beyond the particular grievances that we may have against him. By following the associations of ideas which presented themselves forcefully, I initially moved away from this subject, being led mainly to speak of the conflict to the parents, father or mother indifferently. This "conflict" can take the form of allegiance (as was the case with me) as well as that of antagonism.

Since my work on the lives of my parents, this "conflict in parents" appears to me to be truly "at the heart of the conflict" in ourselves. Resolving the latter, I am convinced, is neither more nor less than resolving the conflict with the parents, that is to say: being free from them, being fully spiritually autonomous, continuing one's own journey...

Returning again to the antagonism to the father, in man, I reconnected with an intuition which imposed itself on me many times during the last years and it appeared to me that the deep meaning of this Antagonism to the father is the refusal of that in us which makes us resemble the father, of the appearance and the virile traits of our person. I made this last part of yesterday's reflection (*) a separate note, with the name "The enemy father (3) — or yang buries yang" — therefore also suggesting, through this name, the link with the two sections "The Enemy Father (1), (2)" (nys 29, 30), where this theme of the "Enemy Father" appears for the first time.

(*) The first written text, I believe, where I mention some of these features, is that of October 1978, "As a Program" (to which reference is made in the note of November 6, "The beautiful unknown " nŷ 120). After this text, I do not take the trouble to explain and deepen in black and white my observations on this subject before the Harvest and Sowing reflection this year. Its first eight sections are essentially devoted to this theme, without counting many other comments throughout this reflection.

(**) In the note "Parents — or the heart of the conflict", nŷ 128.

Thus, the aspect of the Burial which had been discussed at the beginning of the reflection the day before yesterday, namely the aspect of “self-contempt”, or “misrecognition of self” or “refusal of self”, appears as a sort of link, or better, a “mass grave”, between the two previous sections, the section “Supermother — or burial of the “feminine”” and the section “Superfather — or massacre and burial of the father”. This nature of hinge appears, as soon as it is clearly perceived that in the first of these parts, “the feminine” is before anything else, “the feminine in us” (as was indeed perceived from the note of November 10 “The funeral of yin (yang buries yin (4)”, where the “Supermother” component makes its appearance); and moreover, that “the Father” is above all the symbolic substitute for the “masculine in us”. Thus the two aspects in question appear as perfectly symmetrical aspects, corresponding to the two obvious “cases” of “refusal of self” — namely, the refusal of “the woman” (aka the Mother) in us, and the refusal of “the man” (alias father) in us (**). And the theme of the conflict with the parents, which is a sort of conjunction or superposition of the two distinct themes of the conflict with the mother, and with the father, appears also like a kind of hinge. Or to put it better, according to what was seen in yesterday's reflection (*), this theme appears to be inseparable from that of self-refusal, both being two distinct aspects of the same undivided reality, that of the conflict within ourselves.

In all this, it seems that the initial purpose, to “identify the root cause of antagonism towards the father”, still remains unresolved. I could say that antagonism towards the father is one of the forms that antagonism towards oneself, or refusal of oneself, takes. From then on, the initial question seems to split into two. On the one hand, for what “causes” does self-denial take, in certain cases, this particular form? To probe it is also to enter in a somewhat circumstantial manner into a certain number of different typical situations, likely to arouse such antagonism.

On the other hand, we return to the question, deeper and more crucial still, of the “cause” of self-denial, that is to say also, of the cause of the conflict, of the division within us. I believe

(*) In fact, this is the note not from the day before, but from the day before, on which I am preparing to continue here.

(**) I remind you that it is by no means rare for the two kinds of “symmetrical” 6th refusals to superimpose one on the other in the same person. Given the devaluation of yin in our society, it must be quite rare, in any case, that the refusal of yin is not present in a more or less pronounced form. So I would be tempted to see in the antagonism towards the father a sign (at least presumptive) of a double refusal of yin and yang.

(*) See penultimate footnote.

having grasped at least the common mechanism by which the generational conflict is transmitted: the refusal of ourselves within us is nothing other than the internalization of the refusal of us by those around us from our earliest years — of the very refusal at least of certain aspects and certain impulses in us, which form an essential part of our original being, of our creative faculties. I touch on this aspect of things (among others) in the “Refusal and acceptance” part of “The key to yin and yang”, and more particularly in the first two notes “Paradise lost” and “The cycle” (116), (116).

Having grasped this common “mechanism” of the transmission of conflict does not in any way mean: having understood the cause of conflict in us and (through us) in human society. Why, at all times and in all places (by the unanimous testimonies that have reached us through the ages), does “Society” not tolerate that those who constitute it are whole beings? That is to say, beings in full possession of their creative faculties, who do not repress at great cost a part of what they are, considered as so shameful (or as so formidable...) that it is better to ignore that 'she is, and tacitly rule that she is not...

This is for me one of the great mysteries of existence, the greatest mystery perhaps (*).

There was a time, just a few years ago, when my attitude towards the universal reality of repression and conflict was one of militant revolt - of revolt against this "sword", which claimed to cut this in two. which, by its nature, had to be one, was one. These were my intentions again, when writing the Eulogy, five years ago (**). It is

(*) This suggestion is purely subjective, it simply reflects the fact that among the “great mysteries of existence”, it is the one that has a particularly strong sense, in a way that goes beyond the simple intellectual curiosity. It is the only one that arouses in me a desire - that of probing it, of knowing it, of knowing “the final word” (to the extent that it can be known, with the limited faculties that are mine). The difference is the same as in mathematics, between open questions that “I feel good about” (in which I could launch myself immediately), and those that I “understand” in the technical sense of the term, of which I perceive (at a superficial level) the scope, but which “do not make me hot or cold”. The Riemann hypothesis is one of the latter (probably due to my great ignorance of analytical number theory), and the “Fermat theorem” was one of them until a few years ago. It was my “Anabelian” reflections that changed my attitude towards the latter, while my ignorance of the work it sparked is still as great as before.

(**) This episode is discussed several times in *Récoltes et Semailles*, the last being in the note “The Act”, n° 113.

through the long-term meditation work that followed, on the lives of my parents, that this attitude changed. Through this work, which day after day put me back in intimate contact with the manifestations of the conflict in my parents, and which made me patiently trace the manifestations to their meaning and their cause - through this work I finally finished by feeling the mystery of the conflict. The attitude of revolt had disappeared, as if it had never been. It had been a knee-jerk reaction, a simple dispersion of energy. A revolt — against whom? Not against a person or a group of people, against the famous “Them...” in the same boat, and we have been ¹ We are all here for a million years or two... Revolt against “God”? That's all he would have missed.

Deep down, I know well, for a long time (I can't even say since when even if for a long time I pretended to ignore it...) that everything in this world has its good reason for being, and even , if we understand the bottom of things, surely everything is good as it is. Death and the “beyond” of death (if there is such a beyond) is one of these things. It is a mystery, and if there is a “faith” in me on this subject, it in no way consists of “articles of faith” on the existence (or non-existence) of a beyond and on its particularities, but simply in this simple assurance: that things are perfect as they are, including everything that concerns death, and also everything that concerns birth, which is just as mysterious. For a long time, however, I had excluded “conflict” from the number of these things — I took it as a sort of “blunder”, an unacceptable blemish, a stubborn and absurd (even revolting) “quack” in the concert of the Creation. It was enough for me to finally become somewhat intimately aware of the conflict, instead of wasting myself pretending to fight with him, for my relationship with him to be profoundly transformed.

The mysteries of death and “after death”, of birth and “before birth”, are not specific to our species. The questions they raise have meaning for all living things, perhaps even for everything from the electron to the nebula. The mystery of conflict, on the other hand, seems to me to be specific to man, to the human species (*). It appears to me as the great mystery about the particular meaning, the particular destiny of our species. The “explainers”

(*) (December 3) It will perhaps be objected to me (with reason) that conflict, in the form of aggressiveness and clashes between individuals or groups of individuals, exists within species other than the OUR. When I speak here of “conflict”, I am thinking of the specific form that it takes in human society, and in particular of its deep links with division and repression within the person — repression of the major part of one's being, and notably repression of one's means of perceiving reality, and of perception itself. The various

"tions" which have been given by ethnologists and psychologists, at least those of which I have heard, are visibly nothing other than rationalizations, to justify the repression suffered and internalized, as essential to the good functioning and for the very existence of society; a bit like in a society of penguins or one-legged people, there will be no shortage of eminent theorists to prove by A plus B (without anyone thinking of contradicting) that a society where people would have the use of both arms (or both legs) could not work under any circumstances (*). These are justifications sewn with white thread, striving to evade a mystery through explanations that present themselves as "scientific". In fact, the question of the origin and meaning of conflict (or repression) in human society remains purely rhetorical, as long as the person who pretends to ask it has not gone through intense and in-depth understanding of the conflict itself, and the origins of the conflict in it. In the absence of such self-knowledge, this question (just like questions about the nature of freedom, or love, or creativity) is a modern equivalent of the medieval question of the famous "sex of the angels" — an exercise in style, nothing more, to manage to "fit in" what needs to be fit in anyway. This question is not strictly speaking a "scientific" question, a question whose examination does not presuppose maturity, but simply a certain preliminary knowledge, and a certain level of intellectual power or agility (**).

forms of repression seem to me to be rooted in what appears to me to be the most crucial of all, so-called "sexual" repression, which inculcates shame of one's own body and of the functions and impulses of the body (or at least of some of these functions and drives). These are mechanisms unknown outside of the human species, as far as I know. I am perhaps wrong to use the terms "conflict", "division", "repression" almost as synonyms, or at least as terms which designate different aspects of the same reality. I explain a little about the meaning that the word "conflict" has for me in the note "Parents — or the heart of the conflict", n° 128.

(*) Just as in the days of slave societies, for "the best minds" (who were also served by slaves) as for the others, it went without saying that "no society without slaves". It seems that Plato had to have the unexpected fortune of finding himself a slave to begin to see things differently.

(**) (December 3) That the question of the meaning of the conflict is not within the purview of science could raise the expectation that elements of an answer could be found in myths and religions. However, it seems to me that this is not the case. From what I know, it would seem that one of the essential functions of these, if not their main function, is to establish a "law" which, essentially, consists of a "package" of prohibitions through which repression materializes, in a particular society. This law, presented as

In this case, it is not for me to try to guess as best I can by what mechanisms repression was established in human society, that is to say to find an explanation of the fact of repression . Even assuming that we arrive at a plausible, even convincing, scenario, I wouldn't feel much further ahead. This will perhaps shed light on a certain interesting aspect of the mystery – the “mechanical” aspect in short – without penetrating it. No more than the detailed results of paleontology and molecular biology, nor even the profound ideas of Darwin, really penetrate the mystery of the appearance of life and its creative flourishing on earth, during the three or four billions of years have passed. What interests me, in the mystery of the conflict, is not the mechanical, scientific aspect, an aspect external to me as much as the famous “Fermat's theorem”. But this is the question of the meaning of the conflict. This meaning concerns me in an immediate and essential way, as it concerns each of the countless men and women, who have torn each other apart and killed each other over the course of countless generations, and who have transmitted to their children the conflict taken over from their parents.

That there must be a meaning to the conflict, and that I can know this meaning to some extent, is surely part of the “faith” that I spoke of earlier. This is for me an obvious thing - and this very familiar “feeling of mystery”, that there is something deep to be probed, tells me at the same time that this “something” is precisely this sense. The “faith” in question is covered with a faith in my faculties, when they reveal to me, here without the shadow of a doubt, that there is before me a “meaning” to discover.

Perhaps one day this meaning will become apparent, as if I had always known it! This mystery in no way seems distant or unapproachable to me. It presents to me as a very close thing, which it would be up to me to know more intimately. And surely I now see a path by which to approach it, or rather an aspect which already seems to be sending me a friendly sign. Because after all, conflict has a lot to teach me, and it has already taught me a lot...

(132) (November 22) This makes two consecutive notes where I see myself embarking on excursions that are outside the program - this time I will be careful to start first with what is was foreseen, for once. I would like to examine

of sacred essence, does not have to give itself justifications, nor explain its “meaning”, and even less the common sense of this and other laws, which govern other societies.

one of the “typical situations” mentioned (without further clarification) in the previous note, situations likely to arouse antagonism towards the father, and more profoundly, a rejection (more or less radical) of virile traits in oneself (which rejection finds its symbolic expression in the rejection of the father). I had remembered the situation in question from the reflection of November 18, ending with the note “The Enemy Father (3) — or yang buries yang”. My intention was then to put my finger, in this “typical situation” at least, on a direct link between refusal of the masculine and refusal of the feminine.

The specific case closest to me, and on which I had worked for a long time, was that of my mother. All her life, she had indulged in a barely disguised contempt for everything feminine, she had modeled herself on excessively masculine values, and at the same time her relationship with men had been, since her adolescence, a “viscerally” antagonistic relationship (*). I was very lucky that my mother spoke to me very freely about her life since her childhood, and to have very detailed autobiographical notes up to the first years of her life together with my father, not to mention a voluminous correspondence. This, in addition to what my own experience in contact with her gives me, is a material of exceptional richness, which I am far from having exhausted. I worked on it enough, however, to have felt, without doubt, that the double refusal in her that I have just mentioned, refusal of the feminine and antagonism towards the man, had its root in a torn relationship with father. This one, an endearing man in many respects, generous, honest, and affectionate, had become embittered during a long social decline in post-war Germany (that of 14–18 I mean), as there were so many. To tell the truth, this decline had started even before, from the status of a well-off man driving a carriage, and had led him to that of a traveling shoeshine boy. Under the spur of worries and disappointments, his angry temperament sometimes turned into family tyranny, for which his wife, in fragile health, especially bore the brunt. My mother, deeply attached to her father as to her mother, was revulsed by these episodes of paternal tyranny, suffered in silence by her mother, who sometimes could not bear it but who never complained. The child was passionately identified with her mother, the victim of paternal arbitrariness, and at the same time the role played by her mother (the role of victim, the passive role — “the role of a woman”...) appeared intolerable. There was

(*) Unlike the contempt for the feminine, this visceral antagonism, which appears through a vehement and eventful emotional-mental life, remained unconscious throughout his life. I only realized this during my work from August 1979 to March 1980.

this identification with the mother, expressing itself through a revolt, a visceral antagonism towards the father, and at the same time there was this startle “I will never be like her” (who endures without revolting), a start which does not could only mean at the same time “I will never be like women”.

But even more profoundly, there was also the desire for this power of the father, of man, which allows him to dominate as he pleases. And my mother's life was dominated and devastated by this consuming passion to dominate; and above all, to dominate and break the man - the very one who aroused in her such a surge of angry revolt, the one who by his nature was supposed to dominate her - as her father had dominated her mother, suffering, pale and helpless, his power.

I was going to write here that the reflection now “joins” that pursued in the note “The vehement wife (the reversal of yin and yang. g)”, of November 12 (126). As I no longer had a very clear memory of this note, I just reread it. Strangely enough, I had forgotten that this note was prompted (just like today's) by my mother's “case in point”. I felt reluctant to develop this case at all ten days ago. If I returned to the charge today, overcoming this reluctance (which I had also forgotten in the meantime!), it is undoubtedly because there was an aspect which had remained unclear in the situation examined. I had also forgotten that the starting point of today's note, “the intention to put my finger... on a direct link between the refusal of the masculine and the refusal of the feminine”, had already been the motivation initial reflection of ten days ago, naturally following the question which ended the previous day's note “Supermom or Superdad?” (125). In fact, the last sentence of this reflection from the 12th:

“It doesn't take much to see the “missing link” between... ”, it would seem to say that I then believed I had accomplished my task for the day (to establish such a link). If I completely forgot that I had already updated this link, and even that I had asked myself this question before the note of four days ago (on which I continued the reflection of 'today), it is undoubtedly because I had not yet been fully convinced by the brilliant conclusion that I have just cited, formulated no more than six days before this note “The Enemy Father (3) — or yang bury yang”. The situation becomes clearer by quoting the entire sentence:

“It doesn't take much to see the “missing link” between antagonism in Superfather (finding its symbolic expression in the burial of the said one), and the contempt, the refusal of the “feminine”, and more profoundly the denial of “the woman” in oneself (which finds

vera perhaps expression in "The Funeral" symbolic of a "supermother", under a plethora of dithyrambic epithets with double use...).".

In this conclusion, there was a step missing, which made it hasty: it is the link between "antagonism to the Superfather" and the refusal of the "masculine", a link which only appears in the reflection with the quoted note of November 18 "The enemy father (3) — or yang buries yang". Antagonism towards the Father then appeared to me as the symbolic expression of this much more crucial reality which is the refusal of the yang, "masculine" side in one's own person.

In the "symmetrical" case of the refusal of the feminine, this link between the symbolic expression and its deep meaning had been perceived from the appearance of the "Supermère component", in the note of November 1st "The funerals of the yin (yang bury yin (4))" (124). This is how the two "opposing" aspects appearing in the note of the 11th "Supermaman or Superpapa?", namely the burial of the Father and the burial of the Mother, were seen the day before yesterday as symmetrical manifestations of refusal of oneself (or self-contempt), taking on the double face of the refusal of the masculine and the refusal of the feminine in one's own person.

In the note of 18 "The Enemy Father (3) — or yang buries yang", I had also limited myself to the case of a male "subject" — even though the most extreme case known to me is my mother's! This was also entirely forgotten in this reflection and even for ten days already (if not hidden under the term "my parents", in the note of November 17).

It is the knowledge I have of my children and their relationship with me that made me feel four days ago a link between antagonism towards the father, and the refusal of the masculine in oneself. To tell the truth, for each of the four (among my five) children that I had the opportunity to know quite closely, I have more than once felt in recent years, behind attitudes of inveterate antagonism towards me, their father, a refusal of the virile side of their being, and above all, of the impulse in them which launches them into meeting the world - and which makes them resemble a rejected father 1 I do not I never asked the question if this was a general fact; or rather, there was in me a sort of unexpressed presumption that it must indeed be so, without me ever feeling the need, before the reflection of four days ago, to formulate the thing clearly to myself, and even less to examine it with any care. To tell the truth, this type of "general" question was not at all one of those that I asked myself in meditation, the purpose of which had been more down-to-earth: to understand myself, and this above all through my relationships with others — and through this also, ever so slightly, understanding "others", that is to say those with whom I entered into

relation.

Of course, in the reflection four days ago, when I suggested that there must indeed be this link, that antagonism towards the father was the expression of a deeper conflict, namely the rejection of "the 'man' in itself was still a mere presumption, suggested by my very limited experience. This link seems at least plausible to me, and more particularly in men, but I do not claim to "see" this link in general. I do not have this "inner conviction" about him, which I so often choose as my very sure guide. In the case of my mother for example, I see clearly that antagonism towards the father was the source of an occult and virulent antagonism towards virile traits in a man, but not for such traits in a woman, although on the contrary. It is true that the mere fact of fully valuing virile traits, and of cultivating them excessively in oneself, perhaps does not necessarily mean that one fully accepts the yang side of one's being; this would mean, after all, also accepting the "yin in the yang" which is spontaneously found in any "dominant" yang trait, which of course was not the case for my mother.

But the reflection is taking a somewhat dialectical turn here, which does not inspire confidence in me! I prefer to refer instead to the direct perception I have of my mother's person, as it was refined by my reflection on her life and that of my father. I don't remember ever having the feeling of a refusal in her of something in her that was fundamentally "manly". On the other hand, I strongly perceived in her this contradiction, or rather this tearing, of the one who cultivates in herself (like so many weapons), and who cherishes more than her life, the very traits which, in man, arouse in her such vehemence, such a violent urge to fight and break - and whose life has crumbled (and was consumed prematurely) by this fever of constantly encountering and confronting and reducing to mercy in others this same force, on which she has staked everything and which devastates her own life, as it devastates the life of all those who are dear to her.

(133) (November 24) The cases mentioned in the reflection of the previous note, from the day before yesterday, are not the only ones to my knowledge, which confirm this presentiment that a superyang imbalance in the father (that this imbalance takes despotic forms or not), has repercussions in children through a refusal of yang, which in turn can be expressed under many different faces. In the case of boys, in the cases which are known to me and which are present in my mind at the time of writing, this refusal takes the form of repression (more or less

complete) of the virile side in his own person - and this refusal will surely follow him throughout his life (barring profound renewal, which is certainly extremely rare). My mother's case makes me see that it is not always the same for a girl - unless there was also a certain refusal in my mother of the virile side of her being, 'expressing in a more subtle way which would have escaped me until now (*). What is striking in her case, however, is the extreme opposite effect - that of an excessive development of virile traits in her (in addition to an aversion to everything feminine). I have also been aware of other cases along the same lines, among men (for example among my mother's father) - that of a revolt against the father, expressed through the development of a personality strongly virile, capable of confronting the father "on equal terms". As I have not had the opportunity to experience such a case up close, I tend to believe that it must be rarer. But it really doesn't matter.

If there is one point in common with all the cases that I have been aware of directly or indirectly, it would be this: a superyang imbalance of the father has repercussions on the child through an imbalance, which can be in the yin direction (perhaps the most common case), or in the yang direction (*).

In all the cases that come to mind (without thinking here of making a systematic inventory of all those of which I have been aware), this imbalance is accompanied by a re-relation of antagonism to the father. I have the impression that it is also accompanied by a visceral antagonistic attitude towards third-party men, in whom the yang traits are strongly marked, at least when these are not balanced by the traits complementary yin — that is to say, with respect to men in whom a superyang imbalance prevails, reminiscent of that of the father.

Such a superyang imbalance (just like the opposite imbalance) is certainly likely to cause discomfort in anyone, as I have already had the opportunity to observe (**). But this discomfort does not necessarily translate into an automatic antagonistic attitude — it

(*) A similar situation is that of a mother with a dominating, invasive temperament, a sign of a superyang imbalance. In the two specific cases that are known to me closely, this is translated in the girl by a very thorough repression of the "virile" traits in her.

(*) When "I speak here of "imbalance in the yin direction", this does not mean a development (perhaps excessive, unilateral) of one's yin traits, but rather a repression of yang traits, which is not all the same thing. In the opposite case, described as "imbalance in the yang direction", it is indeed an "excessive development" of yang traits, which often goes hand in hand with a more or less extensive repression of certain yin traits.

(**) In the note "The Superfather (yang buries yin (2))", n° 108.

is not rare, for example, for it to resolve itself (or at least for it to disappear from the field of conscience) by an attitude of submission, of more or less unconditional admiration, or allegiance.

The association comes to me here that it was these tones which were the more common certainly, in relationships with my person (haloed with prestige), within the mathematical world - at least among those of colleagues (or students) who (as I wrote elsewhere) "did not feel protected by a comparable reputation", or (I will add here) those in whom a certain inner balance, a certain spontaneous knowledge of their own strength, did not exclude such overhangs. But undoubtedly it is in the nature of such a relationship of "allegiance" that it conceals a hidden antagonism, which manifests itself (openly, or in a way that remains still occult) when a favorable opportunity presents itself...

I have just followed some associations, which take up and complete the reflection from the day before yesterday (in the previous note "The reversal of yin and yang (2) — or the revolt"), and by there, also that of the note of November 18, "The enemy father (3) — or yang buries yang". They make me realize that the relationship between a certain state of yin or yang imbalance in one of the parents (in this case, a yang imbalance of the father), and the repercussions it has on the child, is not univocal, as I hastily suggested. Without a doubt, the form under which the parental imbalance is transmitted, in this case from the father, must depend on many other factors, both the family environment (and more particularly, the person and the mother's attitude), as well as the child's birth temperament (*).

But to tell the truth, it was not in that direction that I thought I was going, when I started thinking about it earlier. Rather, I thought I was pursuing a completely different association of ideas, which has been present since the reflection of November 12, where it was introduced for the first time once in reflection the dynamics of the reversal of the yin and yang roles (in the note of same name, " — or the vehement wife", (126)). Perhaps the reader will have made the connection for his part - the fact remains that when I raised this question on November 12, then the day before yesterday on the 22nd, there was somewhere in my head, as if muted, the thought of two other occasions where there had already been talk of "reversal", during this reflection-

(*) Thus, I note that in each of my mother's three brothers (all younger than her) continued a very different evolution from that of my mother (who was a bit of a swan in the brood of ducks), and also different from that of the other brothers.

ion on the Burial. The first time it was in the note of the same name of Cortège V, “My friend Pierre” (note (68) of April 28). The second occurrence is found, in a footnote, in the reflection of September 30, which is part of the note “The Funeral Eulogy (2) — or the halo and the strength”. There is even a third such occasion, but between the lines, at the beginning of the reflection due two days later, which opened the reflection “The key to yin and yang”. (this is the note “The muscle and the guts (yang buries yin (1))” (106), from October 30.) This is the content of the famous “association of ideas, aroused by the Eulogy in three parts”, to which reference is made — the very one which triggered me that very day, to start on this digression on the yin and the yang which I have been pursuing for almost two months. Now would perhaps be the time or never to spill the beans, since I've been talking about it, not to mention that I've already been thinking about it since the day after May 12, after the note “The Funeral Eulogy (1) — or compliments”, more than six months ago.

The common point in these three situations is that it is a “reversal” of roles between my friend and ex-student Pierre, and me. In the two cases which were clearly formulated, recalled a moment ago, I appear as the “collaborator” of my ex-student (if not outright as his student!). The first time is like the one who would have contributed (in a messy way certainly, but sometimes interesting, we admit) to the development of the “powerful tool” of cohomology - -adic by my brilliant predecessor and friend. The second time, when we are cited in one breath (for having “linked topology, algebraic geometry and number theory by “interdisciplinary” means...”), it is by the clever means of a typographical “forgetting” that the same reversal of a reality is suggested, as if by the greatest chance (*). The meaning of this reversal becomes more tendentious than a simple question of precedence (within, here, an institution that I was alone, with Dieudonné, in “starting” at the scientific level, but which I had left for a long time), when we pay attention to the choice of laudatory epithets (“theories of legendary depth” for one, “brilliant discoveries” for the other who is also entitled to underlining, with all the world except me). This meaning was illuminated “in a striking way” in the reflection “The funeral of yin (yang buries yin (4))” ((124), of November 10), through which the reflection on yin and yang is seen “landing” suddenly in the middle of the funeral ceremony: to one the accumulation of epithets (dithyrambic at times) yin and superyin,

(*) As I was able to realize previously in the note “The massacre” (n° 87), chance made
Often things go well, as long as the typographers and movers get involved!

to the other the yang and the superyang...

This is what struck me already the day after the “Compliments” note of May 12, even before having had the leisure to explain it in such detail as two weeks ago. According to the way I felt things then (and which I will have to revisit here), there was a real reversal of reality, or more precisely, a “reversal”, pushed to a caricatured extreme, of a basic reality that I felt as a nuanced, balanced thing. I saw myself as a person with a strong “yang” or even superyang dominance, at least in my most apparent, most obvious traits, and particularly, those which are obvious to others (*). On the other hand, I felt in my friend Pierre a basic temperament with a yin tone, clearly more balanced than mine had been, at the time when we saw each other often and when he acted as a student.

I also believe that this apprehension of reality was essentially correct. If it has happened to me sometimes, over the last few years, and even more recently (**), to sense an original “yin” underlying note within me, it seems to me that I was the first and the alone in feeling it — that it is above all through my yang or “manly” traits, often quite invasive, that I have been constantly apprehended by others (***), both at the conscious level and at the unconscious level — at least as far as personal relationships are concerned. These (apart from romantic relationships), also bring into play above all, if not exclusively, “the boss” in us, what is conditioned. The new fact that emerged during the reflection on yin and yang, knowing that in my work, my approach to things is predominantly yin, “feminine”, does not really contradict what I knew elsewhere. He qualifies it, correcting him on a point where I had tacitly put everything “in the same bag”. And all things considered, it seems to me that the sudden and strong impression that I had within myself, of a caricatured “reversal” of a reality, or more precisely, of an intention of such a reversal deliberate — that this “intuition” was also essentially correct, although sketchy. It is the reality imperfectly grasped by this intuition, which I would now like to explore more closely.

(134) (November 25) I would first have to try to understand this impression more closely,

(*) And this, even more in the years “before my departure”, than now.

(**) In the note “The arrow and the wave” (n° 130, of November 19).

(***) And for myself too.

obvious to me, that the "background note" in the person of my friend Pierre is a yin note. As I perceive it, it is so both at the level of the "me", as I have seen it expressed in particular in its relationship with me and with others, as well as in its work, it is say at the level of the knowledge drive, of the creative faculties in him.

As for the first aspect, obviously he and I were of complementary temperaments, with this additional nuance that what was excessive, what was "superyang" in mine, seemed to disconcert him somewhat, sometimes. It was above all, I believe, this constant projection forward towards the accomplishment of my tasks, this isolation from everything that was not linked to them, which aroused in him a sort of incredulous astonishment, where I felt a shade of affectionate regret - the same regret that I had felt many times in my mother, when she saw me so cut off from the beauty of things around me (*). It was not, strictly speaking, a feeling of discomfort for him, a sign of refusal of a certain reality. At least, I don't remember once having felt any discomfort in him towards me, nor having had the impression of an attitude or movement of rejection, of distancing, or of not if it was just a clash between us. And I have no doubt that this was in no way a deliberate "diplomatic" statement on his part, of someone who had decided not to let anything be revealed. On the contrary, he sometimes expressed this "astonishment" to which I was referring, without any trace of embarrassment or irritation. Obviously, the basic tone in our relationship, and which has never wavered until today (**), was that of affectionate sympathy, untouched by any shadow.

This remains a strange fact for me, and which I believe nothing could have made anyone suspect, before the episode of my departure from IHES (and even then, at the level of what "passes" directly into a person's head). to head let's say) the fact that from the first years after our

(*) My mother, just like my father, had retained until the end of her life a capacity for communion with nature, at the same time as a keen sense of observation for everything that surrounded her, which Both have failed me to this day. This was perhaps the only "yin" aspect of her being that she had not repressed within herself, that was able to blossom freely. On the other hand, as for "projection towards a goal", which is one of the dominant traits of my "self", it is also, perhaps, the only aspect of my person by which I managed to be even more yang than my mother!

(**) (November 26) If the basic tone has remained that of sympathy, of attraction, this does not prevent the fact that since my departure, over the years and more and more, this relationship has frozen, sclerotic, emptied of what gave him quality of life. I have the impression of finding myself in front of a "shell" so perfectly sealed that nothing passes in one direction or the other. See on this subject the note "Two turning points" and "The tomb", nos . 66, 71.

meeting there was a deep, essential ambiguity in his relationship to my person, through this presence of a hidden antagonism, of a desire at least to stand out from my person, and that of ousting. The latter manifested itself in a particularly brutal way (which left me speechless at the time), although infinitely subdued in its manner, during the episode of my departure from IHES (mentioned in the section "The "eviction" (63)). My friend had recently been co-opted as the fifth "permanent" at IHES, thanks mainly to my warm efforts in this direction. In the "explanation" that took place between us (perhaps there were several, I can't say anymore), he at no time deviated from this perfect and smiling nature, with all aspects of a caring kindness, which made him so endearing.

He then explained to me, without my detecting the slightest hint of hesitation or embarrassment, and even less of antagonism or enmity, or secret satisfaction, that he had from those early years made the decision to devote his life and all his energy to mathematical work; that this dedication to mathematics which was his, for better and for worse, had to come before anything else for him; that the reason why I expected the solidarity support of my colleagues and in particular, of himself (to request the elimination of funds coming from the Ministry of the Armed Forces) seemed to him entirely foreign to mathematics; that he of course regretted that this was a prohibitive circumstance for me, and that, given the "axioms" of life different from his, I was going to leave the IHES for a cause which, from his point of view, seemed without consequence ; but that to his great regret, he could not associate himself, any more than my other colleagues, with a request which was foreign to him, and whose outcome was entirely indifferent to him (134).

I have given here in substance the "manifest", explicit content of my friend's speech, as my memory recalls it, without any effort to try at the same time to rediscover and restore a style of expression, or the atmosphere of an interview, of which I have not retained any particularity beyond what I have said here. The episode takes place at a time when I did not yet have the slightest suspicion that, behind the very innocuous (and sometimes strangely absurd) content of a speech, often expressed in muted, and very clearly, a completely different message. This was surely perceived at the unconscious level, but hopelessly rejected, repressed from the conscious field. As I suggest in the note cited "The Eviction", it surely required considerable energy to succeed in evacuating a message that was nevertheless quite striking 1 it is in this note however, written more than fourteen years later, that I am taking the trouble for the first time to submit this episode for attention

conscious, and to clearly formulate the meaning so long rejected.

I followed the one of the threads, undoubtedly the strongest, of the associations which presented themselves to me. I did it with a certain reluctance, as if by this “digression” I was moving away from my main point. However, I realize afterwards that this is not the case. Without doubt, the image of a person and of a temperament which emerges spontaneously from the description of concrete situations in which he finds himself involved, is more vivid and more convincing than an enumeration of “traits”, which are supposed to be them. surround. Rather than launching into it, I prefer to note yet another association, and engage in another digression, by comparing the relationship examined here to that between Serre and me. In terms of the relationship between our people, the impression that prevails for me is in no way that of “complementarity” as with Pierre, but rather that of an affinity between two temperaments, strongly “yang” one and the other. the other. More than once, during the eighteen years of close mathematical communication, this affinity has manifested itself in occasional frictions, expressed in passing cold spells, none of which has been of long duration. As I remember them, these episodes were caused by movements of casual impatience in Serre, which “goed” badly with my susceptibility. It happened that Serre was annoyed by the obstinacy with which I pursued an idea against all odds, when it seemed important to me. I brought it out at every opportunity, without worrying whether it would “pass” or not, strong as I was with the conviction (which rarely deceived me) of having “the right” point of view. I don't know for what reason, Serre had developed an aversion to cohomological “my big tricks” — perhaps he was simply allergic/ just like An-dré Weil, to all “big tricks”. On the other hand, when I began to develop “my” cohomological yoga, in the second half of the fifties, Serre was practically my only occasional interlocutor — so it was a bad thing! I believe that he only took a cautious interest in this work, and only began to realize that it was leading somewhere, with the development of flat cohomology from 1963, followed by the year even by my sketch of demonstration (“in four strokes of a spoon”) of the rationality of the functions L^* .

It seems to me that the relationship between Serre and me was typical of a yang-yang affinity,

(*) Another point of friction that I remember, undoubtedly even more episodic, was my insistence on connecting the theory of passage to the quotient in algebraic groups and formal schemes (still poorly understood in the 1950s) to questions of “effectiveness” of flat equivalence relations,

the opposite of the relationship with Deligne, which was a yin-yang complementarity. In terms of mathematical work and the style of approach to mathematics, however, the situations were reversed. As I already had the opportunity to say in a previous note ("The nine months and the five minutes", (123)), I feel Serre's approaches and mine as complementary, in the sense of a complementarity yang-yin. It is this very complementarity which was the occasion for occasional frictions, due to strongly yang temperaments in both his and mine.

The relationship between Deligne's and mine's approaches to mathematics was quite different, without a doubt. I can say, without any reservation, that it is with Deligne more than with anyone else that I have had this experience of perfect affinity, in our ways of seeing and approaching the mathematical questions which were of interest to both. This experience was renewed each time there was mathematical dialogue between us. It is very clear to me that this is in no way a fortuitous circumstance, which would be due, for example, to the influence that I did indeed exert on him during decisive years of apprenticeship. This affinity did not develop over a long period of familiarity - it was, on the contrary, present from our first contacts, which was the force at work to create, almost overnight, a bond of such strength, rooted in our common passion. This is a deep affinity between two approaches to mathematics, pre-existing our encounter, and which express (I am convinced) an important aspect of the original temperament in both — a "tone basic" yin in the apprehension and discovery of things (*).

or even (later) the transition to the quotient in the context of fpqc sheaves. These points of view, first taken up by Gabriel and Manin, are today commonplace almost everywhere in algebraic geometry and even elsewhere. It seems to me that Serre's reluctance dissipated, from the moment when I finally took the trouble (as no one else seemed willing to bother) to prove in black and white the first theorem of effectivity, for flat and finite equivalence relations.

(*) (November 26) The reflections in this note, in continuity with those in the notes "The Rising Sea" and "The Nine Months and the Five Minutes" (n^os 122, 123), seem to suggest for any person the presence of a "double signature", or a double "basic tone": one (the most apparent undoubtedly) concerns the "boss", that is to say the structure of the "me" and the mechanisms that govern it; the other concerns the "Worker", aka the "child", that is also to say the drive for knowledge, discovery of the world, creation (including, of course, the love drive). (It is, it is true, the most common thing in the world to take the boss for the worker and vice versa, that is to say, to take bladders for lanterns - but that is yet another story ...)

So for me this basic double tone is yang (boss)-yin.(child), for Serre it is yang-yang, for Deligne

There is no question of “demonstrating” such an intimate conviction, any more than I would dream of wanting to “demonstrate” that the basic tone in my own mathematical work (let’s say) is yin, “feminine”. At most, it is sometimes possible, for such things, to “pass on” a feeling from one person to another, and trigger in others an awareness of something that they had not previously had. There paid attention; something that had escaped his conscious attention, yet was already “recorded” somewhere, in diffuse form. The situation is surely confused, as so often, by the efforts made by the person concerned to mold themselves according to the values in honor, the yang, “masculine” values. While I clearly see that his mathematical work and the (considerable) influence he exercised are deeply marked by his ambiguous relationship to me, I nevertheless doubt that the efforts in question to erase a basic temperament appeared to mine, challenged — that these efforts have been crowned with success. Certainly the strict dispositions, which were not yet in play in him before my “departure”, have for a long time prevented him from looking (at least in writings intended for publication) on things too far below him, or on those who are anathema today. Yet it seems to me that in what he publishes, he has not been able to help but follow the style of approach which is spontaneously his own. This is the impression at least that I had when leafing through the few parsimonious prints that he was kind enough to send me beyond the grave, after my “death” fifteen years ago.

years.

But of course, my apprehension of Deligne’s mathematical approach draws above all from the years before my “death”, between 1965 and 1969. For five years we were then both strongly connected to the same things, and mathematical-matics communication was uninterrupted (except for a year he spent in Belgium), and more

it is yin-yin (without there being in me any feeling of doubt, of hesitation on this subject). On the basis of relationships of sympathy with one and the other, it is this “distribution” of “signs” (or “tones”) which means that, at the level of relationships between people, my relationship to Serre either of affinity and my relationship to Deligne or of complementarity, and that it is the opposite for the relationships between our approaches to mathematics.

Among the four possible “distributions”, only the yin-yang double tone remains. Given the disfavor of yin in our macho society, a disfavor which will tend to mainly affect the first tone (the “your boss”), I presume that the double-tone yin-yang must be less frequent than yang-yang. However, I know at least one famous mathematician, who seems to me to correspond to this signature. Of course, the second tone, or “original tone”, is more difficult to define, given that it will often be “blurred” by external influences, by the desire to be and do “like everyone else”.

intense than the one I had with any other mathematician, including even (it seems to me) Serre. I have had the opportunity more than once to talk about these years (*), of intense creativity in both of them. They were marked in my friend by an impressive start, which nevertheless did not surprise me, as it seemed so self-evident to me. It was the time when his very strong sense of substance, of what is tangible behind appearances, more abstract, or in the most "general nonsense" formulations, was not yet obscured by complacency, nor by the burial syndrome that appeared later. He then made numerous contributions to these themes (extreme-yin, I might say) that subsequent consensuses (with his unreserved blessing) have long ago excluded from the rank of "serious mathematics" (**): formalism topos, cohomological "big stuff"... I review and highlight these contributions, with obvious pleasure, in the introduction to SGA 4 (*). Other such contributions (among others even more "muscular", which immediately placed him among the "great stars") are found in my double report 1968/69, which is discussed in the note "The inauguration" (**).

(1341) (November 26) (***) Typical detail, these military funds, about which no one wanted to lift a finger, as long as it was questioned that they would be the cause of my departure, were abolished on same year of my departure amid general indifference! We never knew, sometimes that it might upset a distinguished guest who was a little fussy about this chapter... The funds in question only represented a small part of the IHES's resources (5, if I remember are correct). Without having had to consult, there was between my four

(*) See in particular the notes "The child", "The funeral", "The eviction", "The investiture", "The knot" (in procession V, My friend Pierre), and the note "The heir" (in Procession IX, My students).

(**) (November 26) I also recall that part of this mathematics was exhumed with loud cries and without my name being pronounced, during the "Pervers Conference" in 1981, and the year after with the "memorable volume" LN 900. See on this subject the notes "Iniquity - or the meaning of a return", "Thesis on credit and comprehensive insurance", "Remembrance of a dream - or the birth of motifs",

nŷ s 75, 81, 51. (*) (November 26) These comments were added in a second edition of SGA 4, completely revised (especially for everything concerning sites and topos). They can give the impression that Deligne had been associated with the emergence of the main ideas and the main results which constitute the "powerful tool" of étal and -adic cohomology. So I brought grist to the mill of Deligne and my other cohomologist students, sharing (ten years later) the remains of a deceased master!

(**) I remind you that this double relationship is reproduced in this volume 1 of *Réflexions Mathématiques*.

(***) This subnote to the previous note ("Brothers and spouses — or the "ble signature" nŷ 134) comes from a footnote to it. (See reference at the end of the third paragraph of this note.)

colleagues at IHES (not counting the director) a great unanimity, to seize an opportunity to get rid of me (almost at the same time, moreover, as the director himself). And me who was believed to be indispensable, and loved!

(December 6) The two physicists from IHES, Michel and Ruelle, were unhappy that the "Physics" section at IHES was a bit of a poor relation, next to the mathematics section, represented by Thom, Deligne and me (including two "Fields medals"!). This imbalance had just increased by the co-optation of Deligne (which was also done with the unreserved agreement of Michel and Ruelle, in fact unanimously by the IHES Scientific Council, with the exception by Thom). There had been consultation between physicists and mathematicians at IHES, to put pressure on the director, Léon Motchane, in order to re-establish a fair balance between the two sections, as far as possible. I presume that nevertheless my physicist colleagues should not have been unhappy to see this imbalance effectively compensated, and much sooner than they would have hoped, with the sudden prospect of my departure.

As for Thom, he was upset that Deligne's co-optation was against his formal opposition. He had described Deligne's contributions, all unpublished, which I reported in my sparkling "investiture" report, and which clearly went over his head, as simple "exercises"! what shocked him about Deligne's accession to "permanent" status at IHES, on an equal footing with himself, was that the young Deligne — he was then 25 years old — was not already covered with honors. According to Thom, accession to such a position should come only as "the crowning achievement of a career". We were far away, only less than ten years later, from the heroic years when I welcomed a still unknown Hironaka in makeshift premises... Still, Thom's bitterness was such that he thought then (according to what he told me himself) to leave the IHES, to return to his professorship in Strasbourg which he had taken care of (more cautious than me recently, by leaving the CNRS for the IHES) To conserve. By my warm sponsorship of Deligne I had been the first and main cause of his frustration, and I presume that Thom must have found, in his heart of hearts, that I only got what I had deserved by my impertinence, by seeing myself forced to leave IHES just a few months after having introduced my brilliant "protege" there!

As for the director, at a time when he saw himself cornered by the unanimous desire of the permanent staff, urging him to leave, he then (according to a proven tactic that he used to perfection)

played the game of “divide and rule”, using the issue of military funds as a convenient means of diversion, and at the same time getting rid of the most troublesome of its permanent staff. (A masterful reversal of the situation, while the secrecy he had maintained around the presence of these funds appeared to me as an additional and compelling reason to force him to leave 1) This did not prevent that after my departure didn't take long, and his departure from IHES closely followed mine - from the one who, like him, had been part of IHES from its first precarious and heroic years, and who, with him and according to his own means, had ensured its credibility and sustainability.

(135) (November 26) Among the many affinities between Deligne and me, in the years before my departure, there was this pleasure that he took, just like me, to develop (when the need arose).) what I call “big stuff”. Most, if not all, of my energy as a mathematician has been devoted to such tasks. If it was a question of building a house, doing “big things” would mean: not limiting yourself to making a tempting sketch of the house, or even two or three from different angles, nor even making detailed plans, with ribs and all; but to bring and cut one by one the stones which are to be used to build it; assemble them into walls, install the beams, rafters and tiles or lozes; install doors and windows, sinks, pipes and gutters; and install there (if it is indeed a question of living there yourself) even the curtains on the windows and the drawings on the walls. It can be a nice-sized house, or it can be just a one-room shed - the spirit of the work is nevertheless the same. And from the moment we live there, even though we have done everything thoroughly and to the end, we quickly realize that the work is never finished, that something new always comes along - at least when the “big stuff” sorry, the house is large.

Most of my energy as a mathematician, between 1955 and 1970, was devoted to starting and developing four big “big stuff” with a bit of zinc – without of course having reached the end of any of them, see above. These are, in chronological order, the cohomological tool, the diagrams, the topos, the motifs (*). These four master themes are moreover intimately linked to each other, as would be distinct buildings forming part of the same farm or hamlet, and which all contribute to the same purpose. And each of these “big thugs” made me

(*) The “cohomological tool” did not wait for me to exist. This is a question of a certain personal approach, which led in particular to the “mastery of flat cohomology” (which seems to me to be the main technical and conceptual ingredient in the demonstration of Weil's conjectures, completed by Deligne) . This is the one that

led imperatively, without my having sought it in any way, to develop other “big contraptions” already much smaller — a bit like for the construction of a large house or even an entire hamlet, we are led to install an oven limestone, a carpentry and carpentry workshop, etc. For example, each year the need arose again to increase the arsenal of categorical notions and constructions, with two or three (small) additional “big stuff”. People who come ten or twenty years later, who have found everything ready and are comfortably installed in the place (and even others who know deep down what to expect), shrug their shoulders with an air of condescension about so much illegible “nonsense” (Deligne dixit) and splitting hairs (“Spitzfin-digkeiten”, as an illustrious German correspondent called them, although well disposed towards me *)). These are people who have no idea what it is to build a house on the ground, and who will probably never build one, content to play owner in those that others have built. for them, with both hands and with all their heart.

I was a little sharp just now, seeming to put my friend Pierre in the bag of those

I continue again, twenty years later, with “A la Pursuit des Champs”, in the “non-commutative cohomology” (or “homotopic”) direction. For the “commutative cohomology” direction, I give some details about this approach in the beginning of the note “My orphans” (n° 46). The four “big stuff” in question here essentially correspond to the five “key notions” in the note cited, except that the “cohomological tool” corresponds to two such notions or ideas (namely, derived categories, and the formalism of the “six operations”).

It is interesting to note that the only one among the four “big stuff” (or main research themes) that is named in my Eulogy (see notes n° 104 and 105) are the topos. As luck would have it, it is also the one, among the three buried by the care of my cohomologist students, the one which had not yet been exhumed under alternative paternity, at the time of the Eulogy. (This took place in 1983, the derived categories were unearthed in 1981 during the Pervers Colloquium, and the motifs in 1982 in the “memorable volume” LN 900.)

(*) My correspondent kindly assured me, just to please me, that he knew well that my work was “to a large extent free from such defects” (“weitgehend frei von diesen Ubeln”). For him, these were “defects” into which we could not fail to fall (such as the “Spitzfindigkeiten” of categorists of all kinds), if we took it into our heads to develop a theory (as I suggested with regard to motives) on foundations which would still remain conjectural. Here we find the visceral refusal of the “mathematical dream” discussed in the section “The forbidden dream” and in the three following sections (sections 5 to 8). This is yet another aspect of an automatic repression of any “yin”, “feminine” approach or approach in mathematics.

who "have no idea what it is to build a house... *". Not only did he see me at work, but it was with pleasure that he built some of his own, as if he had never done anything else in the twenty years he had been in the world. Besides, this story of "big stuff" and building houses and all that (in case the reader hasn't already noticed it...), is yet another aspect, or another image, to identify something that I had previously tried to grasp as best I could by the image of "the rising sea", then by that of a train of waves following one another (*). This is the "yin mode", or "feminine" mode, of apprehension of reality, and the approach which corresponds to it to absorb it and to release an image, which restores this reality with flexibility and fidelity .

So here I am returning, by a detour through my own person, to my initial purpose - that of "passing on" this strong perception which is in me, of a kinship, of an essential affinity between the approach to mathematics in Deligne, and at home. But in this aspect at Deligne that I have just tried to identify with the help of an image, there was a complete "blurring", it seems to me, after my departure and death in 1970 — I believe that the "big tricks" are completely absent from his "after" publications. Certainly he could not have reasonably used this trait in his disowned master, to undermine him, while tolerating that this same trait flourishes in him, in accordance with his own nature.

It is true that if it is not a question of following an inner need, the expression of an elementary impulse, but simply of increasing prestige through the accumulation of results which "make a mark", my friend n He really had no interest in continuing to bother with (more or less) "big stuff". Already in my time and outside of the Bourbaki group (itself engaged in a good-sized "big rig"), this was already something rather frowned upon. Nothing surprising in this, moreover, given that the "superyang" blinders, in our society and in the consensus of the scientific world, do not date from yesterday. This was perhaps the main reason why the houses that I took pleasure in building remained uninhabited for many years, except by the mason himself (who was at the same time also the architect, the carpenter). etc.). And even today, even the part of my work that has long become common heritage (and even where there is still no other reference available than my writings), remains surrounded (at least for those who do not part of the beautiful world and who do not make it their duty to look down on it) with an almost halo of fear, as if entering it would require almost superhuman faculties. It's true that it is

(*) See the two notes "The rising sea" and "The arrow and the wave", n^o s 122,

often long and it could not be otherwise, given that everything is well and truly done, and by hand and in detail, from start to finish, with even at each turn of the chapter explanations telling where we are going with this (*). It didn't seem to me that my students, at the time they were working with me, were struggling too much to get into the swing of things. But it was at a time when the “tangible results” had already won the support of the mathematical establishment, and my students worked with the assurance of playing a “safe” card. I have the impression that since then, more than one has taken pleasure in accrediting the “illegible” version (**), in accordance with a fashion that is much more tyrannical even today than it was. demon time.

But even apart from the desires of fashion, when we make calculations of profitability and “returns”, we will surely take care to avoid “big stuff” like the plague. Developing a “big thing” and making it available to everyone is a service we provide to a scientific community, which often reluctantly accepts it. I have never been too bothered by this very understandable reluctance; I knew that I had “the good stuff”, and that sooner or later, people wouldn't be able to stop themselves from coming there. But even then, the “returns” in terms of “credit” can only be modest.

If I made a quantitative assessment, not of the notions, questions, ideas that I introduced and developed in the fifteen years 1955–70 and which have either entered into the common and anonymous heritage, or been buried without music (in waiting to be exhumed with great fanfare), but of what one might call “great theorems”, I doubt I would even find ten. Perhaps the total time directly devoted to their demonstration is of the order of a few weeks, or a few months at a time. There was not a single one before 1957 (Riemann-Roch-Grothendieck theorem) — and yet I know that I had not wasted my time during the previous three years. If it is even true, none of the “great theorems” would be demonstrated at the present time (even though it was in no way there

(*) It is only over the years, I believe, that I have realized the need to include such explanations, often purely heuristic, to try as far as possible to communicate to the reader a sense of “direction” and purpose, strongly present in me at the time of writing. Today, this seems much more essential to me than careful writing of the key demonstrations, that the reader will be happy to reconstruct or even construct your pieces in turn, as long as he feels where we are going, and that this “where” attracts him...

(**) This is only obvious to Deligne, who again told me this in person during his recent visit. It was SGA 4 (more than half of which develops the language of topos with extreme meticulousness), declared “illegible” by my friend, as justification for his brilliant “operation SGA 4 V”.

my main concern), if during these fifteen years I had not stubbornly followed a passion to understand within me, trusting the mode of approach that it dictated to me, whether it was “profitable” or not (in terms such desiderata or such others), or whether it is well seen or not in the great world. This approach consisted each time, starting from a strong initial intuition, or a handful of such intuitions, to take them as a solid and foolproof thread which pulled me into the unknown; and in doing so and to change the image, I could not help myself gradually, with the unknown in short making itself known, like rough stones that one “knows” by cutting them, to build houses, some very large and some not so large, and all fit to be inhabited, — houses where every nook and cranny is intended to become a welcoming and familiar place for more than one. The doors and windows are plumb and open and close without cracking or squeaking, the roof does not leak and the chimney is drafty. It is not necessarily Notre Dame de Paris, and there is not a “great theorem” hidden in everyone’s bread bin — it is simply houses that had to be built, and which I built to be inhabited. I found my joy in making them, beautiful and spacious, knowing well that the work I was doing, alone or in company, had to be done and that at any time it was as good as I could make it.

It is this spirit that I also found in the Bourbaki group in the fifties, and which made me feel at ease there, “at home”, notwithstanding the differences in environment and culture, and the occasional difficulties which I have mentioned in its place. At least at that time, it was again a spirit of service that I found there. Service of a task, and beyond the task, service of other men, eager like us to understand things small and large, and to understand them thoroughly and to the end. This “service” did not take on the appearance of austere duty or asceticism. It arose spontaneously and joyfully from an inner need, it expressed a common thing which linked these very different men.

And it is this same spirit that I recognize in the Cartan seminar, where so many French mathematicians cut their teeth, and later (in the sixties) in my own seminar (responding to the acronym SGA, “Seminar of Geometry Algebraic of Bois Marie”). One of the differences between the two seminars is that mine were strongly focused on the development of the “big stuff” mentioned earlier (therefore “my” stuff), for which there were never too many hands, whereas the themes followed by Cartan from one year to another were more eclectic. More important seems to me what was common to the two seminars, and above all, what seems to me to have been their essential function,

their reason for being. To tell the truth, I see two. One of the functions of these seminars, close to Bourbaki's point, was to prepare and make available to all easily accessible texts (I mean, essentially complete), developing in detail important and easily accessible themes. difficult (*). The other function of these seminars was to constitute a place where motivated young researchers were sure, even without being geniuses, of being able to learn the profession of mathematician on very topical questions, in contact with men eminent and benevolent. Learn the trade — that is, get your hands dirty, and thereby find the opportunity to make yourself known.

It would seem that my departure in 1970 marked the end, in France at least, of the “major seminars” — lasting places where, year by year, some of the major themes of the contemporary mathematics — and also benevolent and inspiring places, for all those who come to get their hands on them. I don't know if there are any elsewhere in the world (in Moscow perhaps, under the leadership of IM Gelfand?). What is certain is that such places are decidedly contrary to the spirit of the times, just like the “gros fourbis”, written in black and white, meticulously, to be available to everyone.

It is no coincidence that almost no one anymore writes careful and (provisionally) exhaustive presentations, on themes that have been ripe for ten years or even twenty, visibly crucial, and which in the meantime are not accessible only to a handful of people “in the know”. Anyone who is part of the “big world” of mathematics, if he is not also part of the “handful” in question, will have no difficulty if necessary to be informed by one of those - there, who will not ask for better. As for the others, bernique! In the sixties, I saw a proud pile of books that were crying out to be written. I would have written them myself, but I couldn't do everything at once. None of these provisions, to my knowledge, is yet written at present (*).

However, I know more than one (if only among ex-students) who was quite in the

(*) “Difficult to access”, either because these themes remained imperfectly understood, or because they were known only to rare initiates, and because the scattered publications which dealt with them only gave an inadequate

image. (*) (November 28) I should make an exception here for theses which were written under my impulse. The spirit which animated me and which, I believe, was communicated to my students, at least during the time when they worked with me, was the one which animated me for my own work; that is to say, in pictorial terms, “build the houses” which we obviously needed, even if often I was the only one to feel the need for this or that

suddenly and who had the feeling and the helping hand, to be able to write without difficulty such a book as was necessary (and which is still necessary). And from the little that came back to me from the later works of some, I don't have the impression that it was the abundance and difficulty of their more personal works that would have prevented them ("sorry but really I don't I don't have time!") to provide this service to the famous "mathematical community". For more than one too, it is even a safe bet that this would have made him more notorious, as the author of a book read and cited (even if everything he exposes does not necessarily come from him - but the "how" is by no means a negligible quantity...) than by the more or less thick bundle of its separate prints.

Obviously, it is not a simple "lack of time" which prevents everyone, with impressive unanimity, from making accessible to all what remains the privilege of a few — or even, from having (would not be - what here or there, the time to write a book let's say) an attitude of "service". Here comes irresistibly the association with the SGA seminar.

5 of 1965/66, hidden for eleven years, for their sole personal benefit, by the very people who had been the first and exclusive beneficiaries, my friend Pierre and my other cohomologist students at the head t It is true that there had a remains to share, therefore a somewhat special motivation in this case. But I also think of other cases, where the service accomplished filled obvious gaps, and where it was brushed aside by the people in power (*). We will say that these are still somewhat special cases, that it was my person who was targeted, while it was visible that it was me who had inspired the work in question. However, I sense in all this a "spirit of the times" which goes beyond any specific case.

The aspect of the "spirit of the times" that I am trying to identify here as best I can is the discredit which strikes an attitude of service - discredit which I perceive through a host of

private "house". I have the impression that as a general rule (with one exception) this feeling ended up being communicated to the student, and made him "hook" on a particular subject, and subsequently identified strongly with the chosen subject. . If we put aside Verdier, who did not deign to make available to everyone the foundation work agreed between us and which is still waiting to be written, the thesis work of all the students who have completed their doctoral thesis status with me have become what we can call "standard references". These are houses good to be inhabited, and none of which duplicates any other...

(*) I am thinking here, of course, of the work of Yves Ladegaillerie, and that of Olivier Leroy, which was discussed in four previous notes and sections ("We do not stop Progress", "Cercueil 2 — or the cut-outs", "The note — or the new ethics", "Coffin 4 — or the topos without flowers or crowns", notes n° s 50, 94, section 33, note n° 96).

converging signs, and which for me is a patent fact. Everyone is free to deny it, as he is also free to examine for himself, and to observe it. My point here is not to “prove” to a reluctant reader, but to try to grasp the meaning.

From the perspective of this reflection, there is a first meaning that is obvious. The attitude of service is typically a “yin”, “feminine” attitude, and it is not surprising that it is part of the lot of those who find themselves devalued. The shade that I have thought to perceive many times, is that such an attitude was only good for those who did not have the means for a “master” attitude — that work done in this spirit was menial work good for the rank and file among those who ride the carriages of the great ideas and “brilliant discoveries”.

However, I also know that it's not just that - because otherwise, why would we prevent at all costs a “peddler” of good will (whenever there is one) from doing quietly in his corner the dirty work that is rightfully his, finally providing solid references where previously we had to be content to say (when we deigned to say something...) “we know that... or more rarely ~~by~~ ~~incumbent~~ demonstrated that... honestly “we will admit that...”? !

I found myself confronted for the first time with this troubling question eight years ago. years, during the misadventures of Yves Ladegaillerie to succeed in “settling” his thesis (*). It was, I admit, at a time when my interest both in mathematics and in the world of mathematicians, was one of the most marginal. I was a little stunned, but without trying to elucidate the meaning of this mystery. Apart from variations, my attitude has hardly changed in the years that followed, until last February, with the reflection continued in Récoltes and Sowing. However, by dint of picking up on signs, and even without doing so on purpose, I was unable to gradually preventing myself from capturing its meaning, or rather, its meanings. I see some two in fact. One concerns me — it's about my burial syndrome. respect, which I have not yet completely finished exploring. The other has nothing to do with such person in particular or such and such other. It is an attitude of exclusivity in possession and the control of scientific “information”, an attitude that prevails within the “establishment” scientific, and which makes it a sort of ruling caste by divine right, within the so-called scientific “community” (**).

(*) See on this subject the two notes nos. 50 and 94, cited in the previous footnote.

(**) (December 6) Note that the thirst for domination is a superyang imbalance, and the form from afar

This is a theme that I have already touched on (barely, barely) in the note “Deontological consensus - and control of information”, and also a little in “The “snobbery of young people”, or the defenders of purity” (25), (27)). I suspect that this is a new development in the scientific world, which has slowly taken hold over the past two or three decades. I do not believe I was among those who propagated and welcomed this unwritten “new ethics”, the ethics of “double standards” (*). If I have any co-responsibility for its advent, it would rather be for not having seen it coming (**). Before these very last years, I did not suspect that the all-out information from which I benefited freely, practically since my first contacts with the scientific world, in 1948, had become over the years, I cannot say too much when or how, a colossal privilege that I shared with a handful of friends - a class privilege, to use a term that has been bandied about a bit, and which yet here seems to me to express a reality that is all that is tangible.

But my aim is not to do a “class analysis” of the mathematical world, and of the “relations of force” and the “means of power” in this world — any more than to draw up a “table of morals”. It is time to return to a more limited subject - that of understanding in its essential springs in the main protagonists, the “news item” of

the most common cause of such an imbalance. It corresponds to an obliteration of the term yin, “feminine” in the yinyang couple “Master-servant”, or “that which dominates (or masters) – that which serves”, neighboring

the couple “mastery – service”. (*) (December 6) This is not entirely correct, as appears in the sections “the power to discourage” and “Sporting mathematics” (nŷ 31, 40). But it seems correct to me to say that if for me conceit has often materialized in elitist attitudes, these have not taken the form of the desire to dominate, or even that of crushing, and have not obliterated in me a spontaneous attitude of service: service of a task, and through it and alongside it, service of all those launched with me in a common adventure... During the sixties, it had become almost a fixed idea, and in any case one of my pressing and constantly present motivations, to write and have written the basic texts which were missing, in order to give the widest diffusion to the ideas, techniques and visions which were not known only to very few people. Looking back twenty years, I see today that this constant concern in me was not transmitted to any of my students. They preferred to be masters, without being at the same time (as their late master had been) servants.

(**) I don't know if many of the elders or colleagues of my generation, or even among younger colleagues and friends, have seen it. I doubt that there is a single one among “those who welcomed me fraternally, into this world which became mine”, to whom *Récoltes et Semailles* is dedicated — except perhaps Chevalley. This is certainly one of the things I would have liked to talk about with him — but he is no longer here to tell me...

my early funeral!

(136) (November 28) The two previous notes were essentially digressions around the theme of the yin-yin affinity between Deligne and me, at the level of mathematical work and the approach to mathematics. I don't know if they were able to contribute to "transmitting" the perception I have of this affinity and its nature, which for me is beyond doubt.

I have written elsewhere that "in my work, I am as "yin", as "sea and movement", as one can be". Upon reflection, I would say that this is not literally true — that we "can be" even more so, because (as I perceive it) Deligne is even more so than me. Or at least, the "yang in the yin" seems more pronounced in me than in him. What is fiery in me takes on a more measured appearance in him. Where I boldly move forward, more than once he will remain on a cautious, and very often well-founded, expectation. As long as I have the beginnings of an idea, a "end" through which I can enter, I do not hesitate to launch myself into a mathematical quagmire that I feel is substantial, without bothering to first look at it from a a little closer to the initial idea ("ihr auf den Zahn fuhlen", as we say in German...), nor to predict the outcome of the melee. It happens that the idea does not hold water, for some obvious reason a priori, and which escapes me as I am so eager to "jump in the juice". I end up realizing - sometimes I feel like an idiot, and yet it's rare that I regret having started. It is in this way and no other way that I establish contact with an unknown substance — by rubbing against it, whether "wisely" or not.

My friend first probes and examines - and he sets off, when he feels sure, if not of the point of arrival, which would be too much to ask, but in any case that there is somewhere to land, and that 'he will not come back empty-handed. I never had the impression in his work of any dispersion of energy, as there was often in my work - but rather that in him all blows land. From this point of view, his style of work bore the mark of maturity, whereas mine bore more that of youth, sometimes messy due to being fiery. When we first met, however, it was me who was approaching forty while he was twenty. And more than once, I felt in him, regardless of consideration, a kind of smiling indulgence, the kind that a benevolent adult would have towards a child he had affection for, when he did not see to get involved in some (small) "big thing" again, without ever doubting anything...

The aspects that I mention here are undoubtedly difficult to detect in "clear" works,

published, which present a final, or at least advanced, stage of reflection. My demands in my work are no less than those of him, and I hardly entrusted notes to a typist or a printer unless they had reached a stage where they satisfied the need in me for a complete clarity. On the other hand, in the style of writing that I follow in the “Mathematical Reflections” (and in particular in “A la Pursuit des Champs”), the original approach in the work is apparent on each page. The reader will be able to notice numerous “misses”. They are all of small magnitude - most often spotted the next day or two days after that if not the same day, and rectified in the pages that follow. (That this was so surprised me myself - it is one of the signs of this extraordinary “ease” in my mathematical work, of which I have spoken elsewhere (*).) One of the The reason for the presence of “little hiccups” is of course my lack of familiarity with a subject that I had not touched on for seven or eight years – and these lapses become more rare as the work progresses. advances, that the contact lost little by little is reestablished. Nevertheless, this way, every time, of taking as “silver bullet” without hesitation what was given back to me by a fairly nebulous memory, of things that I knew more or less well over time, clearly illustrates this “go-getter” aspect. , and sometimes messy, which constitutes (among others) the “yang in yin” aspect in my mathematical (or non-mathematical) work.

I am convinced that an equally spontaneous text, which would be written from Deligne's pen, would be much closer to what is commonly considered “publishable” – and even, as publishable according to his demanding criteria.

If I insist here on the character of “maturity”, of “yin very yin” in my friend's style of work and approach to mathematics, it is in no way to suggest the idea of a any imbalance in his work, therefore that this work would be marked by a lack or absence of “yang”, “virile” qualities, if this were so, his works would not carry on each page, just like those of Serre or mine, the delicate and unmistakable mark of beauty. But it is not the place here, any more than I did in the case of Serre or in my own, to follow line by line the delicate harmony of yin and yang, of the “feminine” and the “ masculine”, in his published work which is known to me, and in this

(*) See the note “The trap — or ease and exhaustion”, n° 99. It seems to me that this “ease” is even greater now than it was in the past, before my “departure”. This seems to me linked to a maturation that has taken place in me over the past fifteen years, and which is felt in my mathematical work as elsewhere.

who is known to me from his work through the personal contact I had with him for almost two decades.

Nor should we believe that this observation that I make of a balance of yin and yang is a sort of truism, that it would apply straight away to any man who, in one way or another, appears of “great mathematician”. This perception of beauty that I just mentioned is not equally present, nor to the same degree, in the work of all the mathematicians who leave a lasting imprint on the mathematics of their time. Among these, I know two who, like Deligne, appear to me to be predominantly yin both in their work and in their personality, and whose work has at no time given me this impression of an inner balance. , of a beauty that never leaves you wanting more.

The yin imbalance takes on such an extreme character in one of these colleagues that he seems entirely incapable of even clearly and correctly formulating the slightest definition, or the slightest statement (let alone an idea). ...) — while on many things he has a deep intuition, and he has introduced a number of important and fruitful ideas. They took shape each time through the work of others than him. Visibly, there is in him a repression of a rare effectiveness of the traits and forces of “yang” nature, both in his work and in his ways of being. This repression takes on the proportions of real impotence, including in his work, where he would be incapable of carrying out the slightest thing by his own means. He compensates for this impotence of being with a study of megalomania, internalizing at the same time the defects that he likes to cultivate within himself, as if it were thanks to them that he could have conceived ideas which (to his eyes) make him the 1st great scientist of the millennium...(*)

I sense a repression in the opposite direction in my friend Pierre, eliminating certain “yin” traits and leading him (with more or less success) to model himself on a superyang image. This repression is certainly very far from the extreme opposite case that I have just mentioned. It does not go so far as to erase in the reader or the interlocutor the feeling of beauty, of satisfaction without any aftertaste of unease, which are the signs of true understanding, doing their fair share in each moment and at the same time. clarity, and shadow, mystery. This means that the “superyang” brand image chosen by my friend should hardly encroach on his work itself,

(*) I am talking here about attitudes and ways of being that I had observed in the times before my departure, when I had the opportunity to meet this prestigious colleague familiarly. It is not excluded that something has changed since then (even if this would be a very rare thing...).

at times of work, I mean, where the presence of the “boss” must most often be as hidden as it is (I think) at Serre, or at mine (**).

On the other hand, it is at the level of the choice of work themes, it seems to me, that the role of the boss becomes important, even invasive. There is this fixed idea of distancing himself from my person, and thereby, the refusal to follow certain inclinations of his own nature which are too strongly associated in him with the image of the disowned master. Also, if it happens to him, like everyone with great means, to demonstrate difficult (or even “proverbially difficult”) theorems, and even to introduce beautiful ideas and develop them, he would not dream of “rethink” naively, in his own way and even if only in broad outline, a whole science (such as topology, which nevertheless really needs it...) — or even, to create from everyone*. your pieces a new science, of “bringing new worlds to light” (as I wrote elsewhere) (1361). However, if there is anyone I have no doubt that he has what it takes, it's him. If something has been lacking until today to do so, it is generosity - true generosity, which is at the same time a calm assurance, which makes us follow the impulse of our own nature wherever it takes us. door, without worrying about encouragement or “feedback”.

But there is also the joy of simply “building houses” large or small that others will inhabit, without it necessarily being on the dimensions of “a whole science” or a “new world” — that of carrying around and posing stones and beams like the first mason or carpenter who comes without fear of being taken for this or of looking like such a person - or of putting within the reach of everyone what (according to some) must remain the reserved fiefdom of the very small number. This is an attitude of service, a certain humility, another expression of the same generosity mentioned earlier, of the same fidelity to one's own nature. My friend exchanged it for an attitude of smugness (“me — do such work”) and an attitude of caste (*), in terms of the choice of supposedly “acceptable” work themes.

There is finally a third attitude or force, by which “the boss” weighs on the choice of my friend's work themes, of the substance he sets out to probe, a force which fixes him

(**) I return to this hasty impression at the end of subnote no. 136j (of December 4) to this note.

(*) This “class” attitude, among my friend and in the “great mathematical world”, appears in my reflection first in the two notes (from March) “Ethical consensus — and control of information” and “The Snobbery of the Young — or the Defenders of Purity” (nos. 25, 27), and it reappears in last week's note “Yin The Servant, and the New Masters,” no. 135.

imperative barriers. This is the “master’s funeral” syndrome, or grave-digger syndrome. It is not just a question here of refraining from naming those who must remain ignored. It is also a question of burying one’s work itself, or more precisely, of “cutting” it clean, like with a chainsaw, in one’s own work as in that of others, at the level of each of the main branches springing from a vigorous trunk (**). As I recalled again the day before yesterday (in the previous note, “Yin the Servant, and the new masters”), among the four major themes that I identified and developed during my period as a “surveyor”, between 1955 and 1970, only one was “taken” and used in broad daylight by my brilliant student and successor, the other three were “cut off” – muted, of course. There was a very partial exhumation of one of the themes in 1981, of another the following year – such as stunted shoots which would have regrown on the scarred stumps of the main cut branches, and which we would have for the occasion surrounded by colorful garlands and garish neon lights, just to change things up...

(1361) (December 4) (*) My own approach has constantly led me to “rethink” from top to bottom what was on my path as a mathematician, whether it was the most seemingly insignificant thing, or something it is on the dimensions of “a whole science”. It is true that, having only two arms like everyone else, I have not been able to go as far each time in carrying out a work program to redo “from top to bottom an entire science”, as I did it in the case of algebraic geometry, based on some very simple key ideas around the notion of diagram. Even in this case, where I invested a large part of my energy as a mathematician for twelve years in a row, I was far from “completing” the planned program – for that, it would have taken me a good twelve years of no longer I (And no one after my departure bothered to continue the task, which must (a; wrongly) have seemed thankless...

As other cases where I have rethought a science, but certainly without going that far, I point out homological algebra (both commutative and non-commutative – the latter moreover

(**) I see myself confronted for the first time with the reality of “the chainsaw” on May 19, during the reflection in the double note “The heirs...”, “... and the chainsaw” (ns 91, 92), then in the four coffin notes which follow (and which, with “The Gravedigger”, form the “Funeral Van” or Funeral Procession X), on May 21 and 22 (notes n° 93 –96).

(*) This subnote to the preceding note (“Yin the servant (2) — or generosity”, n° 136), is from a footnote to it. (See reference in third paragraph before the end of the latter)

did not yet exist during my first reflections in 1955), and topology, with the introduction of the notion of topos, which is still waiting for its time to become the daily bread of geometric topology, in the same way as the various notions of “spaces” and “varieties” that we commonly use today (**). No doubt certain important parts of current topology will hardly be affected by the systematic development of the toposical point of view in topology. Also this point of view would seem to me rather to be the crucial element in the “creation from scratch of a new science” – of this science which achieves a synthesis (still entirely unexpected at the time when I arrived, in the fifties) of the algebraic geometry, topology and arithmetic (*). Beyond the construction of the new algebraic geometry, and through the “mastery of étale cohomology” (and that of p -adic cohomology which results from it), it is the development of a project manager of this new science still in the making, and the development of solid technical bases, which was in my eyes my main contribution to the mathematics of my time. The “yoga of motives”, which still remains conjectural, seems to me like the soul, or at least like a neuralgic part among all, of this new science, so vast that until today I had not thought of yet to give it a name. We could call it, perhaps, arithmetic geometry, suggesting by this name the image of a “geometry” which we would develop “above the absolute base” $\text{Spec } \mathbb{Z}$, and which admits “specializations” both in the traditional “algebraic geometries” of different characteristics, as well as in “transcendent” geometric notions (above the basic bodies $\mathbb{R}$, $\mathbb{C}$ or $\mathbb{Q}$...), via the notions of “manifolds” (or better, of multiplicities) analytical or rigid-analytic, and their variants.

I see yet another “new science” that I had glimpsed in the sixties, taking its source from my reflections on homological algebra begun in 1955. It is a vast synthesis of ideas coming from homological algebra (as it developed in contact with the needs of algebraic geometry, or better said, “arithmetic geometry”), homotopic algebra, “general topology” topos version, and finally of the theory (in limbo since the sixties) of (non-strict) $\tilde{Y}$ -categories, or,

(**) Compare with certain comments in the second part of the note at the end of March “My orphans” (n° 46), and in its sub-notes n° s 46. to 46.

(*) See previous footnote.

(March 11, 1985) The term “entirely unexpected” is undoubtedly excessive, because the prescience of such a synthesis is already found in Weil's conjectures, which acted as a powerful source of inspiration.

as I prefer to say now, $\tilde{y}$ -fields. I had expected, as a matter of course, that this synthesis would be taken up by some of my cohomologist students, starting with Verdier whose famous thesis (*) was precisely supposed to go in this direction. It seemed to me that the development of a satisfactory common language having all the generality and all the flexibility desirable, had to be a question of a few years of work, surely fascinating, by a little one. core of motivated researchers. After some very fragmentary beginnings in this direction by some of my cohomologist students, my departure in 1970 sounded the signal for an immediate abandonment of this work program, among many others that were close to my heart. This is why I returned to some of my ideas, in a correspondence with Larry Breen in 1975, with the hope of seeing revived a vision of things which I felt were “on the way”, and that”. everyone “takes care to carefully circumvent them, each time they find themselves confronted with them. In my letters to Larry Breen (reproduced in chapter I of “Chasing the Fields”), I propose to call this science still in gestation by the name topological algebra, which for a decade or two I was alone in glimpse (**). Finally, tired of war and despairing of seeing someone other than me tackle a work that had been burning to be undertaken for twenty years, I set to work in February 1973, with “A la Pursuit des Champs”, to outline at least in broad outline the project manager for what I see a. TO DO.

It is clear that there is no common measure between the “arithmetic geometry” which was discussed earlier, and topological algebra, one of the main roles of which in my eyes is that of “logistical support” in the development of this new geometry. For this to arrive at the stage of full maturity attested (let's say) by a mastery of the notion of pattern, comparable to the mastery that we possess of equated cohomology, we must undoubtedly expect that several generations of geometers will have to having set about it, more dynamic and bolder than those I saw at work; not even to mention a comparable mastery at the level of Anabelian algebraic geometry. which appears to me (with the reasons) as one

(*) See on this subject the note “Thesis on credit and all-risk insurance”, n^o 81.

(**) With the exception at most of Deligne, to whom I believed to have communicated a vision, whom he hurried to bury with the rest the day after my departure. I allude several times, in *Récoltes et Semailles*, to a. this part, the oldest of all, of my overall program of foundations of a sort of “all-round geometry” — notably in “The Dreamer” (section no. 6) and in the notes “My orphans”, “Instinct and fashion — or the law of the strongest”, “The accomplice” (n^os 46, 48, 63vi).

of the two “neuralgic” parts of arithmetic geometry, discernible from now on (*).

Finally, there is a fourth direction of reflection, pursued in my past as a mathematician, moving in the direction of a “from top to bottom” renewal of an existing discipline. This is the “moderate topology” approach in topology, on which I expand

somewhat in the Outline of a Program “(paras. 5 and 6). Here, like so many times since the distant years of high school, it seems that I am alone still to feel the richness and the urgency of foundational work to be done, the need for which here seems more obvious to me than Never. I have the very clear feeling that the development from the point of view of moderate topology, in the spirit mentioned in the Outline of a Program, would represent for the topology a renewal of scope comparable to that which the point of view of diagrams brought in algebraic geometry, and this, without requiring energy investments of comparable dimensions. Moreover, I think that such a moderate topology will eventually turn out a valuable tool in the development of arithmetic geometry, in particular to formulate and prove “comparison theorems” between the “profinite” homo-topic structure associated with a stratified schema of finite type on the body of complexes (Or more generally, to a stratified schematic multiplicity of finite type on this body), and the corresponding “discrete” homotopic structure, defined by transcendent way, and module suitable hypotheses (notably of equisingularity). This question only makes sense terms of a precise “unscrewing theory” for stratified structures, which in the framework of the “transcendent” topology seems to me to require the introduction of the “moderate” context.

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(*) (For some key ideas of Anabelian algebraic geometry, see Outline of a Program, by. 2 and 3.)

By “neuralgic”, I mean here a part of this “arithmetic” geometry which provides it with intuitions, common threads, and problems, entirely new compared to the achievements of the 1960s. (This “acquired” consisting essentially of a framework and a language, and a homological and homotopic formalism common for the three disciplines encompassed in arithmetic geometry.) Perhaps it would be necessary to add to the two previous ones a third such “nerve part”, intimately linked to the motives, namely the theory “at the Langlands” automorphic forms. If I refrained from talking about it, it is because of my regrettable ignorance always about the theory of automorphic functions. (I don't know if the opportunity will present itself, pushing me to finally fill this ignorance somewhat...)

To return to the person of my friend Pierre Deligne, he had ample opportunity, during the years 1965–1970 of close mathematical contact with me, to familiarize himself thoroughly with this set of ideas and geometric visions, which I have just to review in broad strokes. (With the exception of the ideas of moderate topology, which only began to germinate and intrigue me from the beginning of the 70s, which I remember well.) His role in this vast program was twofold, and in two opposite directions. On the one hand, relying on the ready tool of 4-adic cohomology, and on the ideas (which remained hidden) from the theory of patterns, he made remarkable contributions to the development of the arithmetic geometry program. The most important are undoubtedly the start of a theory of mixed Hodge coefficients, and especially his work on the Weil conjectures and their p -adic generalization. On the other hand, apart from the tools and ideas which he directly needed for his work (and whose origin he systematically tried to forget), he did everything possible to thwart development natural to everything else: it is the “chainsaw effect”, which I had ample opportunity to speak about during my reflection on the Burial, including again (by way of allusion) in the preceding note (n° 136). This chainsaw effect was partially blurred by the partial exhumations (in 1981 and 1982), “like stunted shoots which would have resumed...” under the sudden push of immediate needs. (These exhumations of circumstances have just been mentioned again at the end of the previous note.) He also did everything possible to constantly give the impression (without ever saying it clearly...) that the authorship of ideas, notions, techniques, results that he used and whose provenance he took care to conceal, came back to him, when he did not generously attribute them to another of my former students or collaborators.

All things considered, after this rapid retrospective of what was so tenaciously cut down and buried by my friend, I return to the impression which prevailed in the previous note, where I suggested that the interference of the “boss”, of the egoistic greed in his work, was essentially limited to the choice of work themes. After all, the gravedigger-chainsaw disposition is apparent in his work, with very few exceptions, wherever the opportunity presents itself — and I realize that these “opportunities” are innumerable! This gravedigger syndrome (surely closely linked to the promotion of superyang values) seems to me to have had a truly “invasive” effect on his work and his work, without any common measure with that of his pro-yang options; and this effect is in no way limited to the sole choice of themes, which the “boss” would make available to the “child worker”, for

then tiptoe back. It seems to me, on the contrary, that the boss hardly takes his mind off the Worker throughout the work, so worried is he that the latter might forget the imperative instructions; in other words, that the work itself is very often invaded by interior dispositions entirely foreign to the nature specific to the work of discovery, which is an impulse into the unknown. This is something that was strongly felt many times during the reflection on the Burial, and which I tended to lose sight of during my long reflection on yin and yang.

(137) (December 7) It's been over a week since I've continued with notes, other than housekeeping work (including two-person subnotes of previous notes). I had to have three teeth pulled (that's what it's like to be approaching sixty...), a necessary but brutal intrusion, which has meant that I have been operating at a somewhat reduced speed lately. I took the opportunity to fall back on some outstanding correspondence. Everything seems to be back to normal...

In the four previous notes (from November 24 to 28), I especially tried to identify more closely the relationships of affinity or complementarity between temperament and the mathematical approach at Deligne and at home, in order to arrive at situate this "reversal" of yin and yang roles, which I thought I perceived in the presentation that my friend strives to give of himself and of me, at least at the level of the "mathematical" personalities of one and on the other. Along the way, other aspects of reality appeared concerning my friend or myself, and beyond our persons, also aspects of the world of mathematicians or quite simply, of the world of men. Ultimately, it seemed to me that it was the attitude of service, and the signs of the disappearance of such an attitude in the scientific world, which was the most striking new thing that was introduced into the world. this stage of reflection, as I try to suggest by the name "Masters and Servant" that I gave it.

Coming back to the initial point of "situating" a certain reversal, I now have the impression of having understood the real situation concerning my friend and me sufficiently closely, to follow it up. A first observation that stands out is that this initial intuition of a reversal of the yin and yang roles, which came to me the day after the reflection of May 12 "The Funeral Eulogy (1) — or compliments" was indeed correct. It was already clear, from the reflection of November 10 in the note "The funeral of yin (yang buries yin (4))" (nŷ 124), that my friend strives to give a supervirile image of himself-

same, and superfeminine of me. The question raised in the note of November 24 “The reversal (3) — or yin buries yang” (n^y 133), was whether this presentation indeed constitutes a “reversal” of reality. The “new fact” appeared in the note “The sea which” (n^y monte... 122), namely that just like with my friend, the basic tonality in my ap-close to mathematics was yin, “feminine”, could at one time make one doubt it.

The reflection of the last three notes, however, dissipated this doubt. It was already clear from the outset that I have always been perceived by Deligne (just as by my other students and ex-students), on a conscious level at least, as very strongly (too strongly perhaps...) virile (*). But it appeared that moreover, in the relationship between Deligne and me at the mathematical level and on the basis of a strong yin-yin affinity, there was also a yin-yang complementarity (which we could call “secondary”, as opposed to this affinity playing the “primary” role), in which it is indeed me who plays the “yang”, virile role, through a “yang in the yin” component that is clearly more pronounced in me than her. is not at home.

The deliberate intention that I observed at Deligne, and which seems to me to receive an eager echo from many sides (**), therefore appears to me indeed to be a deliberate intention of role reversal, and more specifically, of roles yin-yang (*). It seems to me that it is

(*) Moreover, current values being what they are, I doubt that scientific prestige can be carried by an image (generally accepted and received), which does not necessarily have a “yang”, or even uperyang, image. . it is only at the unconscious level, it seems to me, that the “feminine” nature in my approach to mathematics was perceived both by my friend and ex-student, and in the mathematical public in general (those, at least/ somewhat in touch with the kinds of things I worked on).

(**) I am thinking here of the “gusts of insidious disdain and discreet derision” mentioned in the Introduction (see Intr. 10, “An act of respect”). I need not be surprised when I see some of the most prestigious among those who were my students setting the tone themselves. The thing that seems common to me in the many “whiffs” that have reached me over the years is precisely an affection of condescension towards the strongly marked “yin” traits in my approach to mathematics and in my work. See also on this subject the comments in the footnote of June 23, in note n^y 96 “Coffin 4 — or the topos without flowers or wreaths”.

(*) The first time this deliberate intention of role reversal appears in my reflection, it is a role reversal in the teacher-student relationship, while I am presented as a “collaborator” of my student, taking on his own role. of the true founder and master of etal and -adic cohomology. (See on this subject the two notes “The reversal” and “The Funeral Eulogy (1) — or the compliments”, n^y s 68, 104) It is interesting to note that in the “couple” “master-student” , it is indeed the master who plays the yang role (like the one who gives, or who speaks), “active”, and the student the yin role (like the one who receives, who listens), “passive”. Here again,

here another important aspect of the Burial, adding to the four already reviewed previously (in the notes of November 13 and 17 "Retrospective (1), (2)", n° s 127, 127). It is all of these five aspects, surely intimately linked, that we now need to assemble into a coherent overall picture of the Burial.

Such a picture, to be convincing, should also bring together, in a common perspective, three successive "planes". In the foreground, there is the only Deligne, Grand Officiant at my funeral, non-student and non-heir of the master, declared deceased and having no reason to be nor to have been... It is visibly, apart from the deceased himself (but who is only a deceased, a tacit figure), the 1st central character of the funeral ceremony. He is closely followed, in the background, by "the busy group of my ex-students, carrying many shovels and ropes" (to quote from memory the enumeration of the Processions, in "The Order of Funerals").

Finally, in the third place, there is the (almost) entire Congregation, who came to celebrate my funeral (and those of the four co-deceased, standing in their "solidly screwed oak coffins"), and to lend a helping hand to the funeral.

Between these three planes seems to reign a perfect harmony, a "Unanimous Agreement", like those that we see reign at any other funeral celebrated in formality, between the priest filled with pious compunction, the family of the deceased displaying the airs of circumstance, and the bulk of the audience, intoning where it is necessary to intone, and remaining silent where it is necessary to be silent, without ever, ever making a mistake.

To continue with this last image, I now see myself placed in the situation (less comfortable than that of the dear deceased, decidedly out of touch...) of someone who, placed in front of such a touching ensemble, would impertinently propose to want to guess the true thoughts and motivations which animate and agitate everyone, priest, family and common faithful, behind the airs of solemnity or contrition appropriate for the occasion.

It has been a while since the reflection continued, with the main tacit thread being the intention of preparing what is necessary to understand the closest of these three "planes" of the painting — that of the priest in a chasuble, sorry, of my friend Pierre Deligne I meant. It is on this level that I would now like to focus my attention.

I will say straight away that which of the aspects (or "panels") of the painting that was featured in the reversal brilliantly carried out by my ex-student can be seen as a reversal of yin-yang roles, in the same direction (yin-yang becoming yang-yin) as that which constitutes the main message of my Eulogy, a message which appeared in the note "The funeral of yin (yang buries yin (4))".

note "The Gravedigger — or the entire Congregation" (n^o 97), namely the "retaliation for dissidence" aspect, seems to me to play only a most effaced role in my friend, if indeed he even enters online. At no time did I have the impression that my friend Pierre felt in the least "challenged" by my "dissidence". On the contrary, this was the great boon, as he would probably never have dared to dream, to elegantly get rid of the presence of a master who was a little too present, in this institution where he came, At the age of twenty-five, to access one of the most envied (or at least, the most enviable) situations in the mathematical world. The fact that this dissidence grew in the months and years that followed was experienced, it seems to me (perhaps not on a conscious level, but it doesn't matter in the end), as an even greater boon, which gave him, at the mercy of no desire for resistance coming from wherever it was (as he was able to gradually realize over the years), an impressive "heritage" (*). It was not he who would have pretended to complain, even in his heart of hearts or without his own knowledge of this unexpected windfall! And it seems to me that the same observation must be valid, all things considered, for most of my students "before" (my departure), and in any case, each of my five cohomologist students. If one or the other among them, whether deep down or more or less clearly expressed (*), could have suggested a feeling of dissatisfaction, of frustration because of my dissidence, I have tendency to believe that this is in the nature of a rationalization of a grave attitude towards its providentially disappeared master, rather than a cause (even one among others) of this -this. What strengthens me in this conviction, both for what concerns my cohomologist students "in general", and for their undisputed leader Deligne, is that the warning signs of the Funeral which was going to occur (provided that the auspicious opportunity appears - and, oh unexpected miracle, it appeared!) - it is that these signs are already apparent before my departure in 1970, and in any case since after the famous SGA 5 seminar of 1965/66, destined for the massacre that I know. It is no coincidence, surely, that with such a perfect ensemble, all five

(*) See, on the subject of this "inheritance", the note "The heir" (n^o 90) and the subnote (n^o 1361 of the note "Yin the Servant (2) — or generosity" (n^o 136).

(*) The only one of my ex-students who made me hear a feeling in these tones (with, in addition, a certain reproachful nuance) was Verdier, about a year ago. During the time of *Survive et Vivre*, on the other hand, he seemed to sympathize with my dissent. There was even an episode of cordial collaboration with his wife Yvonne, on the occasion (if I remember correctly) of the organization of a traveling exhibition at the initiative of Robert Jaulin (of whom Yvonne had been a student), which I joined as a survivor participant.

(**) were disinterested in the fate of this seminar where they learned their profession, and at the same time, beautiful mathematics that they were almost the only ones, for twelve years, to have the privilege of knowing and to use. I've talked about this at length enough in the course of thinking about the fate of SGA 5 that it's useful to say more here. I will only recall, with regard to Deligne, that in three of the four articles he wrote before my departure in 1970, the intention to hide, or at least to evade and minimize as far as possible the influence of my ideas is clearly apparent, without waiting for my "dissidence".

What then is the root and the particular nature of this attitude of antagonism, of a competitor eager to supplant, to erase, my friend towards me - an attitude which coexisted with an affectionate and trusting sympathy, and with a communion on the level mathematics, from the first years of our meeting? I am even convinced that she must have been present in silence from the moment we met, and undoubtedly even beforehand; and also, that it rather followed straight away from the role that was to be mine with him, than it was aroused by this or that particularity in me - if not all of the "particularities" which enabled me to play this role with him. This is also the role that he has been trying to erase for twenty years. Surely it implied, without this being sought on either side, and by force of circumstances, a "paternal" aspect. And there is no doubt in me that it is around this aspect that the conflict is based - a conflict which already existed in him, long before he heard my name pronounced or even (undoubtedly) the name of our common master, mathematics.

This conviction, to tell the truth, is not the fruit of reflection, and even less would I claim to "demonstrate" it. Rather, it came over the years, after my departure, I myself cannot really say when or how; little by little I believe, by dint of signs small and large, none of which I stopped at, even for a moment, and which all together nevertheless ended up leaving the trace of a knowledge, diffuse and imperfect certainly, but a knowledge nevertheless, which was there one day... I could undoubtedly, through laborious work bringing to light half-buried memories and probing them one by one, deepen and make them materialize this knowledge which remains somewhat imponderable;

(**) (December 12) I should, however, single out JP Jouanolou, who ended up writing three consecutive presentations of the seminar, developing notions and techniques which he would have a direct and immediate need for his own thesis work.

and it is quite possible (and even probable) that such work would have many surprises in store for me.

I don't feel motivated to do it though. It is undoubtedly because (rightly or wrongly) it seems to me that this is not really my work, but that of my friend - that what I would probe there concerns him much more, than that does not concern me.

As far as I am concerned, this intuition or "knowledge" or "conviction" that I have just formulated is sufficient for my present desire for understanding, and I trust it without any reservation.

As so often in my life, I am confronted here with a relationship of antagonism to the father, where I act as a substitute father, an "adopted" father (much more, it seems to me, than an "adoptive" father (*)) This, plus my friend's deliberate intention of yin-yang role reversal, is immediately associated in my mind with the situation mentioned in the note "The reversal (2) — or the ambiguous revolt" (ne 133 — situation of which the relationship between my mother and her father is for me the most extreme prototype. However, the differences between the situation in question, and that of my friend Pierre's relationship with me, are immediately obvious. For my part, I have at no time perceived the shadow of a tone of "revolt", or even of antagonism in the form of even the slightest virulent, aggressive, showing claws or teeth, even in a smile. There was certainly no shortage of smiles on either side, but they were on his part, either smiles of sympathy (as I felt them), or sometimes of innocent surprise, and sometimes almost of pain. , when he could see (and I ended up feeling the shade of intimate satisfaction) that certain blows, delivered casually and with a velvet paw, had hit the mark where it was intended.

To put it another way, this antagonism, whether it is expressed towards me or towards third parties (when it was a question of reaching through them the deceased master, and yet still very present in him. ..), has always and without a single exception, taken the extreme-yin form: that which delights (and excels) in reaching and injuring, even in eliminating or crushing, with

(*) (December 12) I was aware, while writing these lines, of the extent to which it is necessary to be cautious in such an affirmation of "non-symmetry" of roles, and this all the more so since it involves roles that are played at the unconscious level. I presume that at this level, and apart from mathematical communication strictly speaking, I must have entered somewhat, at some point, into the "paternal" role, all prepared by the context. But this role was obviously not of comparable weight, in my life and in the relationship with my friend, to that of my mathematical passion; it remained episodic, and there must no longer be a trace of it after my "departure" from the mathematical scene in 1970. On the other hand, the attachment of my ex-student to my person, for the better and (above all) for the worse, continued to manifest itself throughout the fifteen years that followed, both in his work itself and through the maintenance, against all odds, of a continuing personal relationship with me.

all appearances of the most exquisite delicacy. While his deliberate choices for his brand image as a mathematician are superyang as mine undoubtedly were, without any more success than with him), it seems to me that at the relational level, the basic tone (with respect to me at least, and those he considers to be related to me) is decidedly and all the way, superyin. (I would, however, make just one reservation on this subject, an important one, to which I will have to come back.)

Another “obviously obvious” difference between Pierre's relationship with me and that of the “ambiguous revolt”: from the little I know of his family, I believe I know that Pierre's father is a maid of gentle and modest temperament, therefore in no way the “profile” which would arouse a reaction of revolt, subsequently transferred to a substitute father.

(138) (December 8) As I finished the reflection last night, I had the somewhat painful impression of someone who understands less and less. Before going to bed, I stayed for a while longer following the associations aroused by the past reflection. I thought I saw some points of light appear, which I think will serve as luminaries in today's reflection.

The most important of these associations is surely linked to this “velvet paw” aspect in my friend, who enjoys scratching (and sometimes deeply and mercilessly) with these most innocent airs in the world, and “with all the appearance of the most exquisite delicacy”. This image, which came at the turn of a comparison (with a situation of “revolt” mentioned previously) which had been wrecked, appeared to me immediately as rich in meaning, as an essential aspect of this “antagonism” that I proposed to probe. And in retrospect, this evocation of the image “innocent smile and velvet paw”, restoring the quintessence of an experience of almost twenty years, seems to me to be the first “sensitive point” in yesterday's reflection, the “point of light ” unexpected as I fumbled in the dark. If this impression of groping and obscurity still prevailed beyond that, it was because, too caught up in the ideas that I had had in mind the moment before and that it was a question of continuing or place, I had not known how to be attentive to this delicate “tilt” which had taken place in me, as soon as the image appeared. And in the half hour that followed, continuing with a few associations connected with this image and with one or two other moments of the elapsed reflection, attention was again dispersed. It is only now, resuming, with the hindsight of one day, the thread of interrupted reflection, that I see the adjustment of a perspective of it which had previously escaped me, while rereading

yesterday's notes.

If I take care to follow the strongest association of all and the most intimately linked to my experience, excluding for the moment others that are more “structured”, more “intellectual”, this comes. I see myself suddenly returning, as if in a single impression which would sum them all up, to this multitude of particular cases (experienced either as a co-actor or as a close witness) of the marital circus - of the circus of the woman-man couple. The circus of the couple, married or not, with or without children, young or old or young-old or vice versa, in despair pulling the devil by the tail or in ease rolling in a carriage, it's the same thing. the couple's circus does not change however. I suddenly see myself returned there, by an aspect of this circus which struck me above all others (it took me a long time, it must be said, before I saw anything other than nothing but fire...) : it is the very particular tactic, very “innocent faces”, “I said nothing and did nothing”, the “velvet paw” tactic played by the woman, in a certain game where she is always the one who leads with perfect skill and casualness, and where he is always the one who calls (and often, cashes in) without realizing anything. I have seen very few couples who do not work on this tune, with infinite variations it is a thing understood, left to the care of the improvisational gifts of one and the other, without take into account particular temperaments and other circumstances. I had the opportunity just today to see a particularly dazzling demonstration of it, on which I however refuse to digress here.

It is a somewhat colorful and nuanced description of these circus games, in broad outline at least, or even just the evocation of tones (velvet paw, precisely, on the “she” side). in which it plays out, who was largely absent in the reflection of November 12 that I have just gone through again, in the note “The reversal (1) — or the vehement wife” (nǚ 126). Obviously, I was pursuing this reflection against the grain of reluctance, to the point that it ended up taking on the appearance of an austere “forces and motivations” analysis — I was definitely not in good shape that day! It was also the first time, in “The Key to Yin and Yang”, that the “reversal of yin and yang” was discussed. The extreme case which had obsessed me somewhat then, and which continued to do so even as recently as yesterday, was that of my mother (resumed in the note of November 22 “The reversal (2) - or the ambiguous revolt”, nǚ 132) I took care, however, in my “attempt at analysis in four points”, to identify the first of these three “points” so as to apply to the vast majority (if not to all) of the couples that I was able to know even a little closely, without

the vehement tone of "revolt" (ambiguous) necessarily predominates (even if it is in an occulted form). However, there is another common thing that I missed that day. It only began to emerge last night, during that well spent half hour where I let my thoughts wander, in the wake of "form" reflection. This important common thing, which I had never previously perceived that in the extreme case "vehement wife", is the subtle play of yin - yang role reversal.

I hesitate whether I should write that this game is "the mainspring" of the power game to which I alluded earlier, or that it is identical to the latter, surely, which for her (and often also for him) constitutes the quintessence of the masculine role, of the role assigned to men, it is the possession of power - a possession that is often fictitious, certainly, but which in any case draws an element of reality from the social consensus. Perhaps I had a tendency to underestimate the strength of this element of reality, the strength of the symbol of man, as representing an authority in front of woman - and in particular, its strength as a driving element in motivations. of the woman. I suspect that for her, "being a man", or "being the man", is above all else, exercising power. The "reversal of roles", at the level of egotistic motivations (*), is undoubtedly neither more nor less than the exercise of the woman's power over the man.

Given the existing consensus, this exercise of women's power can only be done in a hidden way. It does not consist of commanding, nor of pretending to decide (with the expectation that the decision will be followed), but of making things happen - and above all, of making things go crazy, and this, without ever seeming to do so. That's it, the famous marital carousel, which spins without ever being idle. The tactic to keep it moving, transmitted without words from mother to daughter, from woman or young girl to little girl, from generation to generation, is the tactic mentioned yesterday at the bend of the road, the "velvet paw" tactic. As long as we pay attention, we recognize it in an infinity of diverse faces, from the extreme-yang case of the wife

(*) There has been mention elsewhere, in passing, of the reversal of yin-yang roles at the level of the erotic drive and in the game of love. (See in particular the note "Acceptance (the awakening of yin (2))".) The erotic drive is by nature foreign to the games of the ego, and in particular to the games of power, even though the ego is eager to make an instrument to serve one's own ends, and skillful to achieve them (at least within certain narrow limits and by denaturing and mutilating the original impulse. If there is indeed a relationship between the two types of "reversal") " yin-yang, that is to say between on the one hand the free play of the two impulses yin and yang and in the lover, and in the lover, and on the other the obsessive play of an incessant and insidious demonstration of power of one of the spouses over the other, it seems to me that this relationship can hardly be other than this: that each of the two types, at each moment, excludes the other.

vehement, embodied for me by my mother, in the extreme case of the doleful (or even overwhelmed) wife, which I saw embodied by another close relative.

It seems to me that there are very few women who do not practice this immemorial tactic, and who have not mastered it thoroughly (*). It is used daily, especially in the marital circus, without being limited to this one. It seems to me that it is rarely practiced between women (perhaps simply because it is more difficult to “make” a woman walk than a man). On the other hand, for certain women, this tactic becomes like a second nature, in her relationship to all men or almost — to those, at least, who are perceived by her as having a well-marked virile character. .

If I speak here of “tactics”, this only expresses an accessory aspect, the “tactical” aspect precisely, of a more important reality: that of an inveterate internal attitude, towards “of man” in general, or at least with regard to the one, father, lover or husband in particular, who in his life plays a privileged role as a man, invested (by social consensus, or by his own her choice) of an authority. This attitude is by no means always in the nature of a thirst for domination (as in the case of “vehement wife”) — at least not in the sense in which we usually understand the word “domination”. It is rather a craving, which sometimes becomes all-consuming, to constantly exert an action on the other, to “keep them in motion” (implied: in movement around their own person). ...). For this, often, all means are good. One of these means of exercising an action, and thereby, a power, is to injure, and sometimes, to injure as deeply as possible, to completely knock out, and at the limit, to destroy, physically or psychologically. , provided only that the occasion is propitious; and this, always, without appearing to touch it, with “all the appearances of the most exquisite delicacy”. More than once I myself have been “sent to the floor” I Often also, caught off guard as a co-actor or as a witness, I have had my breath taken away by the apparent gratuitousness of the act which hurts or which destroyed, with an innocent smile or an absent air but always casually, seizing with an infallible instinct the moment and the place to touch the other where he can be most deeply touched - let this “other” be THE

(*) It is also true that there are very few men who do not “walk” like clockwork when “we” apply this tactic to them. I myself have walked without firing a shot for most of my life. It only really started to change with the appearance of meditation in my life, at the age of forty-eight (it's never too late to do well). Even today it happens that I let myself get caught in it, (not often it is true, and never for very long...)

father or lover, husband or child, or a simple acquaintance or even a stranger (only if the opportunity is there to strike and to reach...).

(139) (December 9) Here I touch on the extreme case, and yet by no means rare, of violence for violence's sake, of gratuitousness in violence and in malevolence. This violence, whether it strikes the stranger or the closest and supposedly loved being, is neither specific to the woman nor to the man, it is neither "yin", nor " yang". But the disconcerting and insidious form in which I encounter it here, under the mask of an air of absent-minded absence or even ingenuous gentleness - this form, which ended up becoming very familiar to me, appears to me to be particularly specific to the female. This is a circumstance surely linked to the "patriarchal" social consensus, which invests men with authority and power, vis-à-vis women (*). This form is its own means of satisfying a desire for power which, although it is forced (by the force of circumstances) to follow paths other than those open to man, is not for all that less imperious, less devouring. In her — quite the contrary! It would seem that not being able to unfold in the light of day, of being condemned in advance to an occult existence, only exacerbates and further proliferates this craving within her, to the point, in many cases, of truly "devour" his life and that of his loved ones.

This craving does not always reach, far from it (and very fortunately!), the dimension of gratuitous violence in all directions; and the registers on which it is deployed are not all in tones of violence. While tones of discreet derision are most often the rule, giving rise to veiled antagonism or secret enmity, simply mischievous tones, in a coloring of indulgent affection that is a little mischievous on the edges, are not excluded for as much. And if it is true that the proven tactic of the "velvet paw" is the privilege and weapon of choice of women, this privilege is by no means exclusive. Many times I have been able, and very closely, to see this weapon wielded by men (*), with mastery

(*) This consensus, moreover, and the authority of the man in his relationship with the woman, have been greatly eroded over the last generations, and more and more nowadays. I would be the last to complain! It does not seem, however, that this superficial change in laws and morals has changed much in the deep roots and "style" of relations between the sexes, and in particular in the visceral and carefully concealed antagonism of women towards man. This is undoubtedly due to the fact, underlined at the end of the reflection in this note, that this attitude of antagonism, and its means of expression through a certain play of power (or reversal of power), is much more the result of a transmission of a "heritage" from generation to generation, as well as that of "objective" conditions within the family.

(*) I note however this difference, in the cases known to me, that when there is apparent violence

just as perfect (**). remarkably, in all these cases, the man who had appropriated this weapon specific to women, was someone who had a tendency to repress certain virile sides of his being, and (by the same token, no doubt)! mold itself according to the maternal model.

This same tactic is frequently observed, and is almost the rule, in the power games played by children, girls or boys indifferently, towards parents, or towards other adults taking their place. , this immediately brings up the association also with the situation of writers or journalists in countries (past or present) where direct or indirect censorship is rife, making the direct and unvarnished public expression of their views impossible or risky. his true ideas and feelings. The main difference of this last case with the previous ones is that in this case the recourse to the indirect, veiled, sometimes symbolic expression of one's true feelings is no longer the work of the unconscious. , but of conscious thought. The reason for this is, surely, that there is then a sufficiently widespread consensus in favor of the unorthodox ideas and feelings that it is a matter of "transmitting" without appearing to be so), so that the person concerned does not feel no longer obliged to hide them from himself, for fear of appearing as a horrible denatured person in his own eyes. It is only in extreme cases of ferocious political or religious terror (as there were in the Middle Ages, or in the Soviet Union and the satellite countries of Stalin's time) that attempts at unorthodoxy arise. see themselves forced (among some at least) to dive a notch deeper still, by evading the gaze of the Internal Censor, as well as that of the censorship established in morals and in the police apparatus.

All these examples seem to suggest that the "velvet paw" style (or "I didn't say anything, ment "gratuitously" (I mean, unprovoked) towards a close person or friend, it is each time a person towards whom the person concerned maintains (even if it is unbeknownst to him) a long-standing grudge or animosity, materializing in concrete grievances (even if these remain unformulated most often). The only exception in this regard concerns my friend Pierre De Ligne, in his relationship to me and to those he assimilates to me, as belonging to my "sphere of influence". This is therefore an attitude of antagonism and violence (muffled, certainly I) without a "personal" cause, I mean: without a cause in the grievances (real or imaginary) that he harbors against of those he strives to reach. This, on the other hand, is a behavior that we encounter among many women, and not only (as here) towards close friends, or simple acquaintances or even strangers, but also towards such as among the closest, such as the lover or the husband (of course, and as a priority), or the brother or even one's own child.

(**) It would also seem that this tactic, implemented by the unconscious, always inherits from it this "fingerprint" and this almost infallible certainty, so rarely present in a fully conscious action. I don't think I've ever seen this tactic used without mastery.

nothing thought, nothing wanted") appears, more or less automatically, in any situation that is even slightly lasting, where a balance of power against us makes it impossible, or at least dangerous for us, to candidly express, directly, our feelings, desires; ideas, intentions - and, more particularly, feelings of animosity or enmity towards those who are perceived as exerting a constraint on us (and in particular, the very constraint which purported to prevent us from expressing our feelings real) (*). This is not, moreover, the only case where the style in question appears, and the interior arrangements that it covers. Very often, this "balance of power" is more or less fictitious, it corresponds much less to an "objective" reality, taking into account the true dispositions (or means of power) of the one or those perceived as "oppressor", that rather to the idea (conscious or unconscious) that we have of it. This idea is rarely the result of a careful and intelligent examination of a given reality, but it is almost always part of the "package" of conditioning of all kinds that we receive in our young age, taking into account certain fundamental choices. which have been operating in us since ancient times. Thus, whether in a girl or a boy, the (unconscious, of course) choice of identification with the mother implies the adoption of a whole set of attitudes and behaviors (such as those in particular which are expressed by the "velvet paw" style, and at the same time ideas (most often unconscious, but that doesn't matter) which underlie them (such as ideas about a certain balance of power, and the reflexes of antagonism which accompany these ideas). In the opposite case of identification with the father, but when the father himself has integrated into his person certain typically "feminine" traits (or which are such in our society, at least), we can see that the effect can be quite similar to that in the first

(**) While writing these lines, the thought occurred to me that the situation that I have just described is precisely the one with which we found ourselves confronted in the first years of our childhood, all of us without exception, suffice to say . A large part of our unconscious (the part that we could call "the oubliettes", generally perceived at the unconscious level as a sort of "trash pit"), is nothing other than the response of our child's psyche to this pressure from those around us, which forces us (it is practically a question of survival) to bury away from our own eyes, as a sign of disavowal, all that within us which falls under the influence of social censorship. This censorship is soon internalized into an internal Censor, whose sullen presence guarantees the longevity of this premature burial. However, despite the Censor, unorthodox impulses, knowledge and feelings, duly buried, manage to express themselves, sometimes with heightened and formidable effectiveness, in an indirect, often symbolic, and nevertheless perfectly concrete way. The "velvet paw" section offers a particularly "striking" example – and often disconcerting...

cas.

The point I want to get to here is that in our current society, and at least in the environments of which I have been a part, it seems to me that this style ("velvet paw"), and this inner "feminine" attitude that I examine here, are only to a very limited extent the spontaneous individual reaction to objective force relations, established by society or by the particular situation which surrounds our childhood (or even, our adulthood in such moment); that it is rather an "inheritance" taken from one or the other of our parents (or even both at the same time?), who himself had taken it from one of his parents to him. Obviously, this inheritance preferentially follows the maternal line, being transmitted above all from mother to daughter. But more than once I was able to see a transmission from mother to boy up close.

Nothing leads me to think that transmission cannot also take place, exceptionally, from father to boy, or even from father to daughter.

(140) (December 10) I would like to return to some associations around the theme of gratuitous violence. This was the theme with which yesterday's reflection began, then I moved away from it, to return to an examination of the "feminine" (or "velvet paw") style in power games, and as a means expression of a disposition of antagonism towards others (and above all, towards men perceived as strongly virile or as being, in any capacity whatsoever, in a position of authority, of prestige or power).

As I recalled yesterday, (apparently) gratuitous violence, violence "for pleasure", is no more specific to women than to men. Everyone has had the opportunity to suddenly find themselves confronted with it, at a turn in the road, as much in the face of the "most exquisite delicacy", as in that of the kick of a boot or the burst of machine gun in the wind. -be. This last style, the "yang" style certainly, is even rarer in these times, so-called "peace" times, and in civilized countries like ours. For most of us, well-bred people and more or less well-situated in a country of affluence, this violence which calls its name well is not part of daily experience, as it is case of the other, hushed violence, with an ingenuous air. However, it is only necessary to browse the "news stories" column of the first major daily newspaper, or to listen to the news (*), to realize that gratuitous violence "lasts", even among us, always runs rampant. streets. This

(*) These are things, it is true, that I stopped doing a long time ago, contenting myself with occasional information through intermediaries.

doesn't always go so far as to cut the throat of the anonymous little old lady that someone has decided to rob. But when young people in search of adventure "borrow" the car left recklessly open in front of their house, it is rare that, by leaving it in a ditch ten or twenty kilometers away, they have not first trashed it. Even in the peaceful countryside where I have the good fortune to live without worrying too much about anything, the smallest farmhouse or shed remains unoccupied for a long time, until it is already plundered from top to bottom (that's the utility) and what's more, copiously vandalized (that's for fun). In all these cases that I have just mentioned, the gratuitousness of violence appears particularly striking, due to the fact that the person it hits is a stranger, someone often not known. never seen and will never be seen again.

This is therefore a violence that we could call "anonymous". Undoubtedly, wars have always been a kind of collective orgies of such violence - times when the opportunity to kill for free is king, and when the life of a particular wave is worth zero compared to the pleasure of supporting on a trigger and to test its power to make a faceless and nameless silhouette collapse in front of you...

If there is one thing in the world, as far back as I can remember, which each time left me distraught and speechless, it was seeing myself confronted once again with this violence which surpasses understanding. , the one who strikes and destroys for the sole pleasure of striking and destroying. If there is one thing in the world that imprints on us this indelible feeling of "evil", it is neither death nor the suffering that the body can endure, but it is this thing. And when such violence (whether it appears harsh or mild, whether it appears "big" or "small") comes to you unexpectedly from one of your loved ones, it is sure to hit hard and hard. deep, to bring forth (or resurface...) and sweep over you a nameless anguish. The root of this anxiety goes deepest, when it finds the soft, fresh soil of childhood, even early childhood, to take root. This anguish, "the best kept secret in the world" in my life as a child as in my life as an adult, appeared in me at the hands of my mother, in my sixth year.

It was at the age of 51, during the month of March 1980, that I revealed the episode of the establishment of anxiety in my life. The hold of anxiety on me had been defused even before, to a large extent at least, with the appearance of meditation in my life (in 1976), gradually taking an increasing place. A third decisive turning point in my relationship with anxiety took place in July and August 1982 during a careful examination of the

mechanism of anxiety in my everyday life. The situations that created anxiety, from my childhood to middle age, were those which, in the unknown depths of my being, made me relive again "that which surpasses understanding". These are also the ones, very precisely, where I saw myself still confronted with the familiar signs of violence apparently inexplicable, elusive, irreducible... The sudden irruption of this violence suddenly causes a wave of desperate anguish to resurface and surge, immediately taken under control and repressed.

This visceral reaction has remained almost the same until today, more or less (*). If anything has changed in recent years, however, it is through the appearance of a reflection in the wake of anxiety, which makes understandable, and often obvious, what had appeared under the threatening mask of "what is beyond comprehension", of the delusional; and above all, for two years, by the appearance of a look at myself, a look of interest and solicitude for this anguish itself, which a reflex movement of peremptory force would like to make me hide from myself. Or to put it another way, my relationship with anxiety has become, and especially over the last two years, a relationship no longer of visceral refusal, or of tamer of wild beasts or gravedigger, but rather and increasingly, a relationship of attentive and affectionate reception to the message it brings me about myself — both about my present, my past and its action in my present. This, it seems to me, is the last step that I have taken so far, towards an increasingly complete inner autonomy vis-à-vis others, that is to say, before anything else: towards my loved ones and my ands (**).

(*) (December 14) It would be more accurate to say that this reaction remained "the same, more or less" until the time of my meditation in July and August 1982. While the "provocations" taking me by surprise have been numerous since then, the "visceral reaction" in question only appeared once, a year ago. It was then the occasion for a short "incidental" meditation, lasting a few hours, which completely clarified the situation. As soon as a confused internal situation is faced with simplicity and assumed, the anxiety which accompanies it to bring us the message of our confusion, disappears without leaving a trace, except that of knowledge, and of renewed calm.

(**) This "last step" has already been discussed at the end of "Acceptance" (n° 110), in the somewhat different light of a liberation in relation to the need for approval or confirmation, which "truly constitutes the 'hook', discreet and of unfailing solidity, by which the conflict can 'hook' in us, and by which we are... under the dependence of others..., by where in short he 'holds' us, and (casually) maneuvers us as he pleases... ". (This passage, funnily enough, could have been written on this very day - yet I swear I didn't copy anything!)

I cannot say if there are still other such "steps" to take before me, which will give me perspective to

It is, it seems to me, the violence-that-doesn't-speak-its-name, the violence in "feminine" fashion, which is most strongly generating anxiety, much more than the more spectacular violence of punch in the face. The one who plays with muffled violence, and who thereby also plays on these secret valves which release in others waves of nameless and faceless anguish - he holds in his hands a weapon more formidable than an authority or a simple power of coercion. And to maneuver at will and at one's fancy, with an air of innocence, these floodgates of anxiety, undoubtedly represents a power more incisive and more formidable, even though it remains occult, than any power of fact or of principle, established by social consequence. This is the "just revenge" of woman on man, in a society where the latter claims (or has claimed) to dominate her; and this is also the price that "he" pays for his illusory supremacy (present or past). If she is a slave (and in our countries, she is less and less), he is a puppet in her hands or almost (and he still is today as much as he ever was) .

For several years, each time I see myself confronted with a situation of gratuitous violence (whether it is carried out against me or against others, whether it manifests itself in a brutal or insidious way) The association with self-contempt comes to me with unanswerable force - or rather, I see this self-contempt in one who affects, openly or in his heart of hearts, to despise others. I have no doubt that this is not a simple push-button mechanism in me, a "philosophical" or "psychological" hobby that I would be happy to bring out on occasion, as a means perhaps of exorcise with a convincing formula the anguish I was talking about, by nimbly sticking a catch-all label on a threatening stranger. It is knowledge simply, of an essential, profound and (once seen) obvious relationship.

This knowledge does not "evacuate" anything, it simply allows me to situate an unknown person, it is in no way a sentinel, placed there to block the path of anxiety, or to expel it from the place. This is not the nature of knowledge, in the sense in which I understand it. A con-

see my current autonomy as still being relative, and not complete (as I would tend, however, a little naively perhaps, to believe...).

The emergence and blossoming of a relaxed relationship that is attentive to anxiety represents a liberation in the relationship with others. Indeed (as it is said in the following paragraph), it is the possibility for others to "maneuver the valves of anxiety" in us as they wish (notably through alternation, measured and administered with skill, of gratification and rejection), which represents its main means of power over us.

birth is part of an inner calm, it helps to give it its foundation. It is an agitation within us, on the other hand, which constantly pushes us to want to block the way for “intruders”, lest they disrupt a “calm” of composition. The calm I speak of does not fear the intruder, it makes us welcome him. And the surface agitation created by the new encounter with anxiety does not disturb this calm, but it contributes to it.

(141) (December 13) With my “sneak” in the previous note, on the “slave” and the “puppet”, I have surely found a way to displease everyone, and (if I am read.. .) to be called names! Unless the hypothetical reader applauds happily, who knows, convinced that the image is well sent and applies to the whole world, except to himself; and except perhaps, at most, the sarcastic author.

By this supposition, moreover, he would be giving my modest person a credit which in no way belongs to him. At most I would venture to admit that for several years (and above all, since a certain meditation on anxiety, in July and August 1982), I have begun to emerge, or even to have emerged, from the famous “circus” — from the circus marital, certainly, but also of others who resemble him like brothers. There is even, in the first part of *Récoltes et Semailles*, a section in this sense which announces this color well, called “Fini le merège!” (n° 41, from last March). There, it was not a question of the marital circus, but of a certain mathematical circus, in which I no longer had to spend a good part of my life, like everyone else. But it is also true that a few weeks after this section with a promising name, on April 29, a note appears “A foot in the carousel (n° 72), whose name would seem to announce another story! The difference with before, perhaps, is that if I still happen to go on some merry-go-round here and there (and I barely see anything other than the mathematical merry-go-round which continues to attract me...), it is myself (or someone in me at least) and no one else who pulls these threads that make me go in circles, and they have ceased to be invisible to me.

These reservations made, I can say that the greater part of my adult life (and more precisely, until the moment of the discovery of meditation), I “walked” like clockwork (like everyone else). , again), both in the marital carousel (it ran gaily for no less than twenty years!), as in the others. I do not regret it, because the knowledge that I have of carousels of all kinds, I owe it in the first place to those in which I myself filmed, if I filmed there for so long, it was because the student was slow

to learn — and also, surely, that in more than one way I found bait there. They ended up, at the end of the endings, losing their strength and their charm, one must believe...

It seems to me that in all these merry-go-rounds, I was always the one who “walked”, and never the one who “made it walk”. Or to put it another way, I don't think I ever had the shadow of a propensity for the famous “velvet paw” style — I happened to play the claws hard, but never, I think, the drowned claws in a velvety down. It is a trait, among many others, which attests that at the level of the structure of the ego, of the “boss”, of that therefore in me which is conditioned, the basic tone is strongly “masculine”, without any ambiguity. for once. The yin, “feminine” tones, on the other hand, dominate at the level of the “child”, of the original in me, that is to say also, in the drive for knowledge and in the creative faculties.

I would like to add a few more words about the “gratuitous violence” in my life. In the previous note (from three days ago), I mention it in the light of the one who happens to be the target of this violence, or at least the one who is confronted with it in others (even if it is as simple witness), when I write:

“If there is one thing in the world, as far back as I can remember, that has always left me distraught and speechless, it has been seeing myself confronted once again with this violence which surpasses understanding. , she who strikes and destroys for the sole pleasure of striking and destroying...”

These lines, and those that follow them, correspond well to reality”, to the reality of my own experience in any case, and surely also that of countless men and women who, like me, have been confronted with this violence -there. They could give the impression that the person who wrote them is himself entirely foreign to this violence, that all his life he has been free from such delusions. However, this is not the case. I remember certain relationships in my life, four in number, three of which took place in my childhood or adolescence (between the ages of eight and sixteen), relationships marked by enmity not based on any grievance. precise personnel, and expressed in the form of systematic and merciless mockery, or through ruffées and other brutalities. The first time the victim, a classmate (again in Germany), was the bully of the whole class. The situation dragged on for years, I seem to remember. The following two cases take place during the war, during my stay (after leaving a French concentration camp) in a relief children's home.

Switzerland at Chambon sur Lignon, "la Guespy", between 1942 and 1944. This time the "horrible ones" were one of my comrades (whose parents, like mine, had to be interned, as German Jews), and one of our two supervisors, both German-speaking like me. They were both a bit like the Turkish heads of a group of young boys and girls, sometimes ruthless, of which I was a part - but I believe that I made life harder for them than any other of them. the whole gang. Cohabitation under the same roof, and the common situation of refugees with precarious status, under the constant threat of a roundup of Jews by the Gestapo, could have aroused in me feelings of solidarity and respect, but it did not. nothing was.

In all three cases, the person I took as the target of malevolence was of a gentle nature, rather shy, in no way combative, whom I therefore classified as "soft" or as "cowardly", and who was therefore part of traits that were supposed to make him a somewhat re-shining character. In a time devastated by the breath of violence and contempt for the person, and myself filled with aversion for warlike or concentration camp violence, and for everything that accompanies them, I nevertheless felt entirely justified in the contempt and the violence that I inflicted on others, for the simple "reason" that I had liked to classify him as "unfriendly" (and other qualifiers to match...), after which everything (or almost) became permissible, not to say highly commendable. I, who flattered myself that I had a "logical" and fair mind, did not then see that my behavior, and its justification by an antipathy (the true nature of which I certainly would not have thought of probing), were the same. ex-actly as those of the good-natured Germans of the thirties vis-à-vis the "dirty Jews" (things that I had seen up close in my childhood); and that these were also the people who made possible this unprecedented outburst of violence which was then sweeping the world. I, of course, pretend (in the wake of my parents) to distance myself from this violence as a strange aberration (even, sometimes, one that "beyond understanding"). I was full of haughty condescension towards all those, soldiers or civilians, who in one way or another consented to be active or passive cogs in the heroic mass graves and in the abominations. -nations that accompany them. And at the same time, at my modest level and within my own limited range of action, I was doing like everyone else...

If I try to discern the cause of such strange blindness in the service of deliberate contempt and violence, this comes up. The violence that I myself had had to endure during my childhood since the age of five, without ever having been designated as such to my attention as a child, had ended up creating a state of chronic tension, remained unconscious and carefully controlled by a strong will. This tension, or accumulation of aggression without a particular target, created the need for a discharge of aggression. This “need” was not, however, of a bodily nature – the opportunities to let off steam through appropriate bodily activity were not lacking in any of these cases – but rather psychological, surely there must have been an accumulated resentment, especially unconscious of course and which did not materialize in palpable grievances towards such a person in particular (one of the born parents, let's say, or one of the people who took their place), on whom I could then have transferred feelings of resentment, and their give a concrete expression, violent perhaps. There must have been a “vacant” violence in me, a diffuse, wandering violence, looking for a target on which to unload. It seems that it is often the animals (insects, toads, dogs or cats, even oxen or horses...) who bear the brunt of such violence, wandering around, looking for a victim. This was not the case for me, I do not recall having martyred an animal in my life, neither small nor large. Apparently, a scapegoat closer to me was needed, a person! When we look for one, surely we never have trouble finding one.

I have no doubt that what I have just written describes a certain aspect of reality well. However, I feel that this description still remains on the surface of things, it only surrounds a certain “mechanistic” aspect, without really going further into the unconscious experience. At the moment, in place of this experience, there is a sort of great “blank”, of emptiness. This is not the time and place to go beyond, to probe further what this “white” covers, what dissolves in this “empty”. Is it this famous “self-contempt”, which asserted itself so peremptorily in the note of three days ago, and which suddenly, now that it concerns me, seems to have vanished without leaving any trace? traces? It would be the moment now or never, finally, to be clear about it, to elucidate this tenacious and ambiguous “fuzziness” which continues to mark the knowledge that I have of myself, like the “fuzziness” which previously surrounded the role and very existence of anxiety in my life. This was the anxiety, the “best kept secret” in my entire life, it seemed to me. Could there be another secret, even better kept, barely touched upon here and there, on two or three occasions, since I started meditating? I have the

feeling of having everything in hand to find out the end of it - including this sudden influx of very familiar interest, which tells me that the moment is ripe to get started! However, I feel that I am not going to do it here, in this meditation that is somehow "public", or at least, intended to be published. This will at least have had, among many others, the virtue of making a question unexpectedly mature, which had suddenly become very close, finally recognized as crucial for an understanding of myself, whereas previously it seemed a bit like a question among a hundred, on a long waiting list of which I will perhaps never see the end...

It is by no means excluded that I will still have the opportunity to meet one or other of the three men (two of whom are around my age) who were once the innocent targets of violent and an aggressiveness in me; or if not, at least, that I will have the opportunity to write to one of them. It will be a good thing for me to be able to make amends, and to do so with full knowledge of the facts. Maybe it will be a good thing for him too. Strangely enough, however, I don't have the impression that any of the three were ever really angry with me, and that my violence triggered in him a personal animosity towards me in particular. Rather, it seems to me that the whole context in which he was caught must have been experienced by him as a sort of calamity, from which there could not even have been a question of escaping, and that my own person was perceived more as a among the figures in this calamity, only as a merciless tormentor (which I was) and hated. It may of course be that I am wrong, and that I will never know - just as it may also be that I will have the chance to be confronted one day with this karma, which I sowed in blindness .

There must have been, I believe, a maturation in me in the years following the "Guespy" episode, without there having been any reflection on this subject, as far as I remember. The fact remains that there were subsequently effective reflexes in me, which would have prohibited me from further associating myself with acts of collective violence by an entire group against one of its members. I don't believe that the thing has happened again in my adult life, nor that I have ever been tempted to play such a role again, which I must have felt to what extent it was false, and without courage under a cheerful exterior. and "athletes". This does not prevent the fact that after the war, life was responsible for accumulating before me situations full of veiled violence and anguish, and of perpetuating in me the deep tensions which had already marked my childhood. and my adolescence. It is in this context that

There is a fourth relationship, marked by occasional movements of animosity and violence that I can call “gratuitous” — not founded or provoked by concrete grievances, nor even (I believe) by acts that could pass for “gratuitous” provocative”. It’s about my relationship with one of my sons. I know, however, that I was no less attached to him, and that I “loved” him no less than my other children. But at a certain level in the unconscious, there must have been in me a refusal of certain aspects of his person, precisely those which made him softer and more vulnerable, and also more difficult to understand, than his brothers and his sister. Clearly, he did not “fit” at all, even less than my other children, with the beautiful superyang images that I would have liked to find realized in my children - and this all the less, given certain very harsh circumstances which had surrounded his first two years and had marked him a lot, made it more difficult for him to form trusting relationships with his parents. The fact remains that during the time he still lived with me under the same roof, until around his tenth year, I sometimes subjected him to punishments of a humiliating nature, imposed in a thunderous voice. These were things which had completely sunk into oblivion, just like a certain atmosphere which had ended up permeating the family air - these are some dialogues with his sister and his two brothers, two years ago or three years, which very opportunely brought these things back to my memory a little.

Perhaps the day will come when he too will be willing to talk about it with me — he who, perhaps, among my children, has borne the brunt of a family atmosphere charged with hushed anguish and unaccounted for tensions. ; or at least, the one who “sucked” the most at the hands of their father, while each of them had their ample share of the parental “package”. At least I know — and I am happy about it — that what prevents one or the other of my children from maintaining a simple and trusting relationship with me, their father, and from talking together about a difficult past and to probe it, it is not a fear that they would have kept towards me, and that they would strive to hide.

But here again, this is not the place in these notes to probe further into a complex situation, which involves six or seven other people as much as myself. What was important to me above all was to make an unvarnished observation of the occasional appearance, here and there in my life and in my own actions, of this same apparently gratuitous violence, which so many times “has left distraught and speechless”, when I encountered it in others. This observation is not made with a particular “intention”, it does not claim to “explain” or “excuse” gratuitous violence in anyone, any more than it is supposed to explain or excuse the

mine. It is not impossible, and even probable, that by deepening the reflection, the two violences, that in others and that in me, will end up clarifying each other. It's the kind of thing that ends up coming by itself, moreover, without it being sought, if I made this observation, it's simply because he was on the path and that (under penalty of ceasing to be true) I could not not do it here.

(142) (December 14) Last night's reflection very opportunely reminds me of this thing that we have such a tendency to forget, and above all (in this case) the one that I, myself, have such a tendency to forget that I am not "better" than anyone else, that I am cut from the same cloth as everyone else; exactly like one of my friends whom I am about to place in the hot seat, at the center of uncompromising attention...

Yesterday I gave a sort of description of the appearance of (apparently) "gratuitous" violence, reflecting the release of accumulated tension and aggression onto a particular scapegoat who, for one reason or another, happens to have the head of the job. This "mechanistic" and superficial description, surely "well known", can give credence to an equally "mechanistic" attitude towards this violence, in oneself or in others. This is then seen as a sort of inevitable fatality, a fatality rooted in the very structure of the psyche alas - what could we do about it? Such an attitude, under a "rational" or "scientific" appearance, seems to me to be nothing other than the rationalization of an abdication: the abdication before the presence of a creative freedom in oneself and in others, which opens up the option to each of us to assume the situations in which we find ourselves placed, instead to passively follow the slope lines of the ready-made mechanisms, ready to take charge of us at any moment, if it is true that it is rather rare that we make use of this "freedom" option, the simple presence of this option and creative possibilities within us, whether or not we choose to make use of them, completely change the nature of things. It is through this, and through nothing else, that situations involving relationships between people, or from a person to himself or to the world around him, have a dimension which is absent when instead of people, they are (let's say) computers, however sophisticated they may be. It is also through this that the privilege of responsibility for our actions and for the motivations of our actions appears for each of us. This responsibility is in no way relieved by the fact that we often resort to the convenience offered to us of hiding our own motivations.

to return to the present case as an illustration, if I was able to play the great soul while using my power to torment such a comrade who had done me no harm, it is because behind a "good faith" On the surface, I had chosen an attitude of rude, phenomenal bad faith, which was as eye-popping at that time as it is now in hindsight, forty years later. This was indeed a choice, which nothing forced me to make, and which amounted to turning a blind eye to the tensions and aggressiveness accumulated within me (while asking me, of course, for beautiful ideas "no -violent"), and to evacuate them "softly" (sic) onto the scapegoats at hand. Such violence - that is also to say, almost all of the violence and abominations which rage in the world of men - can only take place, and their secret function can only be accomplished, on condition that this this remains strictly secret (even though it is obvious); on condition therefore of being taken "bladders for lanterns", of playing with conviction a crude double game, by obscuring for the needs of the cause our most elementary faculties of knowledge. We are encouraged to do so, it is true, by the air that has always surrounded us, while we have always seen those around us eager to sanction through their consensus the subterfuges, however crude they may be, in the service of fictions which had their consent. And my own subterfuge, in the specific cases I have spoken about, did indeed have the consent or tacit encouragement of those around me, without which I would not have been able to maintain it and continue my game.

Taking responsibility for a situation, on the other hand, is neither more nor less than approaching it in good faith, in the full sense of the term, that is to say: without making use of the facility offered to us to hide its consequences. obvious ins and outs, by crude subterfuges. It is therefore also, quite simply, making use of our healthy faculties of perception and judgment, without taking care to conceal them for the needs of this cause or that. Something which may seem strange, and yet is also simple and obvious - when we approach a situation in such dispositions, dispositions of "innocence", it is transformed immediately and profoundly, so confused and so knotted that she could have appeared. Or to put it better, if it was "knotted" in fact and had not moved a bit for a long time, it was because we ourselves were preventing it from evolving, from "flowing" according to your needs. own nature; that we obstruct its spontaneous movement, following the consistent example of all those who have surrounded us since our earliest childhood. It is enough to stop stiffening, to stop obstructing, so that things which seemed frozen will start moving again,

so that what was stuck comes loose, and the hard accumulated tensions finally find release and resolve in a new and ample movement, finally reappearing.

This “ease” or “convenience” that we have, with the encouragement of all, of “taking bladders for lanterns”, and thereby blocking what is made to flow, has in fact nothing of “comfortable” — lanterns. That said, everyone does what they want, at all times — that’s our privilege. And at all times, through what we do, we sow, for ourselves and for others. And the harvest of what we sow begins right now.

(143) It would perhaps be time to return to this “first plan” of the Funeral, that is to say to the ins and outs of the role played by the Grand Officiant at my funeral, my friend Pierre. I had already returned to it a week ago, in the note “Velvet paw — or smiles” (nǚ 137, of December 7), only to move away from it again with this digression (on five consecutive notes) on “the label” and “the velvet”. I feel that this “digression”, like many others that preceded it, was not in vain.

If I was led there, it is precisely because the most striking apparent trait, perhaps, in the way in which my friend took on his role, was the persistence, without any inclination to rupture at no time, in the purest “velvet paw” style, in the service of an unfailing antagonism which never speaks its name (*). Another salient fact, behind the pleasant and well-tempered appearance of the knowing smile and the friendly airs, many times was expressed in my friend, towards myself or one of those he placed among “mine” (at the level of mathematical work), an unequivocal, and apparently gratuitous, intention to harm or injure. I have spoken at length enough about concrete facts in this sense, in the first part of the Burial, for it to be useful to come back to this here. It is indeed

(*) As I have already had occasion to point out elsewhere, the fact that antagonism, or a deliberate statement of rejection or derision, “never say his name”, is in no way special to my friend Pierre, but (as far as I am aware) applies to all participants in the Funeral, without exception. This is how in these “funerals of Yin” through derision, the underlying note in each of the participants (and as befits such a funereal occasion) is itself — yin!

See also, for this “occult” character of the Burial, the note “The Gravedigger — or the entire Congregation”, nǚ 97.

of malicious dispositions (strictly circumscribed in the domain of scientific activity, it seems), of "violence" in a strong sense of the term, even though this remains strictly occult — the claw always drowned in exquisite downy silks. And this violence, this malevolence has all the appearance of the most disconcerting gratuitousness - it would seem that they are exercised for the sole pleasure of harming and injuring.

As every time we find ourselves confronted with such a situation, it seems so unbelievable that we often hesitate to believe the testimony of our healthy faculties (*). Rejecting this testimony, as is common practice, is one of the countless ways of not accepting a situation, and thereby perpetuating it. It is surely preferable to reflect on the thing, to go around it, perhaps looking for aspects which may have escaped us and which provide an approach to it, which allow us to integrate it into our experience. There must be few people, it seems to me, who at no time in their lives have not gone through such dispositions of maliciousness without cause - and to agree to remember this is already a possible step towards getting closer to a situation of fact, that common reflexes would rather encourage us to evacuate quickly. It is surely also good to probe further, to see if there might not be some hidden grievance which would be the cause and the result of a violence which seemed without cause - as it is also good, if necessary, to recognize for what they are bogus "grievances", of the style (for example) that I myself practiced, knowing that such and such is a horrible character who deserves no consideration etc.

But in the present case, no matter how much I probe, I do not see anything appear which, closely or remotely, resembles a grievance that my friend could (rightly or wrongly) harbor against me, or against him. against any of those he has chosen as the target of malevolence. At no time did he himself suggest anything that would go in the slightest in this direction; not to mention that, when questioned more than once by me about such of his actions as had left me speechless, he at no time admitted that there could have been in him with regard to anyone the shadow of dispositions of enmity. I ended up feeling a secret gratification in him, during my occasional meetings, when he gave me his good reasons, all that were objective, with his very own air of somewhat innocent surprise. amused... In short, I entered into a game that he played as he pleased and at his pleasure, and with an intimate satisfaction that took me a long time to perceive. (However, he was very far from being the first to make me go crazy like this

(*) See on this subject the note "The dress of the Emperor of China", n° 77

!) I still ended up, better late than never, getting out of that merry-go-round (**)!

If, on the other hand, I probe myself, reviewing my relationship with my friend since we met almost twenty years ago (in 1965), I also find no trace of something which, at any moment, could have been the cause of some grievance against me. In the conventional, superficial sense of things, I can say that during all this time, and more particularly in the first five years of close contact, I “have only done him good”. But this observation immediately reminds me of another, less superficial one - that of a complacency in me with regard to it, which appeared during the reflection in the notes “Being apart” and “Ambiguity” (nŷ s 67 and 63). It is clear that this complacency was in no way “good” for him — and also, that the dispositions of my young and brilliant student and friend towards me developed in close symbiosis with my own dispositions, and more particularly, with this complacency. It is not impossible, even, that this, at a certain unconscious level, was (not only perceived, an obvious thing in any case, but moreover) felt by my friend as a “grievance”, as a scenario perhaps too well known and rehashed over and over, in his young age as a child who was a bit of a prodigy on the edges, and who was served to him (even if discreetly) again. He had perhaps believed, naively, that by setting foot in the “big world” of mathematics, everything would be different from what he had known — and then no, it was always the same tobacco 1 (And by his own choices deliberate, today it's still the same tobacco again, and even bigger, what's more...)

Exactly what it is about that, I'll probably never know. It's not my job to clarify it, assuming that I have the antennae fine enough to be able to do it by my own means. If there was a “grievance”, it was in any case, at most, an “additional” grievance, which contributed its flick to setting “something” in motion — a certain I moved us by a force of all kinds. other magnitude; a force whose presence I have felt for a long time, but whose nature remains enigmatic for me. Before leaving this “foreground” of the painting of the Burial, I would at least like to try to calculate the nature of this force.

There is, visibly, an eagerness to supplant, to oust, to erase, and also to appropriate the fruits of the labors and loves of others with a mathematical lady. However, it is clear to me that it is not a simple “bulimia” of prestige, of admiration,

(**) It was in 1981 — this is the “second turning point” referred to in the note “Two turning points”, nŷ

of honors, nor even of power, which is the deep spring of the role which is his in the Burial. How many times, during my reflection on this role, have I been struck by the extent to which this obsession in him to bury made him bury himself! He had received, through his exceptional gifts and an equally exceptional situation, everything he needed to far surpass his master, and to leave a deep imprint on the whole of mathematics of his time. All he had to do was let the child in him play as he pleased, without bothering him with instructions, barriers here and forbidden meanings there - simply limiting himself to taking care of what was necessary, strictly stewardship. In doing so, and without having to push or pull or elbow, the "boss" in him, undoubtedly neither more nor less greedy than in anyone else, would certainly not have lacked all the imaginable marks of prestige, admiration, honors, and power on top of that, not even knowing what to do with it, while it's the kid who's having fun and doesn't give the boss much time to play. the bosses...

Certainly, in simply "utilitarian" terms, it was a really bad deal to get involved in a Burial that had stuck with him for fifteen years or more, and which was set to stick with him after his lifetime, if the The cumbersome deceased had suddenly decided to disrupt the Ceremony, by lifting the lid of his coffin, at the moment (of course) when we least expected it! (Bets are off on the impact of the unfortunate incident on boss Pierre's future bets...) Or to put it another way, my friend had the makings (by his intellectual means, at least), and the letters from nobility, to be a Peter the Great in mathematics, and he chose instead to play the little Peter. It seems like a bad deal indeed, at least if the goal pursued was indeed, above all, that of vanity satisfaction.

(144) (December 15) Towards the end of last night's reflection, there was in me the slight discomfort of someone who, with a peremptory air, offers reasoning of impeccable logic, while dismissing the diffuse feeling that there is something wrong. This "something" appeared, moreover, as soon as I stopped writing. A vague way of putting it is this: the "logic" of the unconscious, that which governs our most crucial choices, is in no way that of ordinary conscious reasoning, and even less that of reasoning. "orthodox". In this case, the perception I have of the "assets" of the young man Deligne in the second half of the sixties (let's say), and the weight I give them

(which goes in the same direction, at least, as the weight that any reasonably well-informed mathematician will give them) — this perception and this weight (which I would like to describe as “objective”) have no relation to the dispositions and feelings of the person concerned himself; with those, in particular, concerning his own abilities, which certainly form the key asset among all those at his disposal.

I have the impression, however, that at a conscious level at least, and with all the style clauses that modesty demanded, my friend had integrated and made his own the flattering echoes that had been coming back to him for a long time, surely, on the subject of his unusual gifts. But there is no doubt for me that on a deeper level, the one where the major choices that dominate a life are made without words, this “objective” version of things became (and still remains today) a dead letter. In its place, there is an insidious doubt, which no “proof” of value (or superiority over others...) will ever uproot - a doubt all the more tenacious because it remains forever unformulated. I perceived it in my friend, as I perceived it in others less brilliantly gifted, and it is the same. This doubt is the stubborn messenger of an intimate conviction, which also remains unexpressed, even more deeply buried than this doubt itself: an intimate conviction of impotence, fundamental and irremediable. It's her too, this “. self-contempt” which I spoke about at the very beginning of *Récoltes et Semailles*, in the context of a reflection which remained “general” (*). It reappears, in an impersonal context again and under a different face, a month or two ago, like a “feeling of crack” (**) — this diffuse feeling which I had noticed for the first time within myself -even, two days after the day I discovered meditation. And several times also during the reflection on the Funeral, there was a sudden and acute perception of this “intimate conviction of impotence” in my friend, shedding new light on a situation which seemed to defy common sense. (***).

I know that this intimate conviction, in my friend or in any other, is itself like the shadow of a knowledge - of the knowledge of a “crack” precisely which indeed exists from a “mutilation” suffered, and sanctioned and maintained until this very day by his own acquiescence. The shadow does not, however, restore the knowledge from which it comes, beneficial in itself like all knowledge - it is rather like a caricature of it.

(*) See the section “Infallibility (of others) and contempt (of oneself)”, n° 4.

(**) See the note “Half and all — or the crack” (no. 112), dated October 17.

(***) See on this subject the note “The reversal (3) — or yin buries yang”, where (among others) are mentioned some such “sensitive moments” of reflection.

deformed and gigantic structure, a scarecrow version. What thus distorts and makes knowledge unrecognizable is a fear - the fear precisely of making contact with this knowledge itself, of letting it rise from the depths where it has always been repressed, and of assuming the humble reality of which it is the faithful reflection.

To make contact with this dreaded knowledge, to take cognizance with a fully conscious gaze of this reality known in the deep layers, and to escape - this is what, truly, means: to reestablish full contact with this in us (that we call "the force", or "the child"), "believed lost and died a long life". For it is certainly this strength and nothing else, the strength of childhood, which makes us capable of assuming the knowledge of that within us which is cracked, mutilated, paralyzed. And assuming it also means resuming contact with this other knowledge, prior to that of our mutilation and even more essential than it: the original knowledge of the presence of this "force" which rests in us, a force which is not that of the muscle nor of the brain, and which contains both.

Something that may seem strange, this lost knowledge of the presence in us of this "force", of this creative power, as an obvious, indestructible part of our true nature - this knowledge is found through the discovery and humble acceptance of a state of helplessness, resolved by this very acceptance. The knowledge of a state of helplessness covers and hides the even deeper knowledge of our creative force. This one is like the key which opens us to this one, both inseparable in truth, like the front and back of the same knowledge (*), objects of the same fear.

When I speak of "the force" buried in each of us, it is by no means an abstract and vague thing, a purely verbal subtlety of a "philosopher", or of a psychologist who is a little philosophical on the edges. It is this force that allows you to "do math" (or "make love"...) like a child breathes — that is to say, without prudently forcing yourself not to leave the in the wake left by your predecessors, and to repeat with application the gestures and recipes (or the clichés...) which were theirs; and it is also the one that gives you courage and humility, in

(*) In this image, of course, the "upside" is the knowledge of the state of impotence, that of inauthenticity, of "cracks", while the other side, even more hidden, is the knowledge of our undivided nature and our creative power. I have observed again and again over the years that it is indeed the "other side", the more deeply buried knowledge of the two, which is the object of the strongest fear, and the most vehement denials. It is not so much the familiar and innocuous state of the trained and (more or less) "learned" monkey that worries anyone, but rather the innocence of the child who senses things as they are and calls them by their name, and who does and says as he feels, without shame of being different from what "is" expected of him.

your own house as in that of others, to call a spade a spade and not take bladders for lanterns, even if in doing so you go against the best established consensus, or the most inveterate mechanisms and the best practiced in yourself. (ỹ)

(*) (December 16) The action of the creative force in each person, of the force of renewal (or “child force”), can be recognized by its fruits, both by the works of the hand or the mind, as well as through the facts of everyday life, in the relationship with others and with the beings and things around one. I was able to note again and again that creativity in everyday life is much less common than that through “works” (in the conventional sense — that is to say, tangible “products”, shaped by the hand or by the spirit, creativity).

The presence, in the life of such a person, of continuous creativity, is the sign of a continuous “contact”, however fragmentary and imperfect it may be, with the creative force within him. This is something other than the mere presence of “gifts”, and a continuous investment of energy to take advantage of them, expressed by a more or less important production, more or less “quoted” too. , but which does not have, in itself, creative virtue, virtue of renewal.

In my intellectual quests and in particular, in my mathematical work, with modest “gifts” (but considerable investment), it seems only this “contact” with the force in me, that is also to say, the tacit knowledge and deep as I had, were almost intact. That is to say, that more or less I “functioned” on the totality of my (creative) means in this area (very fragmentary it is true) of my life, almost without loss, diversion or blockages of energy through the usual “friction effects”.

One of the most common among these is a certain pusillanimity, which so often makes us deaf to the inner voice telling us what we have to do, when what it teaches us is precisely “new”, that is to say , leads us on paths that only we tread. This kind of inhibition, almost absent from my relationship with mathematics (and this, it seems to me, more and more over the years), on the other hand exists* in other areas of my life as well. as much as in anyone else, and in particular, precisely in that of “everyday life”. It's not uncommon for me to detect this kind of inertia, or laziness, in my day-to-day life.

Coming back to the mathematical activity, I see a somewhat reversed relationship in my brilliant ex-student. He has “gifts” that have always amazed and enchanted me, incommensurate with my own. (It is true that the longer I live, the better I see that it is in no way 1 the truly essential thing, to do innovative work in science or elsewhere; see on this subject the reflection in the note “Yin the Servant (2) — or generosity” (nř 136).) His investment in mathematics is considerable, as was mine not long ago, and since his young age he has benefited from exceptionally favorable conditions for the development of his gifts, and for the design and development of a work that is commensurate with these. Twenty years later, I am still waiting for this work and am left wanting more! There is surely a certain “contact” with the creative force within him, attested by the beauty of such things that he made — but this contact is disturbed, tormented. My friend's relationship with his work, and even in his work itself, is a relationship of conflict - work becoming, more and more over the years, an instrument in the hands of the “boss” to satisfy his cravings, foreign to the child's thirst to know and discover.

The first example that came to my attention really hits its mark - it is sure to make the heart of any young (or even less young) glory-loving researcher beat faster. Who would not want to be the intrepid pioneer of sciences still in progress, and as such figure prominently in all the textbooks, like Kepler, father of modern astronomy¹ But when it comes (as Kepler did and others) to tenaciously spin his own thread in solitude and in the indifference of all (except disdain or hostility), for thirty years or even for just one — then he Suddenly there's no one there! We want to be in textbooks, in good company, but we are also afraid of being alone, even for a year or even just a day. But the one who “knows” the presence of the force in him (and to know it he has never had to talk about it, neither to others, nor to himself...) — he also knows well that he is alone, and being alone does not cause him any worry. And whether he'll be in the textbooks is the least of his worries — especially when he's working.

It also turns out that this same Kepler, in his very work, “went against the best established consensuses” in his science, and established for millennia, what's more. In his time (when the Inquisition still existed) this was even less convenient than today, where there is a good chance of losing your job, or of not finding one, but without risking ending up on a pyre. Coming back to Kepler, I don't know what the situation was in his everyday life, with regard to the “best established consensuses”; maybe he was holding his own, like everyone else. What is certain is that today, as in the past and always, there are not many people who deviate even a bit from these consensuses; it is undoubtedly still the same tobacco — the fear of being alone, the reverse of a deep and almost universal need in man: the need for approval, for confirmation

I doubt that such a conflict relationship can be resolved without first being assumed - that is to say, before anything else: recognized. At least, not once in my life have I seen such a thing done, without the other, which is what made me write that the knowledge of our helplessness was “the key” to regaining full knowledge of our creative power, and thereby also, fully, this creative power itself.

In my mathematical work, the question did not arise, because in this work there was no deep blockage, equivalent to partial impotence, which would have made me “function” on only a small part of my possibilities. On the other hand, the question arose for me as for anyone else, at the level of my daily experience, in my relationship with others and with my own person, with my non-body and with the impulses of my body. It is at this level that I experienced, again and again, that becoming aware of a blockage, of a “helplessness”, was indeed the key that freed a captive creativity.

by others (and is there only one who approves and confirms)... (*)

(145) But I have strayed from my point again! I started with the observation that my “reasoning” from last night was off the mark, when I wanted to “transmit” this conviction into myself, that my friend's motivation to play the role that I know in my Burial, and in the way that I know, was not greed (for prestige, admiration, honors, power). It is certainly true that by exchanging a child's enthusiasm for a role, he had made a “bad deal”, even from the point of view of “returns”, prestige-wise, etc.

But that doesn't prove absolutely anything. Such “bad calculations” are moreover the almost absolute rule, it seems to me, and by no means the exception, in the choices (at the unconscious level) of our main investments and options. But even though the reasoning is worthless, I have no doubt that what I wanted to convey is indeed the perception of a reality: that it is not this very real greed, and which has taken on a growing and truly devouring part in the life of my friend, that it is not however that which constitutes the nerve in this role played by my friend, as the key character in the implementation of

my funeral.

If I try to understand this very clear feeling more closely (without there being any question of “establishing” its validity!), I come up with this: it is this gratuitousness in the act antagonistic or malicious, gratuitousness which many times left me speechless, which absolutely does not “fit” with the all-purpose “explanation”: greed. As for prestige, admiration, honors, at least, and even for “power” in the current sense of the term, my brilliant ex-student and friend gained nothing, neither at the moment nor in the long term. maturity, by playing, vis-à-vis the one who was his master, with this “discreet and delicately measured disdain” of which he had the secret; or by playing on this same disdain (perhaps less delicately measured) towards a researcher of lesser status than him, or towards his present or past work, so as to discourage the one whose confidence in his own faculties of judgment was not as firmly anchored as in me; or for yet another, who had courageously persevered against the general disdain for which my friend set the tone, by robbing him of the fruits of his perseverance against all odds. If it is true that in this last case, as in others, my friend pretended to appropriate the fruits ripened by others in solitude (and sometimes in the disdain of his

(*) I join here, in another way, with observations which had already appeared in the sections “The fruit defended” and “The solitary adventure” (n^os 46, 47), and also, in passing, in the note “Acceptance” (n^o 110).

elders), this “benefit” – there (in the “Pouce” (*)) style – is so derisory, when we think about who is the one who appropriates it in this way, that the “explanation” put forward leaves itself in smoke!

I know well, for my part, and with obvious knowledge, that it is not this benefit which is the “nerve” of such appropriations. On the other hand, I feel the intoxication of a certain power - a power more delicate, and no doubt more exhilarating, than power in the conventional sense, as such a man of science and importance commonly exercises it while sitting in Committees, Councils, Juries and the like, by directing an Institute, or the research of brilliant young researchers, or by speaking in the ear of a minister. The “drunkenness” of which I speak appeared (for the first time in the reflection) in the note “La Perversité” (n° 76), when I suddenly found myself confronted with “an act of bravado, a sort of 'drunkenness in a power so total, that he can even allow himself to display (symbolically...)... his true nature of “perverse” despoliation of others”.

It was a brilliant, ostentatious act of bravado, and yet at the same time occult, unformulated, slipped in casually, with even a semblance of a circumstantial explanation for this strange name “perverse bundles”, what's more natural, we will enlighten you on this in three words, in addition to a small list of “what should have found its place” in our modest and brilliant article... (*).

I recognize here, once again, the purest “velvet paw” style, aka “Thumb!” style. — and behind the uniformity of a style that has become familiar to me in more than one person, I also feel the common nerve: this imperious, devouring thirst to exercise power; a certain power, and in a certain mode - the power of the cat over the mouse, when it plays its Great Game with this perfect grace (which only the mouse is not able to appreciate at its value), and with “the most exquisite delicacy” for sure — or also the power of a clever wife over her big dope of a husband...

From the specific case posed by my friend, I was already led to talk about the “style” in question, and its meaning, in the general context of couples of all kinds. It was in the reflection a week ago, in the note “The reversal (4) — or the marital circus” (n° 138, of December 8). This is where the “nerve” of the game “velvet paw” (aka “Thumb!”) appears for the first time, with all the clarity it deserves, as a power game. As

(*) See the notes “Thumb!” (n° 77) and “Appropriation and contempt” (n° 59) about this style of appropriation at my brilliant friend and ex-student's house.

(*) See the note “The Conjuror” (n° 75).

a game of power, however, of a very particular nature: the fascination of the game on the one who practices it, its very often devouring charm, consists precisely in the occult character of the power which is exercised by it, this character "neither seen nor known", which allows you to play with the other (him, never with him...), make him go around in circles as you please, always leading the dance, where the other follows clumsily blow after blow, clumsily response to these little blows carried by invisible threads that we handle at our whim and according to our good pleasure...

It will have been enough for me to finally write in black and white what has undoubtedly been obscurely felt for years, without me having ever taken the trouble to formulate it clearly - it will have been enough for this short effort to condense into words which for a long time had remained diffuse, so that what only yesterday appeared "enigmatic" to me (namely, the nature of a "certain force" in such a friend), suddenly opens up its obvious meaning to me. This "force" in him, or (as I wrote earlier) the "nerve" of such acts which can seem "inexplicable" (even, "beyond understanding"), I had already clearly identified it in the reflection of December 8. But while the starting point for this crucial reflection was indeed a certain "enigmatic" game of my brilliant friend, it was another experience, richer and more intense than that associated with his person, which fueled this reflection; an experience, entirely assimilated (or almost), and which gave me an already formed knowledge, which the more epidermal experience of my sporadic relationship with my friend Pierre could not then have communicated to me.

Of course, it was this experience that ultimately needed to be understood, and thereby fully assumed; and if I then launched myself without inner reservation into a digression on the "couple carousel", it was because I felt that this carousel had something to tell me about the relationship with my friend. The thought of him continued to be present in the background, like a discreet background note.

However, the complete "joining" of the two did not happen that day, nor in the following days. No doubt the moment was not yet fully ripe. For the junction to be made without reserve or effort, with the ease of evidence, I first had to "clear the ground", by following obstinately and without haste, one by one, the most compelling associations which demanded -but my attention. I didn't rush things, and* I knew that this was exactly what I had to do - take care of what called me insistently, without letting myself be diverted by a "talk" or by a "thread" (of reflection), or even by a program to be completed.

While I weed and hoe, the forces of earth and sky do their work. When evening comes, all you have to do is come and collect the ripe fruit, which falls into the open hand to

welcome him...

(146) (December 17) It seems to me that with the reflection of the day before yesterday, there was a sort of unlocking of an understanding which had remained undecided, a little stunned, in the face of a quantity of facts and intuitions piled up in front of me in a rather amorphous heap - like a puzzle of which I had only managed as best I could to put together a few pieces here and there. There I have the impression of having come across a nerve "piece" of the unknown picture that needs to be reconstructed, around which the others will finally be arranged without effort. I have no doubt in any case that I have touched the "nerve" behind the role played by friend Pierre in the burial of the master and his (more or less) faithful, and the "nerve" too at the same time, of his relationship to me, the deceased master.

This craving to play with a certain power, pulling invisible threads discreetly and with an air of candor - this craving must surely have been present long before I met him, unknown to himself and to everyone. If I did not see it manifest in the first years we knew each other, before the episode of my departure (in 1970), it is undoubtedly because in these years of intense learning and growth of 'a delicate and powerful thought, my friend's energy was totally absorbed elsewhere. The conditions were indeed ideal, to serve as a springboard for his exceptional means. The episode of my departure, first from the institution of which we were both part, and then (in the year which followed) from the mathematical scene, was a crucial turning point not only in my own spiritual adventure, but surely also in his. It is this episode which suddenly opens up to him means of power of which only the day before he would have dared to dream: the power, first of all, to "evict" from the place a former master who occupied a very large place there, and from whom previously he had limited himself to discreetly distancing himself (*); then when it became clear that he was disappearing from the scene, the even more exhilarating power of making him disappear without leaving

(*) On the subject of this concern to distance oneself, then to evict, see the notes "Eviction" (nŷ 63) and "Brothers and spouses — or the double signature" (nŷ 134), as well as the sub-note (nŷ 1341 to the latter, and finally the section "The unfinished harvest" (nŷ 28). (**) Even, on the subject of the liquidation of a "School" and the "chainsaw" effect, the notes "The heir", "The co-heirs..." , "... and the chainsaw" (nŷ 90, 91, 92) and the first four notes of the Procession "Fourgon Van" (coffins 1 to 4) nŷ s 93–96. Concerning the vision that was buried, see the two overviews (in two different lights) given in the two notes "My orphans" (nŷ 46), and the subnote n 1361 to the note "Yin the Servant (2) — or generosity".

Note that in the main text, the expression "and in doing so..." ("...to cut short...the development of a vast program...") is not adequate. The liquidation of a School was the first "transitional blow"

traces of a certain School which bore the name of the late master; and in doing so, finally, to cut off, in all its main branches (except the one on which he was himself perched), the blossoming of a vast program in the service of a vast Vision, from which he was himself fed for a long time (**).

The meaning of this great turning point in my friend's life appears to me as a sort of reversal in the mutual relationship of hegemony of the two dominant forces in his person, those which seem to me to take precedence over all others; the mathematical passion, and the "craving" for the power play ("with velvet paws"). The first of these forces is in essence of an "impulsive" nature (*), the second is of an egotistical, "acquired" nature. Before the turning point, it is the drive for knowledge that dominates my friend's life (as far as it is known to me), while the craving for power is more or less dormant, in a state of vacancy. At the end of a dizzying social climb in the space of a few years (**), and in a situation that suddenly appeared posing a draconian choice, it is the temptation of power and its secret intoxications which wins (the hand high I believe, and without any desire to fight) on the passion for knowledge. This does not disappear from the scene, but it is now a vassal and humble servant of the craving, an instrument in its hands. Passion (aka "the worker") goes about her work under the jealous eye of Fringale, alias "the boss", who never leaves her side. As the worker has good tools (not all of which are forbidden to him), and good hands, even thus kept off guard, he continues slowly to maintain production and the reputation of the house. But it's no longer like before, of course, when the worker (very childish on the edges) had his fun all day long, while the boss was far away and only came to tack once a season!

The subsequent evolution seems to me to be more of a quantitative nature than qualitative. It is the progressive evolution of a certain tactic of the boss, following a style which remains uniform, while the boss-worker relationship no longer changes one bit. This boss has a cautious temperament, and he only likes to venture where he is sure of winning. For that, . you have to be sure

saw" radical for "cut cleanly" one. set of main branches, but not the last (as evidenced in particular by the coffin notes cited, nys 93–96).

(*) That the mathematical passion is "of an impulse nature", that it is an expression of the "child" (aka "the worker"), does not prevent (as is forcefully recalled in the Berne paragraph) that it is also not more or less strongly invested by the "cravings" of the "boss" — and this is part of the common lot (from which I have not been exempt any more than anyone else) in the relationship between the "worker" and "the boss".

(**) See on this subject the note "The ascension" (n — 63).

from the field — or even, be sure of the tacit approval of the “entire Congregation”, starting with the more restricted group of ex-students of the deceased. The evolution of the personal relationship maintained with him against all odds is a faithful reflection of the evolution of “knowledge of the field”. There is a progressive escalation in the boldness of the game of power and contempt, culminating after twelve years (in 1981) with the prowess of the Colloque Pervers, where all restraint (and even, all caution) are blithely thrown away by overboard in. general euphoria (*). Thus, it took twelve years for my friend to convince himself that the terrain was so favorable that no more caution was required: every shot wins! The time was definitely ripe to finally get out in broad daylight the secret weapon, the motives - exhumed under an alternative authorship the following year (**).

I do not feel motivated to retrace the successive steps of this twelve-year escalation here, even though I would have everything in hand to do so. This would be the work of a chronicler, as I did enough in the unforeseen “investigation” pursued in the first part of the Burial (or “The Dress of the Emperor of China”). These “steps” of an escalation appear to me like so many probes, launched by my friend in the direction of a silent congregation, with each time the same response: he could go there i For almost fifteen years, She was his silent ally and his surety, while he was, without knowing it or probably caring about it, his docile instrument (***).

(147) I don't know if this craving in my friend is exercised against others other than me, and younger mathematicians in whom he smells my “smell”. No echo came back to me in this sense. On the other hand, it is clear to me that it is through his relationship to me, and thanks to a situation that is certainly unusual in the scientific world, that this propensity in him which existed in the shadows has become, overnight, an all-consuming craving. During the episode of my departure, when he explained to me, with all the appearance of seriousness, that he had given his life, completely, to mathematics (*), he undoubtedly “believed” this that he said, and I myself, a little stunned nevertheless, did not think of putting his

(*) See, on the subject of the “Pervers Colloquy”, the Procession VII “The Colloquy — or bundles of Mebkhou and Perversity”, notes n°s 75–80.

(**) See, regarding the exhumation of the motifs, the notes “memory of a dream — or the birth of the motifs”, and “The Burial — or the New” Father”, n°s 51, 52.

(***) see the note “The Gravedigger — or the entire Congregation”, n° 97.

(*) See, regarding this episode, the note “Brothers and spouses — or the double signature” (n° 134).

words in doubt.. However, if I had had a finer ear, or to put it better, if I had then had the maturity to listen and trust a “finer ear”, which indeed exists in I, like everyone else, would have known that what he told me about himself was perhaps true the day before, but that it was not true that day. It was a noble reason given for a doubtful act, an act whose meaning neither he nor I then had the simplicity to face, even though it was striking. It was something other than such a passion, which had seized the reins of his life in those days, never to let go until today.

It is therefore my person, or rather something in the relationship of my friend to my person, which (the favorable occasion helping) then had a triggering role, for this drastic change of nature in the force which dominates his life, and in the sense and direction of his investment in mathematics, it is the moment here to remember the famous “vo-lets” or “aspects” of the Burial, featured in the reflection of the 13 November (in the note “Retrospective (1) — or the three parts of a table”, nŷ 127), and in the note which follows it (“Retrospective (2) — or the crux of the table”, nŷ 127), shutters which have had time to get lost a little along the way since then. I pretended to remember it, a little, in the note from ten years ago. days, “Velvet paw — or smiles” (nŷ 137, December 7). In particular, I reconnected with the intuition of this eternal role of “adopted parent” that I had to play with my young friend, and which, it seems to me, was preserved and remained active in him until Today. On the occasion of this reflection, I once again express an unreserved conviction, which must have formed and taken shape little by little over the past six or seven years at least (for even longer, perhaps). being): that it is “around this aspect (the paternal aspect in his apprehension of my person) that the conflict is tied - a conflict which already existed in him long before he heard utterance my name... ”.

(So this is the famous “Superfather” part, while the “Supermother” part still remains in limbo, for the moment at least.)

Moreover, it is barely a page later that the famous “smiles and velvet paw” style makes its first and rapid appearance, as an object of attention. The associations attached to it seem at first, in the days that follow, to distance me from the person of my friend, as well as from the occult “paternal” aspect, in the role that my friend assigned to me in his life. This aspect hasn't been discussed before even today — you can't think about everything at once, and even less talk about everything at once! As for thinking, however, it seems to me that somewhere, in the indistinct but nevertheless present and active background,

the thought of this paternal aspect had to be present, it had to act as an effective and discreet stimulator of this long digression on a "claw in velvet" style. After all (I now explain it clearly, after the fact, but it must have already been there in the form of a diffuse and yet peremptory motivation...), the figure of the "father" is in no way foreign to this famous style, quite the contrary. We can even say that the very first person in her life that the little girl (or little boy, whatever) sees led delicately and roundly (but not always tenderly) by this style, is none other than Dad! And as long as the innocent kid (or the brat) adopts and makes this style and this know-how her own, which must become like second nature almost at the same time as we learn to speak, or rather need it — the very first guinea pig and beneficiary, no doubt, will be this same big daddy!

Most often, when I saw this game practiced, there was added the hidden anger of a grudge, in addition to a deliberate statement of derision. And certainly, in most families, there is no shortage of reasons for resentment towards the father, when there is also no shortage of those cleverly suggested (or even created from scratch) by the loving wife. At my friend's house, however, I never sensed such a hint of resentment or anger. When I saw him hurt or harm "for pleasure," it was truly (so I felt) for pleasure alone; not (I believe) the pleasure through the suffering or the humiliation itself that he inflicted, but rather the secret intoxication of exercising, according to his good pleasure and in this particular style in which he has become a master, a power - more exhilarating or even more spicy, no doubt, by this ingredient with a "perverse", "forbidden" connotation (to harm, or to cause suffering for pleasure), and which, however, he could allow himself, delicately and casually and apart that, until I'm no longer thirsty and galore...(*)

(148) (December 18) With the reflection of last night, I feel that this "foreground" of the painting of the Burial, centered on the relationship between my friend Pierre and me, continues to emerge from the mist of the misunderstood and confusedly felt. I had seen myself faced with the task, for quite a while, of inserting in this first shot (between entrees) a certain "Superfather" component, and without really having formulated it clearly for myself, this component had not doesn't really seem to want to fit in willingly. If there is a student that I have always felt completely "at ease" with me, not tense for a penny and at no time that I can remember, it is him! I hardly have any more

(*) See in particular, as a detailed illustration, the note "La Perversité", n° 76.

memory, it is true, of our very first meetings, and we cannot affirm that there had not then been in him this tension, often barely perceptible and yet very real, which appears when we approach someone for the first time someone invested (in one capacity or another) with authority or prestige, and from whom we have particular expectations. It is at least probable that such a tension must have been present, and that I paid no more attention to it than to any other young researcher I happened to get to know. What is certain is that if there was tension at first contact, it disappeared very quickly without leaving any trace. To use the image that appeared last night, he was as comfortable with me as a kid (or ex-kid) is with a sugar daddy he never had to fear, and who rarely refused him anything.

I thought about the situation again last night, after I stopped writing. It now appears to me that my friend's relationship with me operated on two very distinct levels, and (it would seem) without mutual communication. One of these levels, which was undoubtedly established in the weeks and months following our meeting, was that of the personal relationship - that of the "sugar daddy" therefore, nice as hell, not impressive at all, himself a bit of a child around the edges, including in his work, even to the point that there is a, I would almost say, maternal nuance about him, which I have already had the opportunity to mention once or twice: the one we give to a kid, dizzy and a little turbulent, and above all as naive as anyone. It's also true that in terms of work, and objectively speaking, he really had no reason to be impressed. Of course, I knew a lot of things about math that he didn't know (and that he learned in a few years, by playing), and above all, I had experience of mathematics that he still lacked. But he had a speed of assimilation, and an acuity of vision to quickly recognize himself in muddled and confused situations, by which he often amazed me, and which I lack. If I happened to impress colleagues myself, it was above all not the unusual dejection that I have in my work, mainly due, I believe, to a certain mode of approach that I have mathematical work. But there was certainly no reason for my young and brilliant friend to be impressed by it, whereas his own dejection, as long as he started writing (something which did not displease him in the least), was clearly even more effective than the mine.

This level of my friend's relationship with me, the "sugar daddy" level, seems to me to include the entirety of the conscious image he has of me, and also a good part of the unconscious image. It is this image, it seems to me, which provokes a response, undoubtedly following paths

established since childhood, as a reflex desire, that of the famous game of “claw in the velvet” — a game precisely which requires that we be entirely “at ease” with our partner, entirely “sure of himself” and thereby also, sure of himself (*). It is the level of complete assurance, based on an intimate knowledge of a situation, corroborated again and again by experience, which is interpreted in a fully concordant manner by the faculties of perception and appreciation both conscious and unconscious. The game itself is occult, unconscious for the person himself (I presume so at least), but the feeling of assurance and the perception of reality which establishes it, are in the conscious, rational, “objective” domain.

The other level, on the other hand, is entirely unconscious (at least that is my impression), uncontrolled and uncontrollable, of an irrational nature which seems to defy and mock any reasoned or reasonable knowledge of “objective” reality (which I just called back). At this level, the personal relationship strictly speaking, linked to a somewhat realistic perception of the Other, disappears. I myself appear there as a giant, powerful and secretly envied, and my friend feels like a dwarf, overwhelmed by the conviction of his irremediable insignificance, and devoured at the same time by the insane desire, not to be a giant himself then that he is a dwarf by immutable condition, but somehow to raise himself to his level, to pass himself off as a giant at least, or, even more secretly and insidiously — the insane desire to be this giant himself, or at least, to pass for him. I believe in this desire to detect yet another nuance, which is like the echo, in deeper layers, of the desire present in the layers close to the surface, which finds a symbolic satisfaction precisely in this “football” game. velvet”, and is its nerve and spring: the desire for a role reversal. In the upper layers, it is a reversal of yin-yang, dominated-dominant, object-subject roles. This relationship is not appropriate here, however, because the giant has no concern to dominate the dwarf - he is content to be giant, and thereby, without knowing it or worrying about it, d 'to be a perpetual and burning challenge - for one who feels overwhelmed by an irremediable condition of dwarf... this superb ignorance in which

(*) (December 29) This statement is only seemingly contradicted by the cases (which do not include my friend) where the “playmaker” seems (at first glance at least) to be impressed, even captivated, by the one he makes walk. However, this is a pose for the needs of the cause, of which of course the actor himself is the first dupe (on a conscious level, I mean) - which is essential to give this pose a certain air of “truth” which cannot be improvised! The most extreme case of this game that I have experienced was that of my mother towards my father. On this subject, see the two notes “The reversal (1) — or the vehement wife” and “The reversal (2) — or the ambiguous revolt”, n° s 126, 132.

he feels held, he feels it as tacit contempt and as an affront. It is this relationship that he burns to overthrow, himself appearing as the giant, and dooming it to insignificance - insignificance through forgetting, when it is not insignificance through derision, in fair return for the ignorance and contempt in which he himself feels held.

I said earlier that the two levels, “papa cake” and “giant”, “would seem to have no mutual communication”. On reflection, it would seem to me now that there is indeed a communication between the two, if only through this desire for reversal: the desire at one of the two levels now appears as an “echo” to the similar desire observed already to the other. At first glance, it seemed to me that this role reversal, on the deeper “dwarf-giant” level, was not a yin-yang type role reversal. What is true is that this reversal is not of the dominated-dominant type in fact. However, upon further reflection, there is no doubt that the values embodied by the giant are yang and superyang values, while the dwarf appears as the incarnation of yin non-values — in terms, I mean, of ideological options of my friend, not so different from the options that were still mine in the first years of our relationship (*).

This statement will undoubtedly become clear, when I have established a bridge between the image “the dwarf and the giant” and reality, or at least, explained the origin of this image in the history and prehistory of the relationship between my friend and me. It is hardly necessary to specify, concerning “prehistory”, that such a type of conscious or unconscious image only takes birth thanks to this deeply buried “self-contempt”, which I have many times already mentioned in my reflection; or to put it better, that such an image is nothing other than a tangible, more or less concrete, materialization of this contempt. Perhaps I could even say that this “secret conviction” is on the lookout for a situation that can serve as a support for it, and at the same time give rise to the scarecrow-image that expresses it. I believe that in everything in the psyche, however deeply buried it may be, there lives a force which encourages it to express itself, often in a symbolic way. This expression undoubtedly itself often remains unconscious, but it is no less active, quite the contrary, at the level of visible actions and gestures in everyday life.

(*) This concordance in the choice of “yang” or “superyang” values lasted until the time of my departure, in 1970. In the years that followed, my value system at the conscious level “switched” towards options “yin” and “superyin” — see the note “Yang plays yin — or the role of Master”, nŷ 118.

To return, this time, to the story of my friend's relationship with me, it also, undoubtedly, begins before our meeting. He must have heard about me around the time of his first contacts with the world of mathematicians, in Brussels, around 1960 - four or five years before our meeting, when he was sixteen or seventeen years old (*). It is surely no coincidence that it was me, and no one else, that he asked to teach him the profession of mathematician, or at least, to teach him what would be the theme and the tool central to his work (namely, algebraic geometry). Before our meeting, the features under which I appeared to him (at least as a mathematician) could hardly be other than those of my brand image, making me a sort of heroic and prestigious incarnation of the master values which are current in the world of mathematicians,, and this at a time when he himself was a modest student, fresh from high school. This image that he had of me, and which was the very one that I liked to give of myself, was not a simple image from Epinal, made to make high school students dream of glory. It was made from tangible realities, and he certainly had enough flair to smell it during those years, in contact with mature and well-versed mathematicians. From 1965 onwards, he was in a better position than anyone else to take my measurements himself. I then felt in him a fascination with a vision that was opening up to him, born and matured in me over the past decade and which continued to unfold and develop before his eyes. There was no doubt for me then that these visions which he made his own "as if he had always known them", would serve him in broad daylight as inspiration and as tools to develop even larger visions and work, within its means. He doesn't

(*) (December 29) I found this chronological information in the "Biographical Note" (two pages), by Pierre Deligne, written in 1975 on the occasion of the awarding of the "Quinquennial Prize" of the "Fonds National Scientific Research" (Belgian) (Rue d'Egmont 5, 1050 Brussels). I plan to return to this biographical sketch in a later note, where I will talk about Deligne's visit to my home last October. It was during this visit that I learned from him of the existence of this notice, which he was kind enough (at my request) to send to me later. It was in this notice that I also found the form concrete "the dwarf and the giant" of a certain image in my friend, of which a diffuse conception had gradually emerged during the reflection on the Burial. It began to appear in the note "The funeral" (n° 61), and became clearer, in particular, during the reflection in each of the notes "The eviction", "The knot", "The reversal ", "The massacre", "... and the chainsaw", "The Eulogy (2) — or strength and the halo". It is only with this note that this perception begins to "place" itself into a coherent overall view of the "foreground" of the Burial.

(March 1985) For the biographical note of Deligne, see the note "The profession of faith — or the truth in the falsehood" (n° 166).

was nothing - and it is only in the light of this long meditation on a Funeral, almost twenty years later, that I see how the fine and passionate perception of what I had to transmit to him must have served in at the same time to flesh out and support, with first-hand elements and an irrefutable reality, a horrifying, aberrant image; an image likely to paralyze, like the "intimate conviction" of which it is an expression. The very acuity of his perception of a "greatness" and a depth in what I transmitted to him and that he was the only one to have done well (and without effort) in its entirety — this acuity and this liveliness which were his strength, then turned against him, making the aberrant image even more striking and more peremptory.

I thought three days ago that I had touched the "nerve" of the role played by my friend for almost fifteen years — and there was indeed no doubt, then, that I had just touched a nerve point: this devouring craving for a certain game, a delicate game of power, which was at the same time the symbolic and ephemeral satisfaction of the desire for a certain reversal of roles... With today's reflection, descending into layers deeper, it now seems to me to touch the nerve within the nerve, the even more secret sting, which constantly arouses and maintains this craving. Because at the level of the "cake daddy", there is certainly the opportunity and every latitude to play this game in complete safety, leading the dance with nonchalant delicacy, and sure of winning every time. But undoubtedly the charm of the easy opportunity fades in the absence of a sting. And as I noticed again yesterday, there is no sting of hidden grievance, of secret resentment, when it comes to sugar daddy - that's why we call him "cake". "!" This missing sting in short, I just suddenly touched it earlier, when through the course of associations, and as if under the dictation of a knowledge which would have been there ready for a long time, I was led to describe this "other level", "uncontrolled and uncontrollable", where a dwarf and a giant live side by side.

And the initial impression of a still confused intuition, that between the two levels there was no mutual communication, suddenly disappears, giving way to an understanding, expressed and aroused at the same time by the double image of the "nerve within the nerve and the "sting". In terms this time of "layers", some superficial and others deep, I would now resume with a third image again, saying that these nourish or maintain the movement of those, that they are the basis of deep, firmly anchored in the structure of the self. Without this foundation, the agitation on the surface would quickly dissipate and disappear, finally giving way to something else...

(149) (December 20) Since the reflection five days ago, and that especially continued in the second of the notes of that day, “The secret nerve” (nǚ 145), I feel that the work on this famous “foreground” of the painting of the Burial) suddenly took another turn. Before this reflection, I felt in the somewhat embarrassing position of someone placed in front of a puzzle, where he would have the impression of not understanding much of it. Since April I had already strived to collect the pieces one by one, and to carefully inventory them. It's not that I lacked pieces, no, I would have rather had the impression of having too many 1 In any case, there must have been enough to make a painting, partial perhaps , but a painting that stands up. The last piece of the puzzle that I threw on the table was that of the “reversal” (of yin and yang), kept in reserve from the very beginning of “The Key to Yin and Yang” (like “ association of ideas” to which I promised myself to return), and finally bursting forth with an unexpected force in the note “The funeral of yin (yang buries yin (4))”, of November 10 (nǚ 124)! The thirty-five days that followed, until five days ago, were essentially devoted to turning over and over the pieces already brought to light in all directions, along with the most compelling associations demanding my attention (*). I expected that, in doing so, the said pieces would eventually come together on their own, to finally reveal the unknown picture. It has not happened. On the contrary, they continued to make fun of each other, like fragments of ten newspaper clippings, all different, which would have been thrown there pell-mell, it was up to me to put them together! I was starting to wonder if I wasn't going to be forced, at the end of the day, to do the final inventory of the parts, and another question mark regarding their assembly, and stop there...

The situation changed five days ago, when, by dint of turning and turning these famous pieces, feeling them and smelling them, something finally “tilted”, when one of them (that of 'a craving for a certain style) suddenly was recognized as “neural-gic”. I indeed had the immediate impression of a qualitative change, that a perspective which had been lacking until then was already in the process of being organized from this piece, it is in these terms that I will speak two days later, taking up the reflection in the following note (“Passion and craving — or the escalation”, nǚ 146). And my presentiment com-

(*) The “piece” which had been the starting point of all the reflection on yin and yang, since the beginning of October, only returns to the charge and is only explained fourteen days later, on November 24 , in the note “The reversal (3) — or yin buries yang” (nǚ 133).

was already beginning to be confirmed the same day, with the appearance of the “daddy - cake” piece, which looked like it had been called by the “nerve piece” precisely for the purpose of adjusting to it without any burrs!

The piece “Superpère”, which had been hanging around there forever (already inherited from the first part of Récoltes et Semailles, and taken up from the beginning of “La clef du yin et du yang” (*)), suddenly seems to move to profits and losses, as if she had simply strayed there by my care.

Under the still fresh impression of the new “cake” piece (**), I tend to forget that this famous Superfather (not “cake” at all, in fact) really had something to do with it. see in the relationship between my friend Pierre and me, even if he did not take center stage (he was far from it...). I still ended up remembering it at the next session, inevitably - at the precise moment, moreover, when I was preparing to explain to myself why this eternal piece of the puzzle had no nothing to do with it! She was, in short, “just the opposite” of the piece-cake, which had just placed itself with such ease. And then no, looking at it more closely, this piece supposedly foreign to the game, and whose contours had remained the most vague, suddenly clarified its shapes, “taking those of the force-image (blown by no other than my friend Pierre himself (***)) of the dwarf and the giant. I expected at first, seeing her reappear in such strongly marked features, that she would be “without communication” with the double nerve piece already placed (made up of sugar daddy, and the imperious craving for “the make it work” — a little phone call here, a little phone call there...). And now, on the contrary, it appears like “the nerve within the nerve”, like an even more neuralgic piece, fitting together without friction or separation with the part of the puzzle already in place!

This piece, under its old name “Superpère”, had already been touched many times already, and even taken in the hand and turned and turned like the others, and even (I remember now) declared a centerpiece, “ heart of the painting” and everything; but, perhaps failing to be embodied by a striking image (provided by the person concerned himself), and above all undoubtedly, by its absurd, aberrant/entirely crazy nature even in terms of the big

(*) See the sections “The enemy father (1)(2)” (n° s 29, 30) and the note “The Superfather (yang buries yin (2))”, n° 108.

(**) The term “new” part is perhaps not entirely justified. But it's a piece, at least, which had previously escaped inventory, it was so obvious!

(***) for details on this subject, see the last footnote of the previous note “The nerve within the nerve — or the dwarf and the giant” (n° 148).

“common sense” of current and universally accepted consensus, I was embarrassed and as if ashamed, of this damn piece, it burned in my hand: never anyone (including a certain “myself” who tenaciously continues to live in me...) will not want to take it seriously! You might as well pack up quietly and “play” on more removable pieces!

When I have just spoken of “centerpiece”, “heart of the painting” etc., regarding the piece that became “The Dwarf and the Giant”, it is in the “self-contempt” aspect. on that I think, rather than the “Superfather” aspect. For the moment, this last designation for this sting piece, or “nerve in the nerve”, is hasty and unjustified. I mean, it does not seem, at least at first glance, that this famous faceless giant with disproportionate hands has the slightest bit of a paternal figure. If he needs a name, “Superman” or “Supermile” would seem to suit him, rather than “Superfather”. So all things considered, the latter still remains well and truly on the table, for the moment at least, just like the piece (or “part”) “Supermère”, to which I will also have to come back.

For the moment, the most urgent thing seems to me to try to situate the part of the picture already placed, with the “secret nerve” and the even more secret “nerve within the nerve”, in terms of a yin-yang dynamic. in the person of my friend. On this subject, I have three raw facts. Two are expressed by the “double signature” yin-yin (*): friend Pierre has a basic “yin” tone, both in what we can call the “acquired personality”, expressing itself especially in the tonality of one's relationships with others, that in the “innate personality” or instinctual, expressing itself above all (for the external observer such as me, at least), by the spontaneous/free working style of the interference from the “boss”. The first fact, concerning the acquired personality, or the “structure of the ego” (or in more figurative terms, “the head of the boss”), seems to indicate that this structuring took place in childhood and from the first years of the life, by identification with a “yin” nature model. This does not exclude, a priori, that this model was the father, if he himself had (as indeed seems to me to be the case) an “acquired personality” with a yin base tone. But on the other hand, the predisposition in my friend to a craving for a kind of power game which, in our countries if not everywhere and always, is typically (if not exclusively) “feminine”, and more precisely, which is the 1st game among all that the wife has the habit of playing with the husband - this predisposition makes me suppose that the identification was made with the person of the mother, and that it is from her that he “inherited” of

(*) The idea of a “double signature” is introduced into the reflection with the note “Brothers and spouses — or the double signature”, n° 134.

this craving (or a propensity for such a craving), and that it is also from it that he adopted the appropriate "style" (or "tactic"), that of "the claw in the velvet paw".

It is possible that the father was both a cake-husband and a cake-father, and that my friend had ample opportunity for a long time to make him his first "guinea pig", and to sharpen his claws (and the velvet!) on him. But it is also possible that the propensity or predisposition in question in my friend remained unused until after his meeting with me, due to the fault of the first obvious target, namely his father, of having rather strongly marked yang aspects, to "provoke" this craving, and at the same time give use to the proven tactic to "make strong heads work". To tell the truth, none of the impressions I remember from the first years I knew my friend are likely to suggest that he was already familiar with this game, or even that he had already practiced it. In any case, I don't detect a trace of it, even with hindsight, neither in his relationship with me, nor in his relationship with others, in ways let's say somewhat of the "spoiled child" type. Also I would be rather inclined to think that this propensity in him still remained latent, and that it only developed and took the influence that I know on his life and his work, after my "death " in 1970 (when he was twenty-six years old), and thanks to a particularly tempting situation.

The "third fact" to recall here is the choice made by my friend of a system of values consistent with generally received values, the choice therefore of "virile" (or yang) values. These, over the past fifteen years, seem to me to have turned more and more towards "syperyang". In his case, there is a contradiction in this choice that is obvious: while adopting the "official" yang values, he nevertheless modeled himself, in most of the essential traits, following a yin model (*). And it is not that this choice of values is purely "bogus", that it would only be a false flag, raised for circumstantial reasons, and which would only be current in the peripheral layers of the psyche. The force-image of the dwarf and the giant, acting from deep layers, would lose its meaning, and also this imperative desire for reversal that it arouses, if the valorization of yang was not also internalized in these layers -there. There is no doubt that this contradiction must bring an additional living force to this "intimate conviction" of cracks, of insidious impotence - whereas (only due, perhaps, to the lack of an adequate "model" in his childhood on which to model himself) he knows (deep down) fundamentally different from what he "should be"!

If my friend, as seems plausible to me, did not find in his relative the traits which, following

(*) This is a type of contradiction common especially among women, and from which my own life has been exempt.

the current consensus around him, should have been there, and which he could then have made his own, this must have aroused in him a diffuse resentment, a resentment which was unable to cling to any concrete grievance, vis-à-vis -towards a dad whose only fault was that of being too "cakey"! this grudge, in the absence of a "hook" per cm to hang on, would then have remained "vacant", waiting for a suitable target – a target precisely which, first of all, acts (through the context) as a paternal figure, and moreover, whose aptitude for this role is patent, by the undeniable presence, dazzling perhaps even disproportionate, of these traits which were lacking in his "original" father. It is also these traits that make the new "father" the ideal target, in the sort of "game" already ready to be triggered here, which is only waiting for the right partner, aka "the father". spare", aka (here we finally come!) "the Superfather"!

And all of a sudden I seem to have returned to very familiar territory, which I only recognize at this very moment. It is a land where I was a prisoner for twenty years, during the only marriage of my life (a marriage from which three of my five children were born). In the lines of the preceding paragraph and without any deliberate intention (but rather as one who, cautiously, gropes in the shadows to become aware of what surrounds him), I have also just described in turn the neuralgic forces in the relationship to his father, then to me, of the one who was my wife. I cannot say when or how the knowledge (or rather the irrefutable intuition) of the silent and obstinate presence of these two forces within her and of their mutual relationship, came to me. One day I knew, without ever having thought of thinking about it at all, that the inexorable force which had dominated my wife's relationship with me, since the very first days of our marriage, was driven by resentment towards screw me for not having been there with her, like another and true father, in the days of a helpless childhood...

It is true and I know, certainly, that my friend's childhood had nothing "distraught", and that the personality that he developed and that I knew, between the sixties and now, does not resemble hardly to that of my ex-wife. This does not prevent the fact that beyond the obvious dissimilarities, I see appearing, in the part of the painting emerging from the shadows, a striking similarity with another "painting", which is well known to me. This similarity appears in the nature of the relationship with the father (linked to a father's temperament where the yang traits are deficient), and in the repercussions of this on an adult relationship which, in one as in the other, dominated his life, as the focus of the forces of conflict in both (*).

(*) (February 19, 1985) There is indeed a striking kinship between the relationship to my non-friend Pierre,

For a little, I was going to pass over in silence a third “similarity”, which however is not without consequences in my own life: it is that in the two relationships in question, the protagonist each time has been none other than Me. And what, in one case as in the other, designated me for this role of “Superfather” that I was called to play, was (in addition to immaturity) that also which since my childhood was already more dear perhaps than anything else in the world - that in which I had invested the most disproportionately: a “build” more virile than nature...

Thus I find again, in a different and more penetrating light than eight months ago, this feeling of a “return of things” (**) - with, today as before, a nuance of incredulous astonishment (it seems too “right” to be true!). And also, this time again but in tones more restrained than the sudden explosion of laughter of yesteryear, there is the perception of a comic, adding to these inexorable “returns” the softer note of humor.

(150) (December 22) Just yesterday, I did not find time to work on my notes, except for careful rereading and correction of the previous day's notes. These last few days, my energy has been diverted by correspondence tasks and others, and I am chomping at the bit (this is not a new thing!) at not being face to face with myself, to push before the reflection undertaken. The writing is decidedly slower in this third part of *Récoltes et Semailles*, centered on the present reflection, “The key to yin and yang”, where the dynamics of yin and yang is the constant thread to penetrate further into the meaning of the Burial. If I didn't take the precaution of setting the alarm, to provide an interruption in work after about three hours (just to stretch the body, or to alert me that the hour is getting late and it's time to get stop), the whole night would pass like an instant! The three hours have passed each time, while I have the impression of having barely started (or resumed), with two or three unfortunate pages that I have just typed , when it's only one or two, just enough time to go around some seemingly innocuous association that I thought I would step over in the process...

and (since the first days of marriage) of the one who was my wife. This kinship also extends beyond the relationship with myself alone, in the sense that both of them ended up developing a propensity to make certain loved ones, to whom ties of affection bind me (my children notably in one case, students in the other), instruments to reach me through them.

(**) See the note “The return of things — or one foot in the dish”, n° 73.

There is a feeling of extreme slowness in the progress, counted in numbers of pages per hour or per day - and the natural reaction to this feeling, with a hot substance right in front of my nose pulling me forward, this would be to work double and triple, as I used to do until recent years. But I know that this is the trap to avoid — the trap of this extraordinary “ease” in the work of discovery (*), when it is just enough to “push” forward, to be sure of moving forward. indeed, slowly perhaps but surely; like the one who would firmly hold in his hands the handle of a good plow of good hardened steel, pulled by a pair of powerful and impassioned oxen, and who would slowly and surely make his way, furrow after furrow, through dense earth, sometimes rough, and yet supple at the same time, docile to the shiny plowshare which delicately and without haste opens it, penetrates it and turns it over in large brown and smoking strips, bringing into broad daylight an intense and teeming underground life. The pace is slow perhaps, and the field is vast, and each furrow dug seems to barely dent the expanse which remains fallow. However, at the end of the day, furrow after furrow, the field is plowed, and the plowman returns home happy: for him, this day has not passed in vain. His pain and his love were his seed, and his joy at work, and his contentment at the end of each furrow and at the end of a long day, are his harvest and his reward.

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With the reflection of the day before yesterday, and for the first time perhaps in the writing of *Récoltes et Semailles*, I have the impression of having advanced on the uncertain terrain of what is not yet directly perceived or felt, and which remains (and perhaps will remain) hypothetical. Lacking eyes that know how to see in what seems to me twilight and night, I groped my way hesitantly, without any assurance if it was “the right one”. When the path forked, I did not toss a coin, it is true, which way I would continue; I relied on my flair and my common sense to show me the most plausible direction to continue, without having any idea where it was going to lead me. The path that I followed, where I traced myself, thus seemed to “fit” with the facts known to me, this was a good sign. But it was not excluded, especially where these facts were tenuous, that another entirely different path

(*) See the note “The trap — or ease and exhaustion”, n° 99.

would not have “stuck” just as much, on the condition perhaps of delving a little further into this fact that remained raw, or that other... Then, at a bend in the path and to my own surprise, I suddenly found myself on “a very familiar territory”, which I had previously traveled at length and with difficulty, which I had ended up knowing and leaving behind. A situation which, just a few moments before, appeared obscure to me, shrouded in uncertain mists of “no doubt” and “perhaps”, suddenly were illuminated by the light of another situation which was understood.

Questioning myself about the distant origins in myself and in the other, of the conflict in the relationship between such a friend and me, these seem to be revealed by a profound similarity suddenly glimpsed, between this relationship and another, which had weighed on my life and with a completely different weight, for twenty long years.

The appearance of this similarity was of such force, I admit, that this feeling of hesitation, of uncertainty, of groping disappeared immediately, to make way for a feeling of assurance, of conviction. When, at the end of the reflection, I speak of the feeling (“of incredulous astonishment”) that it “was too accurate to be true”, this feeling was the response to another, in the background, and who said that “it was too accurate not to be true”! And this feeling, surely hasty and unjustified in the current state of the facts available to me, has not been adjusted in the meantime, it is always present as a background note, whether I like it or not. Surely, without the help of certain experiences that I ended up understanding and accepting, and especially that of the long experience of my married life, the thought could hardly have occurred to me of this “rancor in a state of vacancy” (of a “suspended” grudge, in short); and this same thought, precisely, was also the “detour of the path” which, in the space of a few moments, brought me back to this “very familiar terrain” of my marital experience.

We can certainly say that a deliberate Unconscious statement will have brought me to a place already designated in advance, which perhaps teaches something about me and about this deliberate statement, and not at all about the motivations of others. As it is also possible that an assumed experience will have allowed me to apprehend a reality in others, which otherwise would have remained entirely enigmatic, due to my lack of having sufficiently sensitive “antennas” (and my lack, also, of having available tangible facts concerning my friend's childhood, and the personality of each of his parents).

It seems to me that I am very close to completing my rough sketch 1 of the “foreground of the painting” (of the Burial.) To assemble the last pieces of the puzzle which

remain in hand, I will use if necessary the elements of apprehension (however hypothetical they may be) which appeared in the reflection of the previous note. This will also be a way of testing their consistency with all the facts that are otherwise known to me.

In the reflection the day before yesterday, it was the "Superfather" piece of the puzzle which clarified its shape and contours. I first identified it, a little hastily, with the play "The Dwarf and the Giant", where the giant appears rather as a kind of "Superman" in an overwhelming format, and not as the "Father", or a "Superfather". But this last piece ended up appearing again in the same reflection, this time as the target of a "resisted grudge", a grudge in search of a target precisely, as if the said "Superfather" had been called by this very grudge and had appeared in response to this call, in fulfillment of a diffuse expectation. If this is indeed so, we can say that if the Superfather (borrowing for the occasion my build and my features, which apparently were tailor-made) had not appeared in the life of my friend, it would have been necessary to 'invent' ! That's it in any case, with nothing more hypothetical for me, in the case of the woman whose husband I was — and of whom I was, moreover, "the target, expected for a young life for a long time..." .

Thus, the Superfather appears as the "face side" of this "faceless giant with disproportionate hands" from the play "The Dwarf and the Giant". "The dwarf" must see him especially from behind, the giant, undoubtedly making his famous "demonstrations of force" (which is discussed in the note of October 5 "The Superfather" (n° 108)). So here is the play "Superfather" finally placed, adjusting to the "giant" side of the play "The Dwarf and the Giant". As for the "dwarf" side of this one, its outline also appeared more clearly by the reflection of the day before yesterday, which here joins that of the note of October 17 "The half and the whole — or the crack" (n° 112). It's still, as if. often, the eternal rejection of "yin", "feminine" traits, in favor of "yang", "masculine" traits, which causes my friend to be "fundamentally different from what he "should be"", then that he modeled himself in conformity with a predominantly "yin" model.

It is important here to emphasize that at no time in the past reflection did I think, nor did I want to suggest, that my friend's person was marked by a predominantly yin imbalance, therefore by a deficiency, a "empty" on the side of the yang traits, virile in his acquired personality. I recall on this subject that the impression that especially emerged from his person, at least during the first years when I knew him, was on the contrary that of a balance, of a harmony, which made him so endearing to me as for all those, it seemed to me, who knew him then. This impression is very closely associated with this other, of which I have spoken elsewhere

(*) — that he seemed to have retained something of the freshness, of the innocence of the child, in his approach to things (mathematics in particular) and also, it seemed to me, to people. This balance, and this “freshness” or “innocence”, are not subject to the slightest doubt for me — these are facts, which there is no question of wanting to hide. They expressed themselves in my friend through a delicate sensitivity, and, when the opportunity presented itself, through the nuanced and unambiguous expression of what was perceived and seen. There was a firmness, as there was a softness. The softness has faded over the years, leaving only the shell, muffled and empty, of a vanished softness - and the firmness has become closure and hardness, behind a facade of precious and borrowed half-tones. A delicate yin-yang balance transformed over the years (without anyone, perhaps, noticing) into the eternal yang imbalance — the same one, but in a different style, that had dominated my own life since my childhood. That was his choice, and these choices can change — the game is never over! The fact remains that I have never been aware, in my friend's life, of a passage marked by a yin imbalance, by a softness therefore, a carelessness, or an inconsistency; and I don't think there was any.

All this makes it at least probable that the person who served as his “model” in his childhood, who certainly had strongly marked yin features, did not lack yang features to balance them out. If (as I tend to believe) this person was his mother, I therefore presume that she had fairly strongly marked yang traits (in particular with respect to such traits which were undoubtedly less marked in the father) to appear as “the best choice”, as a “masculine” role model for a boy; and at the same time, to promote through such a choice the blossoming of a harmonious temperament.

Everything would seem, at this point, to be for the best in the best of all possible worlds, in a united family undisturbed by (perhaps) any disagreement. Everything would be for the best, if there were not a very small stumbling block, in the form of a silent and seemingly innocuous consensus: a boy is supposed to look like his father, and no to his mother...

(151) (December 23) It seems to me that to finish assembling the “puzzle” of the foreground of the Burial painting, I only need to place one last piece. This is the one I called “the Supermother”, in the note “Supermom or Superdad?” from 11

(*) See on this subject the note “The child” (n° 60), in Cortège V “My friend Pierre”.

November (nǚ 125). This designation “Super” was inspired, first and foremost, by the “portrait” of myself, with great bursts of superlative epithets, in my Funeral Eulogy (*). surely, a symmetry reflex must have also been at play, since there was already “superfather” in the air, in more than one way! On reflection, however, the name I gave to the image that had just appeared didn't quite hit the mark. What was evoked by this superyin image had no “maternal” connotation. If it was in a symmetrical relationship with another image, it was that of “Superman”, with muscles of steel and an IBM software brain, rather than that of “Superfather”. So in this case it would rather be “Superwoman” or “Supernana”, with heavy breasts hanging down to the navel and beyond (not to mention, down to the knees...), and buttocks at the 'adventurous, to make Hercules dream - as for the brain, let's not talk about it... a little in these tones. The insufficiency of the language must also have forced my hand a little, given that there is no ready-made “female” counterpart to the famous “Superman” (itself a recent invention in fact, modern version of a Hercules decidedly overwhelmed by events). Still going for “Supernana”, for lack of anything better...

It must be said that I dragged this poorly named piece around for almost a month and a half, without really doing anything with it, except recalling it here and there for the record, as a promise that we was going to take care of it, but later. In the end, she shouldn't have inspired me that much, and that could well be because of the name which didn't really stick. After all, I would be hard pressed, among all the friends (ex-relevants and other colleagues that I have had in the mathematical world until today), to find a single one towards whom I have ever held a “maternal” role, or one that I had the impression attributed to me such a role. Even those towards whom I would have played a more “yin” role, , receptive, instead of an especially “yang” role of the one who teaches, communicates, transmits, must be very rare - at first sight I hardly see (after the years 1952, 53, where I did my thesis) that Serre, and again... If I try to remember what my current, not to say permanent, dispositions were in relation to other mathematicians, it was above all that I always had “ brand new carpets to be “placed” (to use the image that was current in my time), not to mention the “carpets” (also of my own making) which were less new but which (in my opinion) had not really been used as much say, and which seemed essential to me for the

(*) See the notes “The Funeral Eulogy (1)(2)” (nǚ s 104, 105), and “The funeral of yin (yang buries yin (4))” (nǚ 124).

good running of a mathematical house, in a particular area of mathematics with which I was familiar. To put it another way in my relationship with my “fellow” mathematicians and even though we barely talked together about math (I must have even been worse on this subject than any of my colleagues and friends!), the yang predominance (or rather, the su-peryang imbalance) in my acquired temperament regained all its rights, as in any other relationship. Perhaps even more strongly still, given my disproportionate investment in mathematics, an investment of an egoistic nature (need it be clarified) and moreover, motivated precisely by my long-standing superyang options!

It is these obvious aspects, manifesting themselves at every step in my relationships with other mathematicians, which must have obliterated, from my colleagues as well as from myself, this other fact, in the opposite direction: that my style in mathematical work, and my approach to mathematics, are strongly dominated by yin, “feminine”. It is this particularity, it seems to me, apparently rather exceptional in the scientific world, which also makes this style so recognizable, so different from that of any other mathematician. That this style is indeed “not like the others” has come back to me through countless echoes, since I have been publishing mathematics, and at least since my thesis work (in 1953). This style did not fail to arouse resistance, which I want to call “visceral” — I mean, which did not seem to me (and does not seem to me today) to be justified by “reasons” that we could call “objective” or “rational”. This reminds me that my thesis work (where I notably introduced nuclear spaces), which I had submitted to the *Memoirs of the American Mathematical Society*, had been refused by the first referral, an honorably known mathematician who had worked on the same subject, and who had considered my work to be more or less dull. It was thanks to Dieudonné’s energetic intervention that my thesis was published despite the unfavorable opinion of the referee. I learned a few years ago that it is one of the hundred most cited articles in the mathematical literature (*) over the past two or three decades. I assume that if there are still twenty or thirty years of mathematics ahead of us, the same will hold true for SGA 4, as (among other things) a basic reference for the point of view of topos in geometric topology; which SGA 4 was classified “illegible” (among other qualifiers of the same water (**)) by my brilliant friend

(*) Perhaps here my memory betrays me, and these are the hundred (or twenty?) most cited articles in analysis functional.

and ex-student Pierre Deligne. I know (as he himself knows) that it is one of the mathematical texts to which I have devoted the most time and the most extreme care, rewriting and having rewritten from top to bottom, in particular, everything which concerns the sites and the topos and the categorical “prerequisites”. The reason for this exceptional care is that I clearly felt to what extent this is a real cornerstone for the development of “arithmetic geometry” of which I had been laying the foundations for a decade. (***). I also know that when I did this work, I had for a long time (without wanting to flatter myself) the master's hand for writing mathematics in a way that was both clear, where the main ideas were constantly highlighted. forward as an omnipresent common thread, and convenient to navigate for reference purposes (****). if I was perhaps wrong to write (and have written) a detailed reference work forty or fifty years ahead of my time, the fact that times which were ripe (in the sixties) suddenly ceased to be so, is not attributable to me, it seems!

These last associations with Deligne take me back to the period after my departure when echoes in the same direction came back to me more than once “like gusts of insidious disdain and discreet derision”. This nuance of derision was absent in the signs of “visceral resistance” to my style of work, to which I alluded earlier, occurring before my departure. I do not detect any hostile or even slightly malicious intention towards me. I had the opportunity to evoke such signs even within Bourbaki (*), at least (if I remember correctly) until around 1957, when my work on the Riemann-Roch-Hirzebruch-Grothendieck formula dispels any doubts that may have existed about my “solidity” as a mathematician. I do not remember having perceived resistance to my style of work between 1957 and 1970 (the year of my “departure”), except occasionally at Serre (**), but never with a nuance of enmity — it was more of a knee-jerk reaction

(**) See the note “The clean slate”, n° 67.

(***) This is surely the reason, also, why Deligne was so keen to discredit this text, that he sometimes even forgets the semitone style that he likes, and does not go there not with the back of the spoon to unseal it 1 See on this subject the note “The clean slate”, already cited in the previous footnote.

(****) It was also by familiarizing himself (in 1965; when he had just arrived at my SGA 5 seminar) with the already written part of SGA 4, and by writing certain parts himself. presentations (drawing inspiration from my handwritten notes), that this same Deligne learned from my contact the art of writing a mathematical text, and in particular that of clearly presenting a dense and complex substance.

(*) See in particular note (without name) n° 5, in the first part of Récoltes et Semailles.

(**) See on this subject the note “Brothers and spouses — or the double signature”, n° 134.

of annoyance. On the other hand, I had the impression that my friends sometimes felt overwhelmed, because I was moving too quickly and they wanted to not spend their time just keeping up to date with my complete works as they progressed. as I sent them my paving stones, or as I told them (by letter or in person) what I was concocting.

I believe I have understood the nature of the “visceral resistance” to my style, to which I alluded earlier. Its cause appears to me to be independent of the Burial which took place subsequently (where this resistance nevertheless ended up playing an important role). This resistance is none other than the (“visceral”) reaction to a “feminine” style of approach to a science (mathematics in this case). Such a reaction is common and “in the nature of things”, in a scientific world which, as much and more than any other partial microcosm in our current society, is steeped in virile values, and feelings, attitudes, reactions (of apprehension and rejection in particular) which go with these values. The reaction of resistance to my particular style of work, the embodiment of a creative approach with a “feminine” undertone, arises simply from the common conditioning of the scientist in the world today and in recent decades — the scientific world, in in any case, as I have always known it.

Like any other reaction resulting from conditioning, this reaction has nothing “rational” in fact, and in the one where it manifests itself, there is considerable resistance to even thinking of examining its meaning. It is strongly felt as being its own justification - a bit like the aversion to the “faggot” in most decent circles, or that to the “faggot”, also among us. However, in the case that concerns me, I did not sense in this reaction by itself a nuance of enmity (conscious or unconscious) towards me, but rather an attitude of reserve, of unfavorable prejudice, vis — a — vis my only work. Only from the moment when it became obvious that through my style (or despite my style, it doesn't matter!) I was doing things that we hadn't been able to do before (and that we couldn't no longer to really do otherwise, after the fact) - only then were these reservations sheathed, as if with regret perhaps... In any case, if in some people these reservations remained in tacit and unconscious form, I was too caught up in my work and my tasks to perceive them. To tell the truth, it seems improbable to me, to say the least, that such a “visceral reaction” could disappear as if by magic

simply because Mr. So-and-so demonstrated theorems that we had not been able to demonstrate before. At the level where words are made and undone

deliberate acceptance and rejection, both things (“such and such a way of working should not be permitted”, and “Mr. So-and-so demonstrated such and such theorems”) are really without mutual relation!

We will say that it is normal, therefore, that things changed after I withdrew from the mathematical scene — once I was no longer there, in short, to “fill in a corner” for those who would pretend to be choosy about my style, without being able to do the same with their own style. This “explanation” is flawed, however, because it does not take into account the nuance of derision, of muffled malevolence, which did not exist before. Neither, in what is known to me, is likely to make me suppose that between 1957 and 1970 I would have had the time to make myself so unpleasant to the entire Congregation of my fellows. , that a motivation of resentment or revenge in this regard could have come into play after my departure. With many friends from the world that I left, I had maintained warm, sometimes affectionate relationships, and (as I have said elsewhere) I do not remember a single relationship of enmity with a fellow mathematician of before 1970.

There was, however, a subsequent grievance from the Congregation against me, the cause of a sort of collective “grudge”, and in any case, of a collective act of “retaliation”, which, for having remained tacit, it was nonetheless “unfailingly effective”. I explored this aspect of “retaliation for dissidence” in the note of May 24, “The Gravedigger — or the entire Congregation” (n° 97). In this note, I left aside a certain tone in these reprisals, towards me and those who had the imprudence to claim to be mine - precisely the tone of derision, which goes to the beyond the simple “end of not receiving”. And each time I felt this “puff”, it was a certain style that was the designated target. To put it another way, it is the particularity that distinguishes this style from any other, its “yin” or “feminine” nature, which was the providential circumstance, eagerly seized by the collective unconscious to wash away the affront. of dissidence, by adding to reprisals through exclusion the additional dimension of derision - derision which is supposed to designate, through a certain style, the undeniable signs of impotence.

And now that with this word “impotence” a certain unsaid thing is finally named, it becomes apparent to what extent this same “providential circumstance”, added to that of my “death”, becomes the incredible opportunity for my friend and ex-student and ex-heir Pierre Deligne, to make tangible, credible and raw this reversal of roles, this insane and apparently hopeless desire of the one who feels “dwarf” in front of a “giant”! “Perched on

shoulders of a giant” (to use the very terms which appear as the final word in his curriculum vitae (*)), it is he from now on who will be “giant” in front of everyone, and he will designate to the derision of the Congregation whole, like a “dwarf” great boaster and great stirrer of emptiness, this giant of pure junk, but yes! — and which had nevertheless been (and which remains despite everything...) “a perpetual and burning challenge for those who feel overwhelmed by the irremediable condition of a dwarf...”.

This spectacular reversal in the distribution of the “dwarf” and “giant” roles, between himself and the Other (He who is felt as a challenge, and who must be supplanted at all costs!) — this reversal is also in at the same time the reversal in the “feminine” and “masculine” roles. It is indeed as an incarnation (plethoric, flabby and without outline) of the feminine (never named clearly and yet ardently repudiated), that the one who was (and remains despite everything...) giant, is designated to the crowd (and above all to the Conjurer himself...) as a pitiful dwarf and as an object of derision; and it is also good as a heroic and exemplary incarnation of virility that he who was a dwarf (and who, despite everything and deep down “knows” well that he is and remains so, by immutable condition...) finds himself a giant with hands of steel, acclaimed by the same crowd rushing to boo the Other.

This reversal, however symbolic it may be, is visibly out of all proportion to the “private” “reversal”, so to speak, carried out by the virtue of a proven tactic (called “the velvet paw”) in the restricted and inconsequential circle of “between four eyes”; a nice little ride where he feels himself holding the strings that “make the Other walk” and turn... The dwarf making the giant walk, okay, but always and irremediably still a dwarf! While the apotheosis of the dwarf who finds himself giant and perched even higher, and who points out to everyone's derision the very one on whom he is perched - this apotheosis takes place in the middle of a public square, in front of a large crowd and in jubilation, come to acclaim the Funeral Eulogy of a deceased and buried “dwarf”, as a decidedly “highlight” of a superb and delectable Funeral ceremony.

(152) (December 24) With yesterday's reflection, I have the impression of having more or less finished “putting together” this first plan of the Burial painting, as well at least as I feel able to do it with the “pieces” of the puzzle that I now have. He is

(*) See on this subject the last footnote of the note “The nerve within the nerve — or the dwarf and the giant”,

understood that in this second part of the reflection on the Burial (the third part of *Récoltes et Semailles*), my aim was, no longer to gather material facts (I gathered enough of them in the “investigation” part , during Processions I to These motivations arise, first of all, from the nature of the relationship of the person concerned with my modest person (as a “deceased”); or, more precisely perhaps, with what I represent to him for one reason or another, linked or not to my departure from the ma-thematic scene and the circumstances which surrounded it.

The “first plan” consists, apart from myself, of the one among all who played at my funeral the role of the “priest in chasuble”, or the “Grand Officiant at the Funeral”. It is also, among those who were friends or students in the mathematical world before my departure, the one with whom I was linked closest, by mathematical affinities of exceptional strength; and also the only one who continued a personal relationship with me after my departure, a relationship that continues to this day. It is for all these reasons that I have a “given” about him of a richness incommensurate with what is known to me from anyone else among the participants in the Funeral. Finally, among all the mathematicians I have known (*), he is undoubtedly also the one, by far, for whom the role he assigned to me in his life weighed the heaviest — much heavier, visibly, than the one commonly assigned to the one who was his master, was it in the exercise of an art to which one would have devoted oneself body and soul (as I myself had dedicated myself to it). Of this, I ended up realizing perhaps ten years ago, and that this role that he assigned to me also spilled over into his mathematical passion (and into what ended up taking over from it). place). This perception in me, which had remained diffuse throughout all these years, became considerably clearer and fleshed out during my reflection on the Funeral, and until yesterday.

It seems to me that with yesterday's reflection, at the same time as this first plan of the painting centered on the relationship between my friend Pierre and me, ended up falling into place and coming together.

(*) (December 31) This “remark”, taken literally and given the number of its “many protagonists” (and were there only ten!), would of course be entirely out of reach . Apart from my friend Pierre, I can at best get an overall idea, by identifying as best I can the “motivations” and “intentions” in a “collective unconscious”, which at best only approximately covers those of such a particular “protagonist”.

(*) And even among all the people I have known, with only two exceptions.

also the “third plan”, consisting of “the entire Congregation”, hastened in jubilation to participate with its eager acquiescence in the Funeral and Burial. As I wrote yesterday, what was still missing from the image that emerged during the reflection of the note (of May 24) “The Gravedigger — or the entire Congregation” was the nuance of derision placed in the exclusion of those treated as deceased and as “foreigners”, as “outsiders”. The meaning of this derision, which appeared clearly from the note (of November 10) “The funeral of yin (yang buries yin (4))”, was recalled and put into perspective yesterday: it is derision towards what is felt (at an unformulated level) as “feminine”, and which is therefore the object of a “visceral” reaction of rejection, by assimilation (equally unformulated) of the “feminine” to “impotence” — the man alone, in his triumphant virility, being supposed to be the bearer of “power”, of creative force. I also underlined the entirely refractory nature of common sense and reason of such visceral assimilations, resulting from conditioning, when the ideas and images that it arouses are felt with such force of conviction and evidence that They are commonly taken as their own justification.

There is one aspect, however, which appeared in a sudden flash with the final words in the note “The funeral of yin”, which has not yet been taken up. Here are the lines that conclude the reflection in this note:

“It is no longer the funeral of a person, nor of a work, nor even of an unacceptable dissidence, but the funeral of the “mathematical feminine” – and even more profoundly, perhaps, in each of the many participants applauding at the Eulogy, the funeral of the disowned woman who lives in himself.”

It even seems to me, now that I think about it, that this aspect was passed over more or less silently also in the case of my friend Pierre himself, about whom I do not lack first-hand facts! If this aspect was even slightly present, and perhaps felt by an attentive reader, it must have been between the lines rather, while the attention was mainly absorbed by the different angles of the “reversal of the yin” aspect. and yang” — (an aspect which, at least at first glance, seems specific to the person and to the particular role of my friend in the Burial). This omission reminds me that I will still have to talk (in a few days?) about my friend's last visit, from October 10 to 22 (reported in the note of October 21, promising to come back “in a few days). ”...). This will be the

the most propitious moment, it seems to me, to examine a final (?) angle of the “reversalment” — with the reversal of the original yin-yang balance in the very person of my friend. This is another burial of certain original yin traits and him, under the rule of yang traits that appeared later and took possession of the place. I find myself there, in a new and deeper perspective, before this striking observation which had already imposed itself on me more than once (*): it is that in believing that I am burying the one who had been my master (and who always remained a friend), it was none other than himself that he was actually burying with his hands!

If I therefore return again to the “third plane” or “background plane”, to this “Congregation” alias “mathematical community”, the few lines cited earlier would suggest that what I felt so strongly in the case of my friend Pierre, could well also be true for “each of the many participants applauding the Eulogy”. It is this aspect, it seems to me, that I still have to examine somewhat, before feeling fully satisfied and considering the “basic plan” (in addition to the foreground) of the painting of my funeral.

(December 25) I took the pretext yesterday that it was Christmas Eve, to give myself a real “high”, staying on my notes until past three in the morning (once is not customary!) . It is true that the entire day had been scattered among other tasks, and (rereading the notes from the day before) there was barely a few hours left of the night, if I wanted to continue the same day. As is often the case, I ultimately didn't even manage to tackle anything I had in mind when I sat down in front of the white paper! Instead, I took stock of where I was in the “picture” of the Burial, and highlighted an aspect, in the “foreground” as well as in the “background”, which still remained vague: that of “the burial of the disowned woman” who lives in each of the participants in my funeral.

It is very clear that in this quote, the expression “burial” serves as an image to designate an act of disavowal and repression (or “repression”, following accepted terminology). For it to be a question of disavowing and repressing something (in this case, something that “lives” within oneself), one must first ensure that this “something” is indeed very present, “alive” (albeit miserably). This is about “the

(*) This “observation” appears for the first time in the reflection in the note “The Burial” (n^o 61).

woman" in each being, whether woman or man, therefore from the "side" of his person formed traits, qualities, impulses, or forces of "feminine", "yin" nature, in him. Extraordinary thing, this simple and essential fact: that in each being, woman or man, lives both "the woman", and "the honroè" – this fact still remains generally ignored today. I myself only learned about it eight years ago, when I was in my forty-seventh year (*).

Of course, "psychoanalysts" have "known" and talked about it for a long time. There are certainly plenty of books about it, and everyone has heard a little about it, just as I had heard about it. And even, "everyone" is quite ready to admit that there must be truth in that, as long as it is people recognized as knowledgeable who say it, that there are books written on it and everything. However, having heard about it and being "very willing to admit...", and even having read a book or even ten on the subject, or even (I would venture to assert) having written one yourself, or even several, does not in itself imply that one "knows" the thing; at least, not in a stronger and, above all, less useless sense than that of a simple memorization of ready-made formulas, like "Freud (or Jung, or Lao-Tseu...) said that...". Such formulas constitute a certain cultural baggage, a sort of calling card of a "cultured" person, "aware" of this or that, or even sometimes (with diplomas to boot) of an expert in this or that, and as such we can even admit that they have a certain "usefulness"; what is certain is that everyone cares a lot about it, about the baggage that they have accumulated here and there, at school and in books, in "interesting conversations" etc., and that it drags with him through thick and thin, like a flashy and cumbersome trophy, until the end of his days. If I irreverently suggested earlier that this precious baggage was "useless", I meant by that: useless for something which, in any case, no one cares about, and which is even avoided like the plague by everyone. everyone, know, learning about themselves. Or to put it another way: that this baggage is useless for taking charge of one's life, that is also to say, for digesting and assimilating the substance of one's own experience, and thereby, maturing, renewing oneself...

If I had to summarize in a few words the essential content of my long reflection on yin and yang, it would be by "recalling" this "simple and essential fact", which I have just recalled just now. If there is a reader who has followed me so far, and if he has not yet felt, in terms of his own experience, this fact: that there is "the woman" in him even though he is a man, and there is "man" in him, even though he would be a woman — it is because by making

(*) See on this subject the note "Acceptance (the awakening of yin (2))", n° 110.

this vain effort to “follow” me, he would have wasted his time overloading luggage, undoubtedly already heavy, with yet another weight, adorned with the label “Récoltes et Semailles”. And if he is a man, and even if he were not one of the participants in this Funeral, of which he would have had no knowledge or suspicion before reading me, it would be a safe bet that he too, day later day and without his own knowledge, “burys a disowned woman who lives within himself” (just as I myself had done previously and during the greater part of my life).

There are a thousand and one ways for a man to “bury” the woman who lives in him, as also for a woman to “bury” the man who lives in her (*), that is to say: to disavow and repress it. One of the most common ways of “burying” something that lives in oneself is through attitudes or acts of rejection of this same thing, when it is apparent in others. This rejection is none other than the “visceral reaction” that I spoke about yesterday in a specific case. What gives the reaction of rejection its (“visceral”) force is not really (as I seemed to imply yesterday) because the thing rejected in others simply goes against a set of “values” which would have our complete and undivided support. He who knows himself to be “strong” is not offended by the sight of “weakness”. The driving force of the reaction comes, on the contrary, from the fact that this thing, observed in others and “which has no reason to exist”, calls us ourselves into question. It is like an insidious reminder, immediately challenged, of something concerning us, that deep down we know, even though we would like to hide it from ourselves as well as from others; a reminder which therefore takes on the tones of a silent and formidable indictment. In such a context, an attitude of benevolent tolerance towards the apparent “fault” in others would appear to us as a perilous admission of collusion, which must be avoided at all costs. By an attitude of rejection, on the other hand, we unequivocally dissociate ourselves from the other, we give in short convincing guarantees (and first of all, to the inner Censor in ourselves) that we ourselves are pure of all reproach, that we are and remain compliant and “good complexion”. At the same time as an act of unconditional obedience to certain norms of values, distinguishing what is honorable from what is unacceptable, the reaction of rejection is at the same time a symbolic act of burial, by which the thing in ourselves “which has no place to be” is eagerly “classified” as something that “is not”. Not in us, anyway!

(*) The same thing also applies to a man who “burys the man who lives in him”, or to a woman who “burys the woman who lives within her”, attitudes which are far from being as rare as one might think.

In this table, the form that rejection takes, an infinitely variable form, does not seem without consequence. This can be outraged rejection, with all the signs of indignation or disgust, as it can be rejection through irony or “delicately measured” disdain. It can be expressed in clear and unequivocal words, as it can be simply suggested, by allusive or double meaning words, or even without words, by the auspicious smile (or the absence of a smile...), placed there or it fits. The rejection can be fully conscious, just as it can be confined in the darkness of what is barely visible to the eye, or it can take refuge in the complete shadows where the gaze never penetrates.

The intensity of the reaction of rejection is also infinitely variable, depending on whether the “indictment” in question is felt to be relatively innocuous, or as indeed formidable. Those which perhaps provoke the strongest reactions are the “questions” directly relating to sex. This extreme susceptibility “has lessened somewhat in recent generations. I note, however, that things as universal in nature as the so-called “homosexual” and “onist” (or, more gently, “narcissistic”) aspects of the love drive, today, as in the past, arouse reactions of rejection of a great strength.

This is the case at least, as long as one is confronted with it, not in an “interesting conversation” on morals in Roman times or on depth psychology, but in one's everyday life. Even between four eyes, it is rare that we talk about the manifestations, in our own person, of these aspects of the sexual drive (generally felt as somewhat embarrassing “blurrs”, to say the least).

In the specific case that interests me here, the reactions of rejection with which I had been confronted before my departure from the mathematical scene, were certainly not of a force comparable to those which I have just experienced. 'mentioned just now. It is true that the object of this rejection, namely, “feminine” ways of being and doing while we are supposed to be “among men”, does have a “sexual” connotation, in a more sense. broader of the term than that linked to the sole evocation of facts and gestures revolving around “the buttock” and the rest. I have no doubt that this connotation was generally felt, at an unconscious level (*). It was, however, discreet and indirect enough in nature, to exclude somewhat brutal reactions, going beyond a simple “reservation” with regard to my “seriousness”, my “solidity” as a mathematician. It is added that the domain in which my “crossroads” falls, namely that of a purely intellectual activity, contributed to giving it a relatively innocuous appearance, very distant (what would you s

(*) See in particular on this subject the note “The funerals of yin (yang buries yin (4))”, n° 124.

so look there...) of any disturbing and scabrous association of man-woman doing her belly dance by rolling up her skirts! This does not prevent the fact that after my first contacts with the mathematical world (in 1948), it took almost ten more years for the reservations that my style aroused, even within a benevolent microcosm, to end. by disappearing—disappearing from my sight, at least. However, the situation changed again after my departure, due to the fact that an atmosphere of kindness, friendship and respect towards me was suddenly changed (without me realizing it yet during the six years that followed) by what was felt by this same microcosm as “dissidence”, and as a disavowal.

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I'm not sure, to tell the truth, if this change of atmosphere was really as “sudden” as I just said. Or to put it better, I note that I hardly have any facts in hand which allow me to form any idea how this change came about, after my departure in 1970, with which I found myself suddenly confronted (c is the case this time to say it), in 1976 (*). It is true that I had hardly had any contact during all this time with the world I had left, which could have made me feel a certain “temperature” and its evolution.

What is clear to me is that in this evolution, the attitude of the group of all those who had been my students, and of their undisputed leader Pierre Deligne, played a determining role. The Funeral could only take place, and the atmosphere which gave rise to it could only be established by a “unanimous agreement” (**) and without flaws, encompassing both the “three plans” of this Funeral: “The heir” (aka Grand Officiant at the Funeral), the group of “co-heirs” or “relatives”, formed by the eleven other “students from before”, and finally “the Congregation” (can -be still not “entirely” — we will have to come back to that...). How this perfect agreement was put in place and established remains unknown to me, and perhaps will remain so. At present I feel no incentive to probe it, and I doubt that anyone else will do it for me (although

(*) It was, I remind you, during my unsuccessful efforts to get Yves Ladegaillerie's thesis published. This episode is discussed in the two notes “We don't stop Progress” and “Coffin 2 - or the cut-outs”, n^os 50, 94.

(**) For the first appearance in the reflection of this observation of “unanimous agreement”, see the note of the same name (with capitals!), n^o 74.

on the contrary !).

This reminds me that when writing the previous note "The providential circumstance - or the apotheosis", the question had crossed my mind which ultimately of the two, "The Congregation" or "the priest in a chasuble", represented 1 the master force implemented in the Burial, of which the other would have been in some way the "instrument" (***). I didn't stop there then, not being sure even if the question had any meaning - it seemed to me to resemble the famous chicken and egg question! What is certain is that neither of the two (the "priest", nor the "Congregation") could do without the assistance of the other to carry out the Burial.

Another question, on the other hand, which seems to me to have a clearer meaning, is to know which of the two was more strongly invested in this work. It is true that "the Congregation" is not a person, and it is improper to speak of "its" investment in a task.

But it is also true that for me, this personified entity takes concrete form, through ten or twenty people whom I have known well, with each of whom, for a decade or two, or more, I have been in close and friendly relations. . So when I speak of "investment" of the Congregation it is the "sum" of the investments of all those, among these former friends, who were involved in my burial, that I am thinking concretely. So clarified, it seems to me that the question no longer has anything rhetorical.

The answer that comes to me to this question, without a hint of hesitation or doubt, is that there is no common measure between the investment of the "heir" and that of the Congregation — not more, moreover, than there is in an ordinary funeral, and all the more so since the inheritance is important in the eyes of the heir (while no one in the Congregation has anything to do with it). win for himself), and that the ties (of attraction or conflict) which attach him to the deceased are strong and play a neuralgic role in his life. If there is doubt in such a situation, it can only come from the presence of "co-heirs" among the relatives of the deceased. (It is therefore a question here of the "second plan", rather than the "background" formed by the bulk of the Congregation.) In the case which interests me, the only one among these "close" and co-heirs

(***) I recall that in the reflection of the month of May, in the note "The Gravedigger — or the entire Congregation", I realized that my friend had been an "instrument of a collective will to "unfailing consistency". The lines that follow do not really contradict this intuition, but rather complement it, leaving open the possibility of a certain symmetry in the relationship between the "Congregation" and "the priest in the chasuble".

whose part he took in my funeral could be of a weight comparable to that taken by the main heir Pierre Deligne, seems to me to be Jean-Louis Verdier, playing the role of Second Officiant at the Funeral. This name is not gratuitous, because more than once during the Funeral, I did indeed see an officer and both with a perfect ensemble! But as I have already written elsewhere, apart from certain public acts of JL Verdier, I know little about him since we lost touch; too little, no doubt, to be able to form a somewhat detailed idea of the ins and outs of his relationship with me, or his relationship with his prestigious “protector” and friend.

(153) (December 26) In yesterday's reflection, I tried to clarify this intuition, which appeared “in flash” on November 10, that in “each of the many participants” in my funeral, they represented the symbolic burial of “the disowned woman who lives within himself”. When I have spoken and respoken here about “each” of the participants, it is a somewhat sweeping expression, which it is perhaps better not to take entirely literally. I am convinced, at least, that this intuition is indeed correct for each of those (and there are certainly many of them) in whom this “visceral reaction of rejection” takes place to some extent with regard to my particular style in mathematics, a reaction which has been the center of my attention over the past three days.

It is also clear that such a reaction is not present in my friend Pierre, or at least, that there was no trace of it, quite the contrary, in the five years preceding my departure. . It is the deep relationship of my style of approach to mathematics with his own style, which gave rise to such perfect communication during these years, and which was also the cause of this unusual affinity between us in the mathematical plane, an affinity that he and many others must have felt, as I myself felt it. It is this relationship which was also the cause, surely, of this fascination that my person as a mathematician and my work had on him, not only in those years (where it was expressed “positively”), but also in the years that followed and until today (where she expressed herself mainly “negatively”, but in an equally eloquent manner (*). I have no doubt that there had been in him the slightest reserve, the slightest uneasiness with regard to my style of work and approach to mathematical things, in those first years, I would not have failed to sense it.

It is true that from those years onwards, my friend strove, as far as possible, to erase

vis-à-vis the outside world the role that was mine with him, if only as the one who had taught him and transmitted something of weight, and from whom he took important ideas for his work - and a fortiori, to also erase this relationship of affinity, even of fascination.

After my departure, there was a progressive escalation in the disavowal of my person, not only through silence, but also through the affectation of disdain towards my style of work, and towards also of a large part of the ideas and notions that I had introduced. The first trace of such an affection known to me occurred in 1977, during "operation SGA 4 1/2" (*). I have not tried to follow the progression of this escalation step by step, and I hardly feel inspired to do so (as I already said yesterday, for a very close question).

This disavowal of a style of approach closely related to his own, and of a work from which his own comes, is very much akin to a disavowal of himself. Thinking sometimes of this disavowal of my style and my work (while I remain above all under the impression of the five years of close mathematical contact before my departure in 1970), I was disposed to minimize it, to grant it only a somewhat tactical meaning, as a particularly tempting means to supplant, and to satisfy antagonistic impulses, by seizing the opportunity of a certain "providential circumstance". This is indeed the bell ringing of the note from three days ago, "The providential circumstance - or the apotheosis" (N^o 151). And what I have just remembered, knowing that in the years before my departure there was no trace of any disposition of rejection towards his own style or mine, also goes well in this sense, and not in that of the situation examined yesterday: that of a disavowal of "the woman who lives in herself" (even if it was, among other things, through a certain approach to mathematics), a disavowal which would have pre-existed the implementation of the Burial.

This does not prevent the person who chooses such means, whether he likes it or not, from paying for them. This affectation of disdain "of a certain style, to be operational, had to be played, not only towards others, but also and above all, towards himself. But one cannot disavow, in front of others and in front of oneself, a "style" which is so profoundly one's own, while practicing it as if nothing had happened. This "tactical disavowal" of others, through logic

(*) Or at least, this fascination must have been, originally, the force in a "positive sense" (that of identification with one who is felt to be similar) among the two forces which played in the establishment of this relationship of ambiguous, conflicting identification with my person.

(*) See in particular, a. on this subject, the notes "Two turning points" and "The clean slate", nos . 66, 67.

things, goes through a disavowal, through a repression of a part of oneself - in this case, through the repression of the style of approach to mathematics which is one's own, by the original nature of the creative force in him.

This observation does not come here as the effect of a direct perception of a fact. It is the result of a short reflection, making use of known facts by drawing common sense "conclusions". I have learned to be careful with these kinds of conclusions (and especially, outside of mathematics!), and to only trust them if they are confirmed after the fact by other facts. But I remember here, very opportunely, that I was led, in terms of what I know about Deligne's work, to note that we do not find any trace of certain inclinations in this work (of "yin" nature) in my friend, which were nevertheless very apparent in the years before my departure, and which I also recognized in myself.

I express myself in quite detailed terms on this subject in the notes from a month ago (of November 26 and 28) "yin the servant and the new masters", and "yin the Servant (2) — or generosity " (*). The most important of these things perhaps is a certain humility, which makes one see (and describe, without fear of appearing stupid) very simple, very stupid things, to which no one had yet deigned to grant attention. The best things that I myself have contributed in mathematics (**) are precisely this water. The essence of neither my work, nor that of the one who was my most brilliant student, would not have been written, if I had disavowed this inclination of my nature, which did not have the good fortune to please everyone however... This propensity (or this "penchant") is intimately linked to another, without which its effect would remain very limited. It is an attitude of humility again, and of "service": when it comes to getting to know and describing with delicacy and in all its aspects this new thing disdained by all, of not finding one's time too precious to devote ten pages to it if necessary (-instead of being satisfied with two lines: that's the thing - you can do with it what you want!), or even ten thousand; to spend an entire day there (for a man who does not lack other fish to fry...), or an entire life, if necessary.

When I spoke of "new worlds" to discover, in a somewhat haughty tone perhaps, it was nothing other than that that I was talking about: seeing and receiving what seems tiny, and carrying and nourishing it for nine months. or nine years, the time it takes, in solitude if necessary, to see

(*) These are notes nŷ s 135, 136. It is also appropriate to attach the subnote to the second note cited (nŷ 1361).

(**) See on this subject sub-note no. 1361 cited in the previous footnote.

to develop and flourish a vigorous and living thing, itself made to generate and to conceive.

If this propensity, which we could call “maternal”, is today the object of derision, it is for the “benefit” of attitudes perceived as “manly”, which only tolerate one type of possible approach. of mathematics: that of “muscle”, to the exclusion of “guts”. “Real math”, also called “hard math” (or “hard math”), as opposed to the (unsavory) “soft math” (or “soft math”, not to say softened, buark!), is the demonstrations in ten or fifty tight pages, of theorems-in-competition (of proverbial difficulty, or it's not a game!), firing on all cylinders - of all the “well-known” theories and notions and of all the facts available left and right. As for “wood”, it just has to be there, that's what it's there for! And as for those who patiently cleared, who sowed, planted, manured, pruned, throughout the seasons and years, to make these spacious high forests with slender trunks grow and unfold, so in their place (there where it was the bushy and impenetrable bush) that one would believe that they have been there since the creation of the world (as a backdrop no doubt, and as a reserve of “all wood”...) — these people, who are only good at writing river articles (when not river books or river series of river books, if they find publishers crazy enough to print them), and still unreadable to boot, they are “soft math” retards, not to say “flabby” — but even though we are virile, we are no less polite...

With this beautiful flight, I would suddenly think I had returned to the starting point of this. long meditation on yin and yang — to the very first note at the beginning of October, “The muscle and the guts (yang buries yin (1))” (nŷ 106). It is indeed the same burial again, with parade steps and the sound of the bugle, of what is “feminine”, buried by the disdainful male of Bras-de-Fer alias Steel Brain alias Superman. This burial does not only take place in the small mathematical microcosm, that's for sure, and its scope goes beyond any specific case, which can nevertheless be used to smell its scent up close. And this smell is indeed one of the main lessons that the Funeral brought me, where I appear to have died before my time.

When I further narrow the scope of my attention, to focus on the particular role played by my friend Pierre, I see yet another meaning in the Funeral. It is once again a reversal that I discern there. As I already announced yesterday, without thinking that I would come back to it so soon, this is no longer a reversal in a relationship (real or fictitious) which connects to others, but a reversal which takes place in one's very person. . He is not wanted

for its own merits (as the object, perhaps, of a “senseless desire”...), and it is no longer limited to being purely symbolic (while at the end of a magnificent conjuring trick, the one who felt “dwarf” does not stop feeling just as much a dwarf, as if he had not just convinced himself that he had become “giant”...). It is a reversal, I am not saying irreversible, but at least perfectly real. It starts from a state of harmonious balance of “feminine” and “masculine” creative impulses, with a dominant feminine note. It results in a state of war and repression, where attitudes and poses (egoistic, like any attitude or pose), flying the “manly” flag, obstinately repress the creative force, derided and “buried” symbolically, in the form of of a grotesque and flabby effigy, with the features of the “Superfemale”.

In less nuanced terms, but perhaps more graphic and more striking: a “feminine” being, fine and vigorous, supple, alive, has metamorphosed, through a permanent conjuring trick, into a “virile” being, undemolishable, stiff and dead.

(154) (January 1, 1985) Five days passed, taken up by various occupations. The end of the year was the perfect opportunity to write letters overdue for weeks or months, not to mention a few good wishes cards, in response to those received around Christmas. It was also necessary, with manure brought in for two or three months already, and plant waste from the garden and clearing, or brought back from the municipal dump, to build composting heaps, to have good soil ready for the garden. In early spring. As the land is sloping, it was necessary to build an additional terrace, next to the one already planned for the “day to day” composting of household waste.

With all this, I hardly found time to work on my grades, except for housekeeping work. I reread with great care, still making a few edits here and there, the entire reflection from the “Masters and Servant” part (so since the note: from November 24 “The reversal (3) — or yin buries yang” (nǚ 133)), adding the footnotes already provided for the notes of the last fortnight. It was mainly a question of having a manuscript ready for typing, but regardless of any practical question, this rereading was useful to find an overview of the reflections of the past four or five weeks. As is also the case in long-term mathematical reflection, while the particular “moment” of reflection in which I find myself from day to day is

finds placed under the strongly centered beam of lively attention, the “thread” of reflection and the sinuous line that it has followed in the weeks, even in the months that have passed, tends to get lost along the way, to drown and dissolve in the vagueness of a half-light. I cannot say whether this is a general fact in all long-term research work, or whether it is linked to this systematic mechanism of “burying the past” in my life, which I have already had occasion to make allusion to (*). Still, over the days and weeks, even months, of long reflection, there is a loss of contact for me with the previous stages of it, resulting in a growing unease in the work. This uneasiness ends up being resolved by a more or less in-depth retrospective of all the work that has just been done, through which the contact which had gradually relaxed is re-established. I observed that these “halts” Retrospectives play an important role in my work. Each time, I leave with a new wind in my sails, relieved of this “discomfort” which had signaled to me a progressive loss of an overall perception of continuity over time in the work that I am pursuing. In my mathematical work, it is not rare, if not the rule, that such a step back leads me to completely rethink the work already done, and to see the work from a new perspective as well. does that which is to be done (**).

But whether it is mathematical work or a meditation on my life, the “discomfort” of which I speak is always the sign of an understanding which remains imperfect, not only (and for good reason) that of work still to be done, but also the understanding of what has been done during the past work. This imperfection is in no way reduced, in fact, to a faulty memorization of each of the various stages of reflection, and of their chronological order (relatively incidental aspects moreover when it comes to mathematical reflection, where the object of attention is a mathematical situation, foreign in itself to the psychic particularities of the person examining it, and to the vicissitudes of this ex-amen). It seems to me the sign rather of a lack of unity, of an insufficient integration of all the partial understandings that appeared as the fruit of successive stages of

(*) This mechanism was triggered at the time of the “shift” which took place in my childhood, which I place in the summer of 1936 (when I was in my ninth year). Allusion is made to this crucial episode in the structuring of the ego, in the note “The Superfather (yang buries - yin (2))” (nŷ 108), and

in the subnote nŷ 1081 . (**) for other, similar reflections on the role of “occasional retrospectives in long-term work, see also the second part of the note “Retrospective (1) — drinking the three parts of a painting” (nŷ 127), and more particularly the footnote which refers to it.

the reflection. These partial understandings also remain imperfect, even hypothetical, as long as they are not integrated into an overall vision, where they clarify each other. To use the image of a puzzle again, the investigation of an unknown substance is akin to the work of assembling a puzzle whose pieces are not given in advance, but must be discovered during the course of work. What's more, each updated part only appears at first in a vague and approximate form, even grossly distorted compared to the "correct" form, which is still unknown. The "local" work of reflection consists of detecting the pieces one by one, and trying as best we can to guess the contours of each, guided above all by speculations of internal coherence in the piece examined, or in that one. this and others, expected to be nearby. But each of these pieces only reveals its true nature and its precise and final form once they are assembled into the still unknown overall picture from which they come. The "discomfort" of which I spoke is the one which signals to me, in the presence of a multiplicity of perfectly well identified pieces, presenting themselves in a more or less shapeless pile, that it is time to finally assemble them - or also, if there has already been an assembly (more or less partial), it still remains too piecemeal, or it is askew and it must be completely reworked. To find the right assembly, the chronological order in which I came across the pieces of the puzzle is undoubtedly often an incidental thing. But to take the pieces in hand one by one (and in that order, as long as we do), in the disposition of the one who knows that they must come together and who waits for each to be placed in the right place. place which is his, is undoubtedly an essential stage of the work, to finally see them come together in fact.

The "final words" in the previous note (from six days ago) tried to capture in words a certain strong impression in me - that of a metamorphosis which would have taken place in my friend Pierre over the years , in the fifteen years that have passed since I left the mathematical scene. I had noticed scattered signs here and there, over the years, which sometimes left me amazed, but without at any time (as far as I remember) did I stop there, to make myself an overall idea of what was happening. It must be said that, while smelling a certain "wind", and a particular role that my friend played in it (with the burial of the motifs in particular, of which I was vaguely aware (*)), I was very far away to suspect the large-scale burial of myself and my entire family

(*) (February 20) for echoes of this feeling, which remained in an unformulated and diffuse state (until the moment of the discovery of "the burial in all its splendor" from April 19 last year), I note in particular the

work that my friend was skillfully orchestrating. It was the gradual discovery of this burial over the past year, which was finally the shock strong enough to move an inertia within me, and to motivate me to finally “pose” on a situation which had seemed drowned in the mists of a distant past. It is therefore also in a very different mood from the somewhat “routine” mood that was mine during our past meetings, in a mood of stunned attention, that I received my friend during his recent visit, in October. It was during this visit that this impression appeared, or rather this sudden perception of something that had surely been present for a long time, and which until then I had been happy to ignore: the perception of this “metamorphosis” — that -the very one on which I came back in a different way in the reflection of the previous note. If I found this impression again, this time through what I know of my friend's mathematical work, it is surely not by the greatest chance, but guided by what I had taught for two months already direct contact with his own person. The force of evidence of this impression of a metamorphosis, resulting in a “virile” being, undemolishable, stiff and dead”, could certainly not come as the outcome of a reflection comparing and assembling facts (or partial impressions of 'other nature), but only through an immediate experience, which remained unsaid. And this experience still remains unsaid at this very moment (*).

In the previous note, I write that this “reversal” (in the person of my friend himself), or this “metamorphosis” (to use the expression appearing in the “final remarks”), was not “sought for its own merits”, adding further, in parentheses:

occasional allusions in the first part of *Récoltes et semailles* (written in February and March last year), to the fate of the notion of motif, notably in Introduction, 4 (“A journey in pursuit of obvious things”) and in the section “The Dreamer” (n° 6). The formulation of this feeling becomes considerably clearer during the last pages of the final section of this first part, “The weight of a past” (n° 50), from the passage “I could consider the “Letter to... ” (read: Daniel Quillen), which constitutes a sudden turning point in thinking. The first “notes” sparked by this last stage of today's reflection, and above all the double note “My orphans” and “Refusal of an inheritance — or the price of a contradiction” (n° s 50, 51), written at the end of March, provide a bit of an “overview” of what was previously felt in a diffuse state, regarding the fate of my mathematical work and a certain “wind” of fashion with regard to this one and my person.

For a description of a particular form that this “diffuse feeling” took in relation to motives, see the note “The tomb” (n° 71) and the one which follows it, “A foot in the carousel” (n° 72).

(*) (February 20, 1985) It still remains unsaid at this very moment, even though I have just finally done the account of my friend's visit, in the note “The duty accomplished - or the moment of truth”, n° 163.

“as the object, perhaps, of a “senseless desire”... “(of this desire for reversal, therefore, which was discussed in the note “The nerve within the nerve — or the dwarf and the giant”). However, re-reading the reflection notes the next day, I was no longer so sure, nor if not the deliberate intention of opposing these two “reversals” that I discerned in the Burial was really founded. After all, in this image of the dwarf and the giant, the “giant” embodies, as I have emphasized more than once, “manly” values, and the “dwarf” finds himself burdened by “female” de-values. ”. And even though this image is located outside of my friend's person, placed as it is on his relationship to another person (me in this case), this does not prevent it from having any existence. “objective” outside of his person, that it is on the contrary the projection onto the outside (on his relationship to So-and-so) of a conflicting reality which plays out in none other than himself. To put it another way, this image of the dwarf and the giant appears as the symbolic staging of the real conflict which plays out in layers deeper than those where the image lives, which conflict is none other than the eternal conflict between the yin and yang “sides” of his person.

Such exteriorization of an interior conflict, which must remain strictly occult, is also one of the few all-out processes used by the unconscious, to “evacuate” as far as possible the original real conflict, by replacing it with another which seems more “acceptable”, or at least less worrying. In this case, the chosen lightning rod image itself remains unconscious (at least I presume so); and even, I would tend to believe, it remains confined in relatively deep layers of the unconscious, but nevertheless closer to the surface than knowledge of the real conflict. (This is none other than the “place” of this “double-sided knowledge” which was discussed in the note “The two knowledges — or the fear of knowing”, nŷ 144.)

This suggests that this “insane desire” recalled in parentheses in the previous note, that “of being this giant himself, or at least, of passing for him”, — that this desire is only the “externalized” transposition, in terms of the lightning rod image of the dwarf and the giant, of the desire for a “metamorphosis” in himself; of a metamorphosis, if not real, at least apparent - that where a predominance in one's being felt as unacceptable, the predominance of “yin” tones (felt as “soft” and contemptible), would find itself “reversed”, metamorphosed into a predominance of “yang” or “manly” tones (felt as “heroic”, and as the only ones worthy of envy). far from opposing each other even slightly by their intimate nature, these two desires now appear to me as inseparable, one being like the shadow, like

the symbolic and tangible expression of the other. As for the “metamorphosis” that I ended up perceiving during my friend's visit (better late than never), it now appears as the realization or fulfillment of this “insane” and compelling desire; the granting, not by the intervention, of a providential grace, but as a long-term effect of the stubborn desire of the “boss” to “rectify the situation”, to remodel itself according to borrowed traits, and to impose these same traits to the child worker (who, one suspects, is never consulted for this type of operation, typically “boss”).

I underlined in the previous note the character of reality in this “reversal” (or this “metamorphosis”). I now discern more clearly the nature and limits of this “reality”. It is the reality of a pose, striving to mold itself according to a model, felt to be the ideal to achieve. The choice of the model, that is to say the type of pose adopted, undoubtedly dates back well before our meeting. But it seems to me that the energy invested and dispersed in this pose remained minimal at the time of this meeting, and in the years that followed. There was, I believe, a sudden and drastic change in the dimensions taken by this investment, by the extraordinary “opportunity” created by my departure; the departure first, from my institution (where overnight my friend must have appeared to himself as having surreptitiously replaced his “rival”), and shortly after, my departure from the mathematical scene. A second aspect of reality, even more important, is that by virtue of an inordinate investment, this pose has indeed ended up becoming “second nature”. This is indeed this “second nature” that I perceived during our recent meeting. It is weighed down by an immense inertia - just as it had been the case for me.

This did not prevent, in my case, a renewal from occurring; and that it occurred in me, does not take away anything from the inertia in my friend, opposing a renewal in himself.

This “new” reality which was established in him little by little did not “resolve” the conflict within him, any more than the occupation of a country by a neighboring country “resolves” a conflict. Rather, the conflict in my friend is “frozen” in a certain “balance of power”, and there is a chance that it will remain so until the end of his days. We can undoubtedly say that the structure of the ego, that is to say the mechanisms of behavior, have indeed changed, sometimes in a striking way. Such changes, however, imposed by the will of the “boss”, change nothing in the original nature, that of the creative forces of the worker-child. They simply resemble shackles imposed on the worker, who must manage as best he can to work anyway, under the suspicious eye of the “boss”, when the latter does not take the tools from him.

hands, to show the worker what he has to do! That doesn't stop the

company from running and making money, and the boss, roughly speaking, is happy. There's a bad atmosphere for sure, but like most bosses, he has thick skin and doesn't let it get to him, as long as the feedback remains good.

(155) (January 2) It has been more than a week, since the note of December 24 "The disavowal (1) — or the reminder" (nŷ 152), that I have the impression of having to almost finished with the foreground of the Burial painting. And then no - three times in a row already, I had to come back to this point or that other which did not seem entirely clear, just three words to add, no doubt, to put a final dot on a last i. And each time, this "last point" kept me occupied for an entire evening, when it turned out that what had seemed "not entirely clear" had remained even rather obscure, and that it was not It was by no means a luxury to return to it and find its own light. I have a feeling that it will not be any different today, as I propose to return to a (last?) point, touched upon in passing in the note "Disavowal (2) — or metamorphosis" (n ŷ 153). This is one of the aspects specific to a relationship where I play the role of "adopted father" — the aspect of ("ambiguous") identification of my friend with me. This aspect is mentioned in three or four lines, in a footnote to the cited note. There was no further mention of it during this evening, but the next day, rereading the notes from the day before, I felt that I would have to come back to it. When I resumed the reflection yesterday evening, I was thinking of continuing on this, but ultimately it was another of the "last points" remaining unresolved from the previous reflection, which kept me busy until late at night.

In the many times during Récoltes et Semailles where I was led to note, in the relationship with a particular friend or student, an aspect of an adoptive or adopted father", this was each time on the occasion of the appearance of conflicting traits in this relationship. Also, without deliberating, it was the conflicting aspects of such a relationship with "paternal" connotations which were at the center of my attention and were underlined. I felt that in such a relationship, there is always a more or less strong component of identification with the father, with the sole reservation that this identification can sometimes take a "negative" form, through identification with the "negative" (or the opposite) of the image of a repudiated father (*). This knowledge remained in the background, without visibly intervening in the reflection, while

(*) This was particularly the case in the relationship with me of three of my sons, in no way "adopted" at this point,

yet contributing its part to a diffuse apprehension and to the formation of a still vague, unformed image of this or that relationship. I express myself only once, I believe, and in general terms, in the sense of an identification, at the end of the section “The Enemy Father (1)” (n^o 29):

“... it was the reproduction of the same archetype of conflict with the father: the Father both admired and feared, loved and hated - the Man who must be confronted, defeated, supplanted, 'humiliate perhaps... but the One that we secretly would like to be, strip him of a force to make it his own - another Self, feared, hated and fled... ”

It is hardly necessary to say that in these lines, written on the occasion of a “retrospective on my past as a mathematician”, if there was a specific case which guided my pen in writing, it was that of the relationship with my occult “heir” and ex-student-who-doesn’t-say-his-name, Pierre Deligne — at a time, however, when I had no suspicion, at least on a conscious level, of the funeral with great spectacle orchestrated by him! Just reproducing these lines, written more than nine months ago, I was struck to the extent to which they seem to prefigure and “call out” (in some way) the image of the dwarf and the giant, which would seem to have been formed and materialized for the sole purpose of giving tangible form to the intuition which has just been expressed there. However, there is little doubt in my mind that it is not in me, the chronicler-researcher, that the image was formed, but in my friend himself, and it is of no other that he that I hold her (**)!

The conflicting identification appears clearly in the words “The one that we secretly want to be” and, even more strongly and without any equivocation: “another Self”. In the image of the dwarf and the giant, as it came to my pen on December 18 (in the note “The nerve in the nerve — or the dwarf and the giant”, n^o 148), he is a question of the “insane desire to be this giant himself, or at least, to pass for him”, lines which seem to come in response to the “The one who secretly we would like to be” quoted just now. But this time I stop there (each day is enough for its punishment!), a step still below the “another Oneself”, which came nine months earlier as a self-evident thing! It is true that

and even less “adopters”... (**) see on this

subject the last footnote to the note “The nerve within the nerve — or the dwarf and the giant”,

n^o 48.

this time, while it is a "piece work", in this case all there is precise, it is a question of being much more careful and circumspect than in a context where we pretends (casually!) to launch an assertion of a general nature, which would not concern no one in particular...

But considering the thing, it is true that it is indeed a very small step, for the unconscious eager for symbolic satisfaction, which it can pay for with mental images of its own creation, between the "insane desire" (and of considerable visible force) to be this or that , and the act of identification with this mimes that one wants to be. So that identification, however unconscious it may be, is somewhat credible, and so that the satisfactions it brings can be savored with a minimum feeling of security, it is still undoubtedly necessary for it to have the guarantee of certain "objective" characteristics of resembling the person (in this case) with whom one identifies. I assume that in the case that concerns myself, with the relationship between my friend and me, the first "objective character" likely to favor a feeling of resemblance, and an act of identification, was the strong affinity between his approach and mine of our common master, mathematics. That would be the strength "in a positive sense", "that of identification with one who is felt to be similar", of which it has been question in passing in the footnote cited at the start of today's reflection.

However, as I have already had occasion to point out several times during the reflection on the relationship between my friend and me, from the first years of this relationship, he did not did not fail to perceive the aspects of "superyang" imbalance in the character that I I had been camping since I was a child, which had become my "second nature" for a long time. I cannot say whether, at the level of conscious perception, my friend was able to clearly distinguish between these two entirely distinct aspects of my person, (I would tend to doubt it.) Still, the superyang aspect of the "boss" in my company must have aroused in him two very distinct types of reactions. The one, the only one that I have perceived until these last month, and the only conscious one in him (I presume), was expressed on occasion by an attitude of somewhat pained regret*, which I had occasion to evoke, an attitude which never left the tones friendly or affectionate. The other reaction, on closer inspection, appears itself as "ambiguous", formed of two components in apparently opposite directions. One, "positive", goes in the direction of an unreserved valorization of my person, as the incarnation of heroic, "larger than life" "values"; generally accepted values of course, which we assimilate in our young years like the air we breathe, but whose immediate surroundings

diat in his childhood had undoubtedly not provided him with any “model” that was even remotely inspiring. This component, just like the feeling of affinity (of a completely different nature) which was discussed previously, went in the direction of an identification with my person, without an element of antagonism. This antagonistic element, on the other hand, enters into the other component, or better, the other face (or “the other side”) of this identification of which I have just described the “place”, and it remains more enigmatic for me. It is surely here that the “paternal” role that my friend assigned to me, through my conformity to a certain ideal “profile” supposed to embody such values, plays a crucial role. In gropingly trying to fathom, with the help of the few very tenuous elements at my disposal, the root cause of the strongly antagonistic content of this identification with an “adopted father” (with very “Superfather” J traits), I had fallen (two weeks ago) on a plausible “scenario”, but which remains hypothetical, in the note of December 20 “Respite grudge — or the return of things (2)”.

This is not the place to revisit this scenario. It seems more interesting to me to revisit the image “the dwarf and the giant” (which had just appeared in the note two days before), in the perspective of this conflicting identification of my friend with my person. It therefore appears that both protagonists in the image, the dwarf as well as the giant, are none other than himself, or rather, two distinct aspects of himself. “The dwarf” represents what is felt by my friend as the original and “immutable” aspect of his being, the one rooted in his childhood as far back as he can remember and undoubtedly even beyond... it is also what is felt as the banal, insignificant, not to say derisory aspect of his person, it is the disavowed aspect, and by that same token, the one also felt as “irremediable”, as “overwhelming”, as the shameful and contemptible pole of his being. “The Giant” on the other hand represents the dizzying ideal that we despair of ever reaching, to which we can at best hope to resemble everything a little, even if it means deceiving oneself as well as others, by all possible means. its disposition. One of these means was to supplant the One who appears as the prestigious and envied incarnation of this ideal, and to “prove” his superiority over the Rival by all imaginable means. As for the Giant himself, he now appears as distinct from the Rival and father, he is the heightened aspect, the ideal, heroic pole of the self. The supreme gratification of the “boss” is everything that is likely to fuel the illusion that one is indeed this ideal pole, this projection of a mind eager to expand. But the very craving for this gratification reveals a worry, “a deeply buried doubt” — it tells us that the person concerned “is not fooled, deep down, by these artificial signs of importance,

a value of "... " (*).

At a more superficial level of the psyche, these "fictitious signs" (**) are, however, part of these "(more or less) objective characteristics" which were discussed earlier, supposed to "make credible" an act of identification to an ideal model (whether this remains in the impersonal form of a faceless "Giant" who lives within oneself, or whether it takes the familiar face of the enemy Father, the Rival).

(156) (January 3) Yesterday afternoon, taking advantage of a quiet hour while waiting for friends to come by, I leafed through the autobiography of C G. Jung, which a friend had just brought me off chance. I was strongly hooked by the little I read. It was the first time I had held a text by Jung in my hands, and until now I had only the vaguest idea of him - a dissident student of Freud, who had known (according to scattered echoes that had returned to me) reintroduce the moving chiaroscuro of the mystery into the rectilinear paths of the Master. It pretty much ended there. There I had the impression of a living person like you and me, who moreover does not waste his time bringing it back, and above all: one who goes straight to the real questions, those which he feels essential because of his own lights, and who is not satisfied (when the question of adventure is as old as the world) with ready-made answers from learned people.

The "biography" aspect (intended for publication) of course particularly interested me, since the notes that I am writing are somewhat similar to a biography, and in a spirit very close to that of Jung: the external event remains constantly subordinated to the internal adventure, of which it is both a revealer and the occasional stimulator. I was struck that Jung only wrote an autobiography (or more precisely, contributed to a biography) at the age of 83, and, above all: at no earlier time in his life he never took the trouble to examine his own childhood in depth. It would have seemed to me that for Freud's students, it had to go without saying that one of the first things, if not the very first, to become familiar with the paths of the unconscious, would have been to explore said paths in their own person! There's not even a doubt

(*) Quotes in quotation marks are taken from the section "Infallibility (of others) and contempt (of oneself)", n° 4.

(**) These signs may well be "fictitious", but they nevertheless often end up forming a "second nature" of unflinching solidity, "indemolishable" (to use the expression of the word the end in the note "The disavowal (2) — or the metamorphosis", n° 153)!

for me that a so-called “knowledge” of the unconscious which would be limited to what is learned in a university curriculum (even if it was taught by a prestigious master like Freud himself), and the analysis of a certain number of “clinical cases”, remains unintegrated knowledge, a piecemeal, “dead” knowledge – a knowledge which by itself does not provide, nor even promote, an understanding of oneself, or of others, or of the world.

But it is also true that an exploration of one's own person is an enterprise which, by nature, cannot be the subject of an institutionalized “program” — any more than the restoration, at its very root, of a disturbed psychic balance (in a “patient”, let's say) can be the fruit of the intervention of any “ogue” who is limited to implementing all-purpose techniques. “Disturbed balance” is in no way limited to the socially unacceptable stage of the onset of a nervous breakdown or neurosis, but it can be seen in almost everyone (to a greater rather than a less profound degree). THE psychologists themselves (or ethnologists, sociologists and other “ogues”), and of all persuasions, are no more an exception than the others. And a true restoration of balance disturbed is in no way in the nature of a simple “medical act” occurring in a third party. It is an act of the person himself and no one else - an act of love, which he is free to do or not to do. It is, not the result of the inexorable unfolding of psychic mechanisms (with or without the intervention of the psychic mechanics expert), but a act in the full sense of the term, a creation, a re-birth.

Before having finished writing the peremptory sentence above, about the “so-called “knowledge” of the unconscious”, I realized to what extent the context can make her seem arrogant. Without anything ; know the work of Jung (from which he came to be questioned), I seem to send him on the rosés, as well as his “so-called” knowledge of the unconscious — as long as he apparently didn't bother (before the age of 83) to explore the soil where redhead had his own unconscious. I assume, however, that in reading his biography, it will appear that, without having devoted himself to such an “exploration”, Jung must have had other ways of contact with his own unconscious (ways which themselves undoubtedly remained unconscious for a long time). Surely the premises of the assertion incriminated do not apply to him.

Another thing of a completely different order surprised me while leafing through the glossary. Under the term “quaternity” (NB this is the French edition), Jung insists on the “total-izing” character of the number four. Until about ten years ago, I was very resistant to the idea

of a philosophical or “mystical” use of numbers — any speculation or discourse in this sense seemed to me nonsense, childishness, “Hokuspokus” (as they say in German, for four-penny magic tricks). The little I have learned about the Yi-King (or “Book of Transformations”) has made me less peremptory. Yesterday I made the connection between the “cosmic” character attributed to the number four, and the spontaneous grouping which had taken place, by writing “The key to yin and yang”, in “packets” generally of four or eight notes, united under a common title. The first group is reduced to a single note, it is true, but (I noted this with satisfaction when finishing the sixth group, “Mathematics yin and yang”, which has seven notes instead of eight) in uniting with a later group, to which this isolated note seems to fit most naturally, we still find a bundle of eight notes (718), therefore another multiple of four. This “pattern” has continued until now, the last group completed being group 10 “Violence — or games and the sting” (156). It must be said that from group 7 (“The reversal of yin and yang”) I am not left guided by this “pattern” which had just emerged without me looking for it, and without seeking or assuming a “meaning” other than that of a certain mathematical “regularity” in the form, felt as harmonious.

This reminds me of the only other text that I have written on a theme that can be described as “cosmic”, still centered on the dynamics of yin and yang in human life and in the creative act (*). This text came together, apparently without initial deliberate intention and certainly without effort at any time, following a rigorous numerical ordering. I had forgotten what it was, but looking at it now (we are curious or we are not!), it turns out that it is seven “stanzas” of four “stanzas” each . So it was again a grouping of fours that had taken place. It is true that the number of stanzas is seven, which is not a multiple of four - therefore according to the Jungian criterion, the character of totality would not be satisfied for the entire work (**), but only for each of the seven “stances” that compose it. But here I still have enough to get by, seeing as the famous “poetic work”

(*) This is the “In Praise of Incest”, which was discussed in note nŷ 43 (referring to the section “The Guru-not-Guru — or the three-legged horse” , nŷ 45), and especially in the note “L’Acte” (nŷ 113), p. 507 — 509. See also the beginning of the note “The dynamics of things (yin-yang harmony)”, nŷ 111.

(**) The projected work (under the provocative name “In Praise of Incest”) was in fact to include three parts (Innocence, Conflict (or Fall), Deliverance (or Rediscovered Childhood)) , of which only the first was completed. This is what we’re talking about here.

tick" was also provided with a providential "epilogue", (not counting an interminable prologue, which I had the good sense to jettison), we still have $7 + 1 = 8$, we are saved!

It's time to return to yesterday's reflection where I left off. I had tried to understand the image of the dwarf and the giant in my friend, in terms of his identification with me. It appeared that "the dwarf" and "the Giant" represent (or "stage", to use the expression of the note which precedes yesterday's) the two extreme "poles" in the person of my friend (I mean: what the "boss" has established as "extreme poles"): a "shameful and contemptible pole", and another "ideal, heroic pole". To tell the truth, with a difference in accent or lighting, I agree with the interpretation found the day before of the same strong image of the dwarf and the giant, in the note from the day before yesterday "The staging — or the "second-wave nature"" (nř 154). It was then a question of the "staging" of the conflict instituted by the boss, the ego, between the two "sides" yin and yang of being. This formulation of the original conflict, in terms of the two "sides", would correspond to an undistorted knowledge of this conflict - and I am convinced that this knowledge must indeed exist, in deep (but by no means inaccessible) layers of the psyche. . The formulation in terms of two "extreme poles", which came yesterday, represents a distorted vision of the conflict — distorted by a deliberate intention of the boss, valorizing one of the "sides" to make it an ideal, heroic "joy", and devaluing the another to make it yet another pole, extreme opposite to the previous one, a shameful, contemptible pole. I presume that this intermediate image lives in shallower, intermediate layers, in partial cohabitation perhaps with the externalized image, the "staging" of the dwarf and the giant, even closer to the conscious surface, and partially encroaching with the surface layers (*). Finally, in these, I remind you, the idyllic image of the "sugar daddy" reigns. slightly softened at the edges, from a respectful yarn full of thoughtfulness, with clearly visible velvet and an invisible label with a velvet flower...

Compared to the reflection of the day before yesterday, that of yesterday seems to me above all to qualify it, and thereby to sharpen its contours somewhat, without yet bringing anything essentially new to it, however. It is true that by stopping the reflection because of the prohibitive time, I had no impression of having reached the end of the direction in which I had been heading.

(*) This presumption concerning the image of the dwarf and the giant comes, of course, from the very explicit expression of this image, in the final words of the biographical notice of Pierre Deligne written by himself (to which reference is made in the last footnote to the note "The nerve within the nerve — or the dwarf and the giant", nř 148).

engaged, that of “ambiguous identification”. Thinking about it afterwards, I realized that, no doubt as a result of an inveterate habit of “seeing myself in yang”, it seemed self-evident to me that, when there is identification with my person, it cannot concern only my yang features. In this case, in this scenic image of the dwarf and the giant, it is in the giant until now that I had recognized myself, in a distorted form certainly, but still clearly recognizable. If I am nevertheless presented with insistence, as a result of the “reversal” syndrome in my friend, as being “the. dwarf” (*), this assimilation (with visibly malicious intent) was immediately challenged by me, by a reflex of universal nature and great force: of being confronted with a desire for derision, targeting traits (yin, in this case) perfectly real in me, while passing over in silence the equally real complementary traits (which benefit from a validating consensus) - such a situation arouses in me the eternal reaction, if not of to completely deny the incriminated traits, at least to tacitly minimize them, by highlighting, as if to oppose them, the traits that have been unjustly glossed over.

Through this “visceral” reaction, I am indeed entering into the round of conflict, as I am supposed to do! She points out to me this eternal “hook” where someone takes hold of me to drag me into the round. My own vision of reality” is also distorted, in response to a provocative distortion. So it was a complete loss that I wrote yesterday with the tip of my lips (or with the keys of the typewriter), that

“the first “objective character” likely to promote a feeling of resemblance and an act of identification, was the strong affinity between his approach and mine of our common master, mathematics”.

It was more difficult for me then, when writing it, to forget that this “strong affinity” consisted of a yin, feminine approach to the discovery and knowledge of things - that this was precisely the aspect , by which, as “like” him, I too appeared as a dwarf, just like him: it was the secret, vulnerable, shameful side, which he reserved to bring into play, when the right moment would appear, to supplant and to “overthrow”. This “providential circumstance” (*), the yin predominance in my drive for knowledge, it was not

(**) this “dwarf” itself being none other than a metaphor for the “Meganana” with the features of a “false” giant, with flabby and ramo forms... (Feb. 85)

(*) See the note of the same name, n̄y 151.

not just a weapon in the hands of a dubious friend — it was also and first of all a sort of “objective foundation” of his identification with me; not, this time, as identification with the father, but as that with an older brother, not to say an “older sister”.

When I use the term “objective” here, it is to express that this time it is an “identification” taking root, not in one of the fictions of the willing (or fearing) “boss”. .) be this or that, but in a deep, tangible, indubitable reality — that of a kinship between the original nature of one and the other. In any case, surely this kinship could not have failed to be perceived by him as well as by me, and I have no doubt that at a certain deep level, the meaning of this kinship was also perceived. And I assume at least, without being completely convinced, that this perception must indeed have served as material in his identification with me. This identification would therefore have been made on two distinct levels: on the one hand the “ideal” level, in which I appear as the incarnation of values of which he himself would like to be an exemplary incarnation (even if only in appearance, then that the model appears to be out of reach, and is supposed to truly achieve the ideal); on the other hand the “real” level, where identification is established thanks to a correctly perceived de facto kinship, but a kinship in common traits deemed prohibitive, pitiful (*).

This is the moment to remind myself that at the time of our meeting, and for more than ten years after it, this same repression of my “feminine” traits was rife in me that I recently ended up noticing. my friend's house. It seems to me, with hindsight, that at the time of our meeting, this repression in my friend already existed to a certain degree, but that it remained mainly in a latent state, and in any case, was much less strong than before. 'she wasn't at my house. As I have pointed out more than once, my person has for a long time been marked by a superyang imbalance, while his gave off an impression of harmonious balance. Since then, there have been developments in his and mine in opposite directions: an evolution going, in my friend, from a state of yin-yang balance towards a strong yang imbalance, and in me, from 'a strong yang imbalance towards a state of (relative) yin-balance

Which.

(*) These two “levels” therefore correspond to two distinct “archetypes”, and here in opposition to each other, in the identification with my person: that of the father (alias “the giant”), and that of of the Brother, or even that of the Sister (aka “the dwarf”). The latter is also found in the image of the “cake dad” — suggested by the father in flesh and blood “as he is”, alas!, and not “as he should be”...

The idea that immediately presents itself is that my friend, perhaps by virtue of this double identification with me, followed (with a thirty-year gap!) the evolution, in the direction of 'a degradation of an original balance, which I myself had followed since the age of eight. It is possible that a moderate overvaluation of "manly" values to the detriment of "feminine" values was transformed, through my contact or through contact with the environment of which I was a part, into an overvaluation with a bit of zinc. But as I have pointed out elsewhere, the "nerve" is the "living force") in the Burial orchestrated by him, and the nerve also in his own metamorphosis (which is also the burial of the child in him by the care of the boss) — this nerve can hardly reside in the sole adoption of this or that other system of values, more or less extreme (even, insane!). And it is the same with the "nerve" in the identification with my person, and in the disproportionate role that this identification played in the life of my friend. There is no doubt that it is one and the same "force" that is at work, and that its roots go far back into his childhood (**).

Another strange idea occurs to me here. It seems like the heaviest burden I carried around for forty years of my life, this repression of the "feminine" in me by the "manly", which was also similar to that of the child in me by "the Big Boss" — that this burden was "taken up" by my friend, at precisely a moment when it might seem that he himself was free from a similar burden. It was around the time when my value system shifted in the yin/evolution direction which foreshadowed the moment of reunion with the child, some fifteen years later, when Suddenly I felt relieved of an immense weight (*).

The association that immediately presents itself here is that with the Hindu idea of karma. It is clear to me that over the past eight years, I have shed a substantial portion of the karma that I carried with me from my childhood. I would have thought (and I tend to still think) that this relief was not done "at the expense" of anyone, that it is beneficial not only for me, but "for the whole world". I can even say that I know very well that this is the case, even if it turns out that someone else chose (or even that another had to choose) to take it over. It is also true that this karma from which I have relieved myself, I do not consider it to be "evil". He was the substance for me

(**) For a more precise intuition going in this direction, see especially the note "Respite resentment — or the return of things (2)", nř 149.

(*) There is talk of this "shift" in the system of values, in the note "Yang plays the yin — or the role of Master" (nř 118), and of "reunions", in the note of the same name (nř 109).

nourisher of a maturation, which was before me. I know that it is good, for me and for everyone, that I have eaten and been nourished by it, that a knowledge has been formed in the nourishing matrix of an ignorance (**). It seemed to me that this substance or this karma, once transformed into knowledge, left no residue, that it disappeared. To tell the truth, I don't know what the Hindu or Buddhist tradition teaches on this subject - if there is for it a law of "conversation of karma" (similar to that of the conservation of matter), which law does not would in no way be affected by the vital creative processes of ingestion, digestion, assimilation.

Out of scruples of propriety, I have just overlooked, among these "vital processes", excretion. However, this is (in the same way as the death of the entire organism) a key process of recycling what has been absorbed, returning to the infinite cycle of transformation of "dead" organic matter into living organic matter, by which life is eternally reborn from death (***).

(1561) (February 20) this "pattern" ended up breaking with the ultimate group n̄ 12 which unfortunately includes! six notes, bringing the total of notes that make up "The Key to Yin and Yang" to 62. I had anticipated that there would be eight notes in this "Conflicts and Discovery" group, which would have been consistent with the criterion of totality, and would have brought the total number of component notes to $64 = 8 \times 8 = 4 \times 4 \times 4 \times 4$, which is also the number of hexagrams of the I Ching! I was sorry that my expectation did not come true, but I did not want to "cheat" and include in "The key to yin and yang" the two notes devoted to Pierre Deligne's visit to my home, including the natural place seems to me rather in the continuation of "The Funeral Ceremony", being placed after "The key...".

However, I remain with a feeling of dissatisfaction about this group no. 12, the only one of the twelve parts of "The key..." which does not leave me with an impression of unity of inspiration and purpose. This lack of unity seems to me to be due, not to the theme "Conflict and discovery" itself, but to the irruption of foreign (and at times, disturbing) events during reflection.

(March 7) Rereading last night the reflection of January 14 that I had grouped in

(**) For reflections that go in the same direction, see the end of the note "The cycle" (n̄ 116), and in particular the last paragraph thereof.

(***) On the subject of the cycle of life and death, see also the note "The Act", n̄ 113.

a note nŷ 162) called “conviction and knowledge — or the passing” (*), I felt dissatisfaction with this name. On the one hand, the “main” title and the subtitle did not seem, “at first glance”, to fit together — in fact, they correspond, one to a first and other to a third “movement” in reflection, which in themselves are without apparent connection: description of the process of the emergence of knowledge (in the form of a sudden conviction), and evocation of the endless chain and the “passing” of karma, from one generation to another, and from one person to another. Moreover, the most intimately personal content, the “neuralgic” content for my own person, which formed the substance of the “second movement” of reflection (and had moreover been the “bridge”, taking me from the first movement to third) — this crucial content did not appear in the chosen name. (There is also no doubt in my mind that this surreptitious evasion is in no way the result of pure chance...) As the three themes seem important to me, each in its own right, and as I did not see any “welcome” name or double name emerging that would evoke all three, I ended up understanding that the best would be to split the note into three, with a suggestive name for each separately: “Conviction and knowledge”, “The hottest iron - or the turning point”, “the endless chain - or the handover (2)” (nŷ s 162, 162, 162).

It was afterwards that I realized, suddenly, that through this operation, dictated (so to speak) by the very substance of the reflection, the “aesthetic” dissatisfaction that I had been carrying around since then had been resolved at the same time. almost two months, while this twelfth and final part of “The key to yin and yang” (which I had called “Conflict and discovery”) persisted in not wanting to let itself be completed (in a natural way, s 'hears) in a series of eight notes, and to only want to include the six which were already written. And I received my reward for not having given in to the easy temptation to “cheat” and “glue” two “off the cuff” notes at the end of “The Key” whose place was elsewhere! This last part of “The Key” (which will ultimately be called “The Enigma of Evil — or Conflict and Discovery”), takes at the same time. a beautiful symmetrical structure, with two packets (of three notes each) on the central theme, grouping around the two “digression-notes” on Fujii Guruji and on my monk friends.

(157) (January 4) In the reflection of yesterday and the day before yesterday, I tried above all to find contact with the reality of the identification of my friend with my person, and in doing so, to dis-

(*) It was also the last note of “The key to yin and yang”.

identify the scope and implications. It's a job that I still do like someone groping in the darkness, not to say, in the dark night. Or perhaps we should rather say that my eyes remain closed, and that my eyelids are opaque to a light that I remain incapable of perceiving. Still, I do not remember having at any time during the relationship with my friend "felt" or "seen" this identification, any more than I "felt" or "saw" his dispositions. situations of antagonism towards me. I know, however, without the possibility of doubt, through a rich collection of concordant facts, that this identification with my person, and this antagonism which is like its shadow, are realities - just as a person blind from birth would "know" that the sun, daylight, colors, light and dark, exist, even though he has never seen them. He knows it, without having the knowledge of these things. Or if he nevertheless has a very diffuse knowledge of it, through a more refined tactile sense perhaps (or by a "memory" which is not rooted in his life alone, but in those of countless generations of beings gifted with sight who preceded him), this knowledge remains indirect and vague, like that of a warm and sonorous voice reaching us by a distant and uncertain echo.

The work done over the last two days was still like a stopgap, like a substitute. of an immediate perception which is lacking. This is more or less the case in all "meditation" work, in the sense in which I understand it. Work constantly pushes against the tide of an inertia – the inertia of leaden eyelids! Certainly, in the moments when the eyes are fully open and awake, there is no need for meditation, for work: it is enough to look, and to see. As these moments are rare, rather than crossing my arms waiting for them, I prefer to take the lead, without worrying that the work is clumsy and "slow". Although he is slow, and sometimes even slower than usual, he never stomps or goes in circles. When there is work, real work I mean, driven by a real desire, then there is progression: something is done, takes shape, is transformed, imperceptibly at such a moment, visibly at such a time. other... And sometimes, at the end of a clumsy and stubborn progression in a semi-darkness without form or contours, continuing for hours or days, even months or perhaps years, the miracle occurs: the blind sees! And what is seen is not a fleeting vision that disappears as if it had never been, leaving only the faint trace of a memory. It is a knowledge born from these obscure labors, a new knowledge, as intimately ours as the taste for the things we love.

I wrote in my reflection the day before yesterday that if there was a specific case whose thought had

“guided my pen” nine months ago, when writing the final lines of the note “The enemy father (1)” (which I had just quoted), it was that of my friend Pierre in his relationship to me. However, other “cases” even closer to me must have been present in my mind, in the background of the reflection. When I speak of “a father both admired and feared, loved and hated” then of “another Self, feared, hated and fled...”, the terms “feared”, “hated”, “hated”, and undoubtedly even the term “flee”, do not apply to the relationship of friend Pierre to me. Neither by direct perception, however fleeting and slight it may be, nor by cross-checking from obvious facts known to me, have I ever had the slightest indication of a fear that my friend would have had of me, or a hatred or only an animosity that he would have nourished against me. The opposite is true, as I have had the opportunity to point out more than once. And it is precisely this circumstance which has made so disconcerting this unfailing, apparently gratuitous antagonism, which has manifested itself in crescendo throughout the past fifteen years, under the cover of the “thumb!” style, aka “velvet paw ” (*), to finally reach the tune of a quiet impudence, sure (on condition of respecting certain forms) of total impunity...

This disconcerting, enigmatic progression is immediately associated with the equally “disconcerting” and “enigmatic” progression (and these are, for once, euphemisms!) in the degradation which continued, over around fifteen years also, in the relationship with the one who was my wife, and as a result also, in the family that we had founded. In the absence of any sign that would have signaled to me that my wife had a disposition of hatred or chronic animosity towards me, it took me ten years of inexorable deterioration in the relationship (while most of my energy was taken by mathematics, playing the role of the famous pile of sand for the ostrich...), before finally taking note of the presence, in the one I continued to love, of a tenacious, mysterious and im-placable, exerting itself against me through those who were dear to me. It was in 1967, five years before I left my family home, and ten years before this conflict was resolved for me, which I felt was the heaviest weight I had to carry in my life. With the hindsight provided by a long-established relationship, I can only note what continues to remain a mystery for me: an insatiable desire for destruction, and at the same time an absence of hatred, or only animosity, towards - towards those, adults or children,

(*) See the two notes “Thumb!” and “Velvet paw — or smiles” (nos. 77, 137), as well as the notes which follow the latter, forming the part “The claw in the velvet” of “The key to yin and yang”.

who are struck mercilessly, as long as the opportunity lends itself to it.

It is the same mystery, all things considered, as the one with which I now see myself confronted in the relationship between my friend and me, with this difference, that this "tenancy of destruction... exerted against me through those who are not dear" was rigorously confined to the plan of the world of mathematicians, and that its instruments and hostages were, not my children "by the flesh", but those who symbolically took their place: the students and assimilated who, to some extent, "bear my name". In both cases, not only do I not detect hatred or animosity, but moreover, there are feelings of sympathy towards me, and often even affection, which cannot be in doubt.

These are not the only situations where I have been confronted in others with a desire to hurt, or even a desire to destroy (in the strongest sense of the term (*)), without me detecting a trace of hatred or animosity. The one that had the strongest impact on my life took place in 1933 in my sixth year, with my mother as the protagonist — the year when the family that we formed, my parents, my sister and I, was destroyed forever (**).

The different situations of this kind that I have experienced closely, of a desire for destruction, or a desire to hurt as deeply as possible, without me detecting any trace of animosity, seem very different from each other. I doubt I will be able to find a common "explanation" for them, or at least a common trait in the distant antecedents of the protagonists, which would suggest a deep causal link (***). Something more important perhaps than an explanation, and more essential in any case, is to already note the existence of such a thing: the will to destroy in the absence of hatred. Here I come back to the theme of "gratuitous violence", previously approached from a different angle (****). Here, it is gratuitous (and sometimes destructive) violence towards a close person or a person considered a "friend" that we are dealing with. The only existence, in everyday life,

(*) By "strongest sense", I mean here a will, not to cause suffering for the pleasure of causing suffering, or to destroy some limited thing which would be dear to the other, but the will for psychic destruction (if not physical) on the other; that (when possible) of establishing an indelible and devastating despair in the face of "that which surpasses understanding". Behind the brilliant and affable exterior of "Colloque Pervers", I seemed to find this extreme dimension in two of the most brilliant among its actors...

(**) See about this episode "The Superfather", note n° 108.

of such violence (which rarely says its name), is an important fact in everyone's life - one of the important facts. so much of human life. Observing this fact, by going against the inveterate mechanisms which constantly push us to want to avoid it, is a first step towards accepting it. No theory, no reasoning, no "approach" can make us avoid this step.

I don't know if one day I will understand this fact, it seems to me that understanding it is also "understanding the conflict". What is clear to me is that such an understanding cannot come from a "theory", any more than from an "experience" (by the virtue of experience alone). It is not some "total sum" of an accumulation (of "knowledge", or "experience"), just as it is not of the order of the intellect alone, nor even of the order of only "intelligence" (*). I'm not sure I know anyone, even by name, who has such an understanding. But it seems to me that the one who, after a hundred and thousand evasions in the face of an irrefutable reality with a thousand faces, has finally arrived at the sole conclusion of this fact, humbly, without bitterness or revolt, without resignation and without indignation - like the observation of a formidable mystery perhaps whose meaning escapes him, but whose extent and depth he senses; a mystery which intrigues or challenges him, without frightening or worrying him any more - this one has not lived in vain.

(158) (January 5) Without it being premeditated, the final accents of yesterday's reflection were entirely in the tones, again, of a Funeral Eulogy - but this time pronounced (or sung) by the deceased himself. You are never served so well as by yourself!

Yesterday I found myself confronted again with one of the most disconcerting aspects of the "mystery of

(***) However, a self-contempt, virulent and deeply buried, is surely common to all of these situations. Perhaps such virulence (when it is not resolved by an act of grace, by a profound interior transformation, therefore as long as it is not "accepted") finds an outlet and is expressed through destructive acts, by a desire for destruction, which turns against one's own person when it does not seek and find its target in others. In more than one and more than one, and even among close beings, I have often been able to observe the simultaneous action of a desire for destruction, directed both against oneself, and against an external target, chosen from among those close to you (mother, father, spouse, or child, etc.).

(February 1985) See also the reflection in "The cause of violence without a cause" (n° 159), three days after that of this note who, obviously, prepared it.

(****) See the note "Ingénue violence", n° 139. (*)

(March 5) I know in any case that such an understanding will only come to me through an understanding of this violence in myself.

conflict": that of the desire for destruction without hatred and without apparent motive, exerted in the shadows, obstinately and relentlessly, against a loved one, or such relatives or friends. It happens that such a will ends up getting carried away, leading to an all-out destructive craving, where everything that presents itself as vulnerable becomes a welcome target. It's like an irrepressible bulimia of "action" in reverse, whose repetitive nature (like that of clown games), and the consummate mastery in the art of pulling the strings, can have a very comical effect. , when the one who observes (or even the one who has just paid the price) is gifted with a sense of humor, and the Actor-Puppeteer only has modest powers over others. The situation is more serious, it is of consequence, when there are children among those who bear the brunt of circus games, even if these are only "bloody" in the figurative sense; and also when someone possessed by a thirst to destroy finds themselves invested with considerable, even discretionary, powers over certain of their fellow human beings. History tells us of the names of certain despots possessed by such a madness of indiscriminate destruction, transforming their fiefdom into a vast mass grave. We think of Ivan the Terrible, or of Stalin, or of a certain emperor of China (whose name and millennium I have forgotten) who ended up being defeated by his own cornered subjects, armed with sticks and guns. piles (*). There is no doubt that there have been similar cases in our countries, on a less vast scale perhaps, and on which "History"

(*) This emperor, fearing a popular uprising, had forbidden the people the use of all metal objects (such as knives, forks, etc.) which could have been used as weapons, with the exception of one knife per village , tied by a strong chain in a public place.

A trait common to the three characters cited is that in addition to this thirst for destruction, they were also possessed by fear: the fear of being assassinated and beyond this, undoubtedly, the fear of their own inevitable death — while they sowed death all around them. This coincidence is surely not fortuitous. I also note that Stalin (the only one of the three about whom I had even slightly detailed information) began his political career as a great master precisely in the art of pulling strings, of manipulating people by playing on their vanity and their greed. His first acquired style was, it seems, the "velvet paw", until it became unnecessary for him to take the trouble to hide the claws.

If I have not included my (ex-) compatriot Hitler among the examples cited, it is not because of any particular sympathy that I have towards him, but because I do not detect this mania in him. of "all-out" destruction that was discussed. The targets of contempt, then of destruction, were those designated as "the others" "foreigners": first "the Jews" (and the communists and other "Judeo-Bolshevists" dear to Nazi jargon), then "Asians" and other non-Arians. The good, non-Jewish German was all that was easy under Hitler, at least until the moments of the first major Allied air raids, when the war started to go really bad for them.

was more discreet...

When I wrote yesterday, without any false modesty, that I did not understand the “fact” that I had just noted, that of the thirst for destruction in the absence of hatred, this in no way meant that I did not I had no idea about it, quite the contrary. I even have much more than just ideas, but rather some strong intuitions. They were born and grew on the soil of my life, rich in the conflicts which had sometimes seemed to devastate it, like endless storms unleashed in a still winter landscape, tearing up without care what must be torn away (*). But everything is for the sleeping earth which waits in silence. When spring returns to the hollows of the large dead trunks lying there inert, an intense life teems with it, and the following spring (even if it is not the same year) we can already see herbs and flowers blooming there.

These “strong intuitions” all concern, I believe, the “ingredients” of conflict. I have spoken a little, and spoken again, about some of them, and first of all, about “self-contempt”, and its links with the repression of certain aspects and essential forces of our original being, such as the yin or yang “sides”, one of which is often denied. I have also often had the opportunity to talk about vanity, which is like the calling card, the most universal sign of all, and the most apparent, of the presence of conflict in us, and which appears to me as “the other side” of the same coin, the “other side” of which would be self-contempt. There is contempt for others, an outward projection of self-contempt, of which it is at the same time a cover, or to put it better, a diversion and an exorcism. Contempt for others is nothing other than deliberate ignorance of their existence, as a sentient being who shares in this world, in the same way as ourselves. Gratuitous violence can only germinate and proliferate on the ground of such contempt. There is the fear of knowing, the fear of reality, a fear whose nerve center, this “Black Spot”, epicenter of a whirlwind of anxiety ready to be triggered at the

(*) As soon as I noted this image in the flow of my pen, it occurred to me that it is only partially adequate - it would almost have the aftertaste of a “cliché”! By reflecting on this aftertaste for a moment, I find the old deliberate idea within me of “seeing my life in yang”: movement, arrows and storms...

Without having even taken the time to pose, but feeling that the image was wrong (and yet, it was really the one that had come to me, nothing to do!), I “corrected the shot” in the text by moving on to the “sleeping earth that waits in silence” — and there’s yin! It was the agreement that “resolves” a “false agreement” (or “dissonance”). An image in many respects more accurate than that of the storm, “tearing away what must be torn away”, and in tones more yin precisely, would be that of the worm which gnaws “what must be gnawed” — and which finally collapses - but everything gives way to the earth which waits in silence, and when spring returns... (continuation without change!).

least alarm, is the fear of knowing oneself: the fear of becoming aware of one's own poses and subterfuges, even the crudest ones; and also the fear of becoming aware of the creative force in us that day after day we reject and bury, through these same poses and subterfuges.

In my life, fear appeared at the age of six, when there was still (as it seemed to me) no vanity. This must have only appeared later, at the time (I presume) of the "shift" which took place around the age of eight (*). And it was also fear that disappeared first and without a trace, as soon as a curiosity appeared that was both benevolent and irreverent, intrigued certainly but in no way impressed by the absurd and macabre montages with great spectacle, like "Point Noir" and co. The mechanisms of vanity, on the other hand, have remained in place without apparent change in the eight years since the fear of knowledge disappeared. It is only the influence of these mechanisms on my life that has changed, due to the fact that they are defused at moments of the presence of an awakening curiosity, which does not allow itself to be told like that!

I have in my hands a whole range of ingredients for the conflict - which I know first-hand and without a shade of doubt, that they are indeed ingredients, and essential ones. And for years I have also had everything in my hands, whenever I please, to "assemble" these ingredients, carefully explaining, in the light of what I have been able to observe in myself and in others, their links. of contiguity and dependence. It is a work of a few days or a few weeks, not even months, I suppose, and which will surely be very instructive and very useful. If I have not yet taken the trouble to do so, giving priority to other more directly personal directions, it is undoubtedly because I knew well that it is not such a "assemblage" of ingredients, in general terms from which I am absent (except as an "example" among others), that an "understanding of the conflict" could come to me; no more than by the mere fact of putting side by side, "assembling" or even mixing a certain number of simple bodies, "ingredients" in the composition of a compound body, we reconstitute the latter. For "reconstitution" to take place, a "chemical reaction" must first take place — something bringing the ingredients into contact and play in a much more intimate way, and by forces of a completely different order. , that a simple "assemblage" or mixture could not do it.

It is the same for an understanding of things in life. Intelligence alone

(*) On the subject of this "shift", see the note "Le Suprême" (n° 108).

can, if necessary, identify the ingredients of a thing such as “conflict”, and it can in any case, in the presence of already known ingredients and with the help of the facts concerning them (known first or second hand), assemble them in a plausible, and even “correct” way. Such work can be useful in recognizing oneself on occasion, in this or that conflict situation, in drawing out a more or less precise “etiology” — but this is not yet an “understanding of the conflict” . I will say, on the other hand, that I have progressed one step towards such an understanding, the day my relationship to the conflict has been transformed. When I speak here of “my relationship to conflict”, it concerns first and foremost, of course, the conflict in my own person, and (from there) the conflict which occasionally pits me against this or that person. other ; and finally, the conflict that I see acting in close or less close beings in my everyday life, which is often expressed by conflicts pitting one against another among them.

Over the past eight years, there has indeed been such progress towards an understanding of the conflict, that is also to say: a transformation, or rather, successive transformations, in my relationship to the conflict. I had the opportunity to discuss two or three episodes (*). Perhaps a full understanding of conflict amounts to a full acceptance of the existence of conflict, wherever it is, and however it manifests (**). I'm far from it, obviously! And perhaps also, a full understanding of the conflict also means the complete resolution of the conflict in one's own person. I'm even further away!

However, I believe I know one more thing, about the nature of the force which, from an assembly of ingredients, suddenly brings forth an understanding which renews the person. It is precisely this force which is not “of the order of intelligence”. I doubt that any intellectual work whatsoever, the reading, say, of books, however learned, profound or sublime they may be, in any way stimulates its appearance. When it happens to emerge, it is only in silence and in contact with what is most intimately personal in our person and in our experience; something, therefore, that no book and no person, be it Christ or Buddha, can ever reveal to us.

(*) see in particular, on this subject, the two notes “Acceptance (the awakening of yin (2))” and “The slave and the puppet — or the valves”, nř s 110, 140.

(**) The meaning of such “full acceptance” can give rise to countless misunderstandings. It is of a completely different nature than collusion. It does not exclude refusal, clear and unequivocal — it contains it. See on this subject the reflection in the note “Spouses — or the enigma of “Evil”” (nř 117).

When I say “what is most intimately personal,” that does not mean that these are things we cannot talk about, to ourselves or to others — and sometimes it is good to talk about them. But even if we speak through the voices of angels and prophets, what is said is not the thing itself. This thing - already known, but buried perhaps, the contact of which can suddenly bring forth new knowledge, this thing is known neither to angels nor to prophets, nor to even the closest and best being. loved, but only by you.

To return to the conflict, and to “destruction without hatred”, which appears to me to be the hardest “core” of the conflict, the most refractory to understanding, that is also to say: to acceptance. I also believe I know, in the next step before me to enter further, what is this “most intimately personal” thing which I will first have to find contact with! the one which would play the role, in this case, of this famous “Black Spot” so tenaciously avoided! It is the experience of situations of “gratuitous violence”, of contempt for others (and of “destruction without hatred” too, perhaps), in which I was the actor — the one who committed violence, the one who found his account to be despised. It is in contact with this reality, or never, that I will be able to be clear about this famous “self-contempt”, and to finally see, outside of all “doubt” and of all “perhaps”, if it is indeed 1 at the deep root of evil, and not only in “everyone except me”!

(159) (January 7) The reflection in the two previous notes revolved around the mystery of the existence of this strange thing: a desire to destroy (or a desire to hurt, or to humiliate, or to harm) , in the absence of any hatred or animosity. The incentive for this reflection came to me through my friend Pierre's relationship with me, immediately arousing the association with my ex-wife's relationship with me. More than once during the reflection on the Burial, I was led to realize, or to remember, that in these two cases as in others these are certain traits in my person, the “super-manly” traits that I cultivated in myself since the age of eight, which served as stimulators and “attractors” for such antagonistic impulses. If I am not mistaken, it is mentioned for the first time in the note of October 5 “The superfather (yang buries yin (2))” (nÿ 108). This link is taken up in the following note of October 9 “The reunion (the awakening of yin (1))” (nÿ 109).

In this note, I return to the moment when, for the first time in my life, I perceived this link. It was October 18, 1976, the very day I reunited with the child in me, and

in the final lines of the notes which bear witness to this most important day in my adult life. In these lines (reproduced in the cited note), I speak of the "secret hatred and resentment" of three women I had loved, including the one who at that time was still my wife (even though I had not been cohabiting for five years). more with her). With hindsight, it seems to me that in each of the three cases that I had in mind, this impression of "secret hatred" did not correspond, strictly speaking, to reality — I mean, to a direct perception that I would have had at no time (*) such hatred. What I had perceived, and what I had had

(*) (March 6) After writing these lines I remembered that there were, however, during my married life, two episodes, the first lasting a few days, the second lasting a few minutes, where I felt assailed as if by two beams of hatred, bursting from the eyes of the one who was then my wife.

The first time, my wife was going through what is (euphemistically) called a "nervous breakdown" during the fifth year of our marriage (1962). This episode had a profound impact on the couple's life and the family atmosphere. It is also the moment of my life, among all those of which I have kept a conscious memory, which was experienced as the most atrocious, and which marked me the most deeply (as it was supposed to do).

Unless there is an inner foundation of exceptional stability (which, due to lack of maturity, I was far from having then), the hatred of which we are the target, and even more so when it comes from loved and close ones, has a devastating effect on our psyche, when it arouses in us a similar and destructive hatred towards ourselves. It would seem that something in us must at all costs find a "meaning" in "that which surpasses understanding", even if this "meaning" were even a condemnation and an unequivocal rejection of ourselves by ourselves: since we are hated (and even though the "reason" for this hatred totally escapes us...), it is because we are hateable...

If I was so affected by this episode, which remained like a sword of Damocles hanging over my life during the following six or seven years, it is surely because it came into violent resonance with a traumatic experience of my childhood. This had disappeared from conscious memory, but it was all the more active all the times when I found myself suddenly confronted with malevolence or inexplicable hatred - all as sudden and inexplicable as this desire for destruction which had assailed at the age of five, coming then from the person above all others who, as far back as I could remember, had been the peaceful and secure center of the Universe.

This is one of the important things that I ended up learning in my life, about the malice or hatred of which I happen to be the target, that I am however in no way the true and immediate cause (even if certain aspects of my person, which I neither disavow nor reject, contribute to attracting it to me).- This knowledge however remained too epidermal, for years still, to defuse this mechanism deeply rooted in me, coming into play when I find myself confronted with malevolence or violence apparently "without cause". To defuse it, I first had to go back to its root and follow in the footsteps of those forgotten days and nights heavy with anguish, when my mother suddenly, mysteriously and inexplicably became a stranger. , hostile and formidable...

ample opportunity to suffer the effects, was a desire for destruction, or a desire to cause suffering or injury, both lasting and apparently inexplicable, gratuitous - something that I had interpreted as a sign of a "secret" hatred, because never expressed. I also believe that for two of the women in question, it was in these lines quoted, for the first time since I had known them, that I noted what appeared to me as a "secret hatred". At the point where I was at that moment, it was not possible that I would not make the confusion that I have just pointed out. This confusion does not detract from the importance of making this observation, involving myself in it in just as crucial a way as these women to whom I was closely linked.

As for the "resentment", which is mentioned in one breath with the "secret hatred", I felt from that moment that if a "certain superyang force" in me had attracted to my person the resentment of each of these three women, it was for grievances yet for which I was in no way responsible — for wounds and damages suffered "long before they knew of my existence, in the helpless days of a childhood deprived of love". This perception, which had settled over the years as the fruit of an intense experience, surely had the effect of an invisible guide for my reflection of last December 20, in the note "Rancune en reprieve — or the return things (2)" (nř 149), where the intuition appears that this same process of displacement of an initial resentment, or of a "grudge in a state of vacancy", could well have taken place in my friend Pierre, around the time of our meeting or perhaps even before. The facts known to me at least make this intuition plausible.

There is, however, an important difference with the case of my ex-wife, and with the two other cases discussed in the meditation after the reunion. I in no way have the impression, in fact, that my friend's childhood was the least bit "distraught" or "deprived of love". This difference seems to me to manifest itself in the tone of my friend's antagonism towards me, which at no time reached that pitch of vehemence, which was so familiar to me in the three other relationships. Also, in my friend's relationship with me, the appearance of signs of antagonism was at first extremely discreet and sporadic, and even after my departure in 1970, it took another eight years before this year -tagonism is not expressed in a direct and unmistakable way against my person himself (*).

This seems to correspond well to the existence of an initial "resentment" which remained diffuse, imponderable, without the presence of a hard "core" corresponding to the feeling (even if it was hidden from the

(*) See on this subject the note "Two turning points", nř 66.

conscious gaze) of an outrage or harm suffered, felt as irreparable perhaps...

By evoking, in the penultimate note, the desire to destroy, or that of injuring or harming, in the absence of hatred and animosity, the thought came to me (with a certain insistence) of a apparent contradiction, to which I thought I would return immediately. It's this one. In the two cases that were at the center of my attention, involving the one who was my student (and my presumptive mathematical "heir") and the one who was my wife, there was indeed a question of an unconscious "grudge" that they had transferred to my person. The very idea of a "grudge" or "resentment" seems linked to that of an "animosity" or "enmity": we would like to say that grudge (or resentment) is a possible ways (and one of the most common) of fueling animosity. And this assertion is surely founded, in the case of a grudge that could be called "direct", a "real" grudge, motivated by a grievance (real or imaginary) towards the person concerned, wrong or damage that it may have inflicted on us. But in the cases that concern me, it is not such a grudge that is involved, but an indirect grudge, "by proxy" so to speak, carried over from an initial potential target. , inadequate for one reason or another (*), towards an "adoption target" or replacement, which appears to "fit" with the needs of the cause. The remarkable thing is that such "misplaced resentment" (that is the case!), which acts as 1 has an obstinate force at work behind the attitudes, behaviors and actions of a nature such that one would say they are moved by hatred or by an animosity "without cause" — that such

(*) There are many such "reasons", which often mean that someone who (voluntarily or not) has caused harm or inflicted damage, is nonetheless "inadequate" as a target for resentment or animosity, or even of a hatred or a desire for destruction, indeed aroused by him. Perhaps the most common, especially when it concerns the mother or father, or a person considered beyond reach by their rank or social position, is the barrier of fear of breaking a taboo of authority, internalized for a long time. These are dams of very great force - (For me, they have tended, for about fifteen years and more and more, to disappear...) In the opposite direction, it may happen that the person in question "is not up to the task" of satisfying a grudge commensurate with the scale of the wrongs suffered — that he or she appears too insignificant, too evasive or pusillanimous perhaps, to be up to the role that would otherwise be given to him or her. would return by right.

Finally, I can also imagine that in certain cases, the harm suffered is too imponderable, too subtle (and even "non-existent", to put it bluntly, according to the consensus in force, internalized for a long time by the person concerned), for give birth to anything other than a diffuse resentment, incapable of "condensing" and taking shape and strength in a relationship itself in soft tones, without apparent angles. This is undoubtedly a simple variant of the previous case, which appeared in the reflection with the note "Respite grudges — or the return of things (2)" (n° 149).

“grudge” is however devoid of any feeling of hatred or animosity! It is moreover the conjunction of these two aspects of “gratuitous violence” in the strong sense of the term (the one that I am examining here) which makes it so disconcerting, as something which truly “goes beyond understanding” (*): the complete absence of any rational and tangible “cause” of this violence, both in those who bear the brunt of it (without having caused it by attitudes, behaviors or acts that are hurtful or harmful to the other), only in the one who exercises it (without being moved by feelings of hatred or animosity that he nourishes, “rightly or wrongly”, against his target).

Perhaps the question of the presence or absence of hatred or animosity, in the cases that concern me (where we find ourselves confronted with violence that appears “gratuitous”, as unprovoked), is- it here relatively incidental, surely, as was the case for me, in the experience of the one who suffers this violence, and from the moment when the violence suffered becomes conscious, there must appear an impression of “secret hatred” or of “animosity” on the part of the one who inflicts it. This impression, however, is in no way the effect of a perception (which would have suddenly appeared, as if by the wave of a magic wand), but rather that of a cookie-cutter assimilation: violence, hatred (or animosity) (**).

One thing that seems much more important to me, however, is to note, not only the existence of something apparently so aberrant, so insane, so contrary to the most inveterate “common sense” reflexes, that the “proxy grudge”, displaced from its “original target” (or original targets) to a “replacement target” (a target of pure convenience, almost!); but to note, moreover, that this is a very common mechanism, which we encounter on every street corner, whether in our own person (the last one where we would think of going to look for it...), or that of his relatives and friends. I have

(*) On the subject of this violence “which surpasses understanding” (“unfassbar” in German), see the note “The slave and the puppet — or the valves” (n° 140). When I speak here of gratuitous violence “in the strong sense of the term”, without immediately qualifying it other than as that which “beyond understanding”, the precise meaning that I then have in mind is defined in the explanation. which follows, by the explanation of these “two aspects” which are combined in it.

(**) (March 6) In certain cases, however, there may well be a perception of hatred that is indeed present, even though it was in no way provoked. (See on this subject, above in this same note, the other footnote dated today.) This is then a hatred which, except in exceptional circumstances, remains confined to deep layers of the unconscious, and which moreover remains there in a state of “vacancy”, without a designated target, even though it is the secret force which animates acts of violence (in insidious form, most often) which , they are indeed aiming, with unwavering consistency, at the same election target...

even the impression that this mechanism is of a universal nature, that it is part of the basic mechanisms of the human psyche, that it is one of those few all-purpose mechanisms which constitute the syndrome of flight from reality : the refusal to learn about it, and the fear of taking it on.

More precisely, I have the impression of having put my finger, today, on the common source of all situations of “gratuitous violence”, without exception. This impression appeared, with the force of a sudden conviction, when I began to examine (three paragraphs above) an “apparent contradiction”. I then had the feeling that a host of fragmentary and heterogeneous impressions stored throughout my life, revolving around the “sensitive point” among all of this violence “which surpasses understanding”, suddenly came together. ordered, suddenly acquiring a perspective that they still lacked - a perspective that appeared there unexpectedly, at the end of a reflection, when I was only preparing to place a very last point on a very last i...

(160) (January 8) For a week, there has been an unusual cold spell — temperatures of — 15 and below, and when the wind blows from “Mont Venteux” (the name says what it means). he means 1), it must be even colder. It seems that this wave is happening almost everywhere in the world (according to someone who listens to the news), and that in the south it has not been seen since the famous winter and spring of 1956. In my childhood in In Germany, I experienced cold weather like that, but there was snow which protected the earth, and which put a tone of softness in the air and on things. With this snowless cold, the surface earth is frozen like a block of ice. In a few days, the garden was raked - I don't know if there will be anything left in the spring, of what we sowed and planted. The remaining leaves of leeks, celery, chard, lamb's lettuce, beets and chard are like sheets of ice, frozen vegetables. We hurry to harvest as much as possible day by day, to eat it little by little, before it thaws and everything goes into the compost. And yesterday the water supply had frozen in the kitchen, fortunately there was still running water downstairs in the old garage, less exposed to the cold. Today a friend came with a portable gas torch and managed to get the water back on. I'll have to let a little water run, so it doesn't freeze so dry. Fortunately I have a good wood stove in the dining room, where I have transferred my work. Sitting next to the stove it's really good. I warm myself by the vine stumps, which I break with an ax every day, a good grape box

full overboard, in the cold. When the wind doesn't stop blowing all afternoon, it's enough to get nailed, just to stay a quarter of an hour, twenty minutes breaking wood in the open wind. Not to mention the car left outside that won't start - it seems that cars don't stand up to the extreme cold very well, antifreeze or not. The same obliging friend put it back on track for me earlier, but will it still work tomorrow to go and reread the typing of the secretary to whom I gave the work? In short, all it takes is a cold snap in winter, when not a heat wave in summer, or a good little illness at any time, to remind us of some of the realities of existence that we tends to forget when everything is purring as desired...

Gradually over the last three months, my work schedule has shifted towards night hours. I work until around two or three in the morning, and sleep until around eleven or noon. With the weather, if I listened to myself once in bed, I would stay to sleep my easy twelve hours — and conversely, once at work, I would no longer go to bed 1 There I try to keep a reasonable balance . I don't worry too much about time differences, as long as I sleep well, and I don't stay in bed for hours without sleeping, with my thinking machine still running. Even now when there is little work in the garden, there is still enough miscellaneous activity every day, including firewood, and a little bit of gymnastics here and there. I have the impression of a satisfactory life balance, where the work of discovery does not pretend to devour everything else, but without being insignificant. Since I returned to work on September 22, I have had to spend an average of five to six hours a day there. It's modest, but the "yield" seems barely less than before. "The slaughter" (around a hundred pages per month) is roughly the same, more or less, as for the writing of the first two parts of *Récoltes et Semailles*.

But from a qualitative point of view, there is no doubt for me that it is this third part which is the most profound, the one which has taught me the most about myself and about others.

* *

*

Na mu myo ho ren ge kyo!

While I was finishing this short retrospective, on the rigors of winter and the evolution of my life balance, I received a phone call from one of my Buddhist monk friends from the group Nihonzan Myohoji, announcing to me the death of their revered "preceptor"

(*), Nichidatsu Fujii, better known as Fujii Guruji, or “Osshosama” to those close to him. My friend from Paris just heard the news through a phone call from Tokyo, I presume that Fujii Guruji died today (**). On August 6, he had just turned one hundred years old, physically weakened, but in excellent mental condition.

Strange coincidence, this date of August 6 is the anniversary of two other important events, one of historical significance, the other of a personal nature for me. It is the anniversary of the atomic bomb on Hiroshima (August 6, 1945) — which the Japanese commemorate under the name “Hiroshima Day”. (This is why the festivities for Fujii Guruji’s birthday took place towards the end of July, to keep the days around August 6 available for peace and anti-atomic demonstrations.) On the other hand, my father was born on August 6, 1890, six years to the day after the birth of Fujii Guruji.

After the death of Claude Chevalley, that of Nichidatsu Fujii is the second of a person who played a significant role in my life, occurring during the writing of *Récoltes et Semailles*. In view of this disappearance (which does not really come as a surprise), I am particularly happy that last year there was a warm exchange of letters with him. I had been invited to attend the ceremony of the hundredth anniversary of old Naître, which was going to take place with exceptional pomp in Tokyo.

(A small book of testimonies about his person had even been published in great haste, to be given to him for this occasion.) . This had been an opportunity for me to write (like almost every year), a few words of anticipated congratulations, apologizing for not attending the ceremony on July 30, being myself still more or less bedridden at the time. 'to write. (It is also true that I am not so keen on large public ceremonies, but it seemed pointless to me to mention them in my letter. In any case, I must have disappointed and caused pain to more than one of my monk friends, by stubbornly refraining from attending any of the “great occasions” (*), which they never tired of

(*) “Preceptor”, an English word more or less equivalent to “teacher”, designates the “master”, the one who teaches. Nihonzan Myohoji is the phonetic transcription of the group's Japanese name, which translates to “Japanese Mission”. This is a “missionary” Buddhist group, details. . with a primarily pacifist vocation. See further for

(**) It turned out that he had just died a few hours ago. The news spread quickly

(*) Chief among such “great occasions” was the inauguration of “Shanti Stoupas”, or “Pagodas of Peace”. The construction of these Pagodas, or places of contemplation for peace in the world, dates back to

but to invite me.) I had to add a few words about the beneficial side of an illness, which forces us, in spite of ourselves, to “drop out” of our occupations and to give the body what it demands. Fujii Guruji himself had been bedridden a lot during the past year, which must have taken a toll on him, given his action-oriented temperament and unusual energy. While it had been more than seven years since I had received a personal communication from Fujii Guruji, I was surprised to receive a letter from him, dictated by him while he was still bedridden. The letter (which I have just reread just now) is dated July 13, 1984. It is a letter full of delicacy, where he is concerned about my health, and is saddened by not being able to meet me. 'send someone to take care of me. He also talks about his health, and the dispositions in which he tolerates his forced inaction. He ends with these words, in a very “Japanese” style which must be taken with a (big i) grain of salt, and which showed me, perhaps even more than the rest of the letter, that the tone was also good than ever (**):

“Indeed I am a very old *décrépit* man of no use even if I may get back to normal life. Yet still, I would like to live and see how *thé* world turns.”

There he was able to see the world turn for almost six months...

My links with the Nihonzan Myohoji group date back to 1974. There is no question of making here, even if only the sketch of these relationships with multiple episodes, a little in all registers - there would take a volume. They are among the richest “fallout” from the episode “Survive and Live” (*J which followed my departure (between 1970 and the end of 1972). He had a very ancient tradition in the Buddhist world (initiated by King Ashoka in India), and was one of Fujii Guruji's main concerns. He inspired the construction of a large number of Shanti Stupas all over the world, including three in Europe and one in the United States.

(**) The letter was dictated in Japanese (the only language Guruji spoke) and was directly translated into English. French translation of the lines quoted: “Certainly I am a very old and decrepit man and of no use even if I can regain normal health. And yet I would like to live and see how the world turned.”

(***) This episode is alluded to several times in “Fatuity and Renewal” (the first part of *Récoltes et Semailles*). “Surviver et vivre” (which was first called “Survivre” without more) is the name of a group, initially with a pacifist, then also ecological, vocation, which was born in July 1970 (on the sidelines of a “Summer School” at the University of Montreal), in an environment of scientists⁵ (and above all, of mathematicians). It evolved quickly in a “cultural revolution” direction, while expanding its audience outside scientific circles. Its main means of action was the bulletin (more or less periodical) of the same name, whose consecutive directors were Claude Chevalley, myself, Pierre Samuel, Denis Guedj (all four

There was talk of this group, and of the bulletin (not very periodical!) of the same name, and also of my “departure from maths” and my “trajectory”, in a Japanese newspaper (or newspapers?), in 1972 or 73 The “criticism of science” and denunciation of military devices, and also, perhaps, the “criticism of a civilization” aspect, must have “appeared” somewhat in some article, attracting the attention of one of the monks of Nihonzan Myohoji. He spoke about it to others, and in particular to a younger monk from the same city (Kagoshima), who had become a monk under his influence and was somewhat of a “student”. He was the first missionary monk of the group to arrive in the “West”, more precisely in Paris, in the spring of 1974 (*). He came to find me a few weeks later and without announcing himself, in the remote village where I lived at the time, about fifty kilometers from Montpellier. Since that memorable day in May, when I saw, under the midday sun, a strangely dressed man, singing on the road to the accompaniment of a drum and heading (there was no mistake. ..) towards the garden where I was working alone — since that day I have had the

of mathematicians) — not to mention an edition in English, maintained at arm's length by Gordon Edwards (a young Canadian mathematician whom I had met in Montreal and who was among the few initiators of the group and the bulletin).

The first bulletin, entirely from my pen (naive and full of conviction!) and printed in a thousand copies, was distributed at the International Congress of Nice (1970), which brought together (like every four years) several thousand mathematicians . I expected massive memberships — there were (if I remember correctly) two or three. Above all, I felt increased embarrassment among my colleagues! Speaking of the collaboration of scientists with military apparatus, which had infiltrated almost everywhere in scientific life, I was especially putting my foot in well-filled dishes... It is in the “big world” of science that I I felt the greatest embarrassment - the echoes of sympathy coming to me from there were reduced to those of Chevalley and Samuel. It is in what I have elsewhere called “the swamp” of the scientific world that our action found a certain resonance. The newsletter ended up printing around fifteen thousand copies - a crazy stewardship job, in fact, while distribution was done by hand. The juicy drawings of Didier Savard surely contributed a lot to the relative success of our duck.

After my departure and that of Samuel, it ended up turning into a small leftist group, with cutting jargon and unanswerable analyses, and the bulletin ended up dying a beautiful death. What had to be understood and said, at a certain moment still close to the excitement of the year 1968, had been understood and said. There was little point after that in turning a record over and over again...

(*) He did assure me that he was the first Buddhist missionary monk in the West, in the history of Buddhism — but I cannot guarantee that this information is reliable! It is not said, moreover, that becoming a missionary was really a great “progress” for Buddhism. From the beginning, this aspect of the Nihonzan Myohoji group aroused a reservation in me, which has only been confirmed over the years.

privilege and pleasure of seeing many followers and sympathizers (*) of Guruji pass through my house. Their contact brought me a lot. In early November 1976, I even got the great honor and joy to welcome Fujii Guruji himself, then aged 92, into my rustic home, in the company of a group of seven or eight monks, nuns and disciples.

I had already met him the previous year, during the solemn inauguration of the group's temple in Paris, in the 18th arrondissement. Beyond the usual courtesy words, there was a strong contact, an immediate sympathy. The more intimate and more personal context of a several-day visit to my home brought me, of course, a much richer apprehension both of the person of Fujii Guruji, and of himself. relationship to the group of which he was the head and soul.

Interestingly enough, this visit from Fujii Guruji followed very closely, by barely two weeks, the crucial turning point in my life which took place between October 15 and 18 of the same year, which has been discussed elsewhere (**). The weeks that followed these days of crisis and renewal were among the most intense of my life, where each day brought its unforeseen harvest of inner events and discoveries. To tell the truth, this visit, planned and prepared for weeks, of a whole group of monks and nuns around their venerated master, seemed to come there as a sort of strange interlude, like a diversion in the adventure which then absorbed the entirety of my being. It is the respect for my hosts, and especially for Fujii Guruji coming to honor my home, which allowed me to have, for these few days, the availability that the occasion demanded.

As has often happened to me, it was only once I was at the heart of the event that I understood that this was in no way an "interlude" or a "diversion", but that it was knows part of the adventure I was experiencing. Beneath its very "Eastern tale" exterior, of perfect delicacy and unusual charm, this so-called "interlude" brought me into the presence of men and women like me and the men and women that I had always known them in less exotic contexts, less extraordinary in appearance. It was because I felt this kinship that I also felt in my hosts friends and brothers, and not characters straight out of a tale from the Arabian Nights, as must have been the case.

(*) It is precisely one of these who had the honor, as an "illegal foreigner", of being the occasion for the first literal application, in French jurisprudence, of a certain rather incredible article from a certain "Ordinance of 1949". I had the honor of finding myself in Correctional, for having "freely housed and sheltered" such an outlaw. See the section "My farewells — or the strangers" (n° 24) about this episode .

(**) See the section "Desire and meditation" (n° 36) and the note "Reunion (the awakening of yin (1))" (n° 109).

for more than one of the astonished villagers. And Fujii Guruji himself, who spoke to me so familiarly while his “relatives” remained at the right distance required by the respect due to the revered master, I felt him very, very distant (from me as well as from his relatives), and yet close at the same time, as if he had been my father, or a caring older brother.

And as it is not uncommon in a father or an older brother, even the most benevolent, he had an expectation of me, which he did not hide, an expectation shared by those who accompanied and all of whom were my guests. And I also knew that I couldn't answer it. My adventure was linked to that of Fujii Guruji, by links that I barely discerned, deeper perhaps than I could see them, and to that of his disciples who followed him with their eyes closed. But it was no more that of my prestigious and benevolent host, than it was that of my father, also prestigious for me and benevolent, very close and yet different: another person, another destiny.

It wasn't easy to “get across” that I wouldn't be one of them in a company that was theirs, and that I didn't feel like my own. According to the picture of me that Fujii Guruji and his followers must have been given, this was the last thing they would have expected - and even less so since the relationship on a personal level, between the group or the different members of the group and me, was akin to a real honeymoon. It was also during this visit that some very long-standing resistance, due to my upbringing, faded away, and that I joined my hosts to sing their mantra with them, accompanied by the drum:

“Na mu myo ho ren ge kyo!”

This mantra is the foundation, the alpha and omega, of their religious practice. They sing it most often to the accompaniment of the prayer drum, one hour in the morning and one hour in the evening. This drum song, following the teaching of the Japanese prophet Nichiren, is in itself the sovereign good, dispenser of peace in those who sing it and around them. This song is therefore for my Japanese friends what we commonly call a “prayer”.

The meaning they give it, in agreement with Nichiren, and with their direct “preceptor” Fujii Guruji, is that of an act of respect for the person to whom one is addressing, and through them, for all living beings in the universe — as a being promised (following the Lotus Flower Sutra) to become Buddha, the incarnation of perfect wisdom. These seven syllables also serve as a greeting for any other person, or even any other being that one would like to greet, with this connotation of respect for what is of divine essence in the other. They also serve as a thanksgiving before the meal. To tell the truth, it seems to me that there is no

hardly an occasion, whether in moments of surprise, or emotion, or contemplation, which is not propitious for a follower of Nichiren to say the sacred words. As for me, without sharing the religious belief of my monk friends (*), it is with joy that I join them, when the opportunity arises, to do Odaimoku — to sing on the drum what they call “prayer”. It is in their memory, and as an act of affectionate respect for their master, Nichidatsu Fujii Guruji, that I also included “the Prayer” in my daily life, chanting it before each of the two main meals. of the day, at least when I am at home, or with friends, or with people who I know will not be embarrassed (**). This is one of the things of great value for which I am indebted to Fujii Guruji and to those of his disciples whom I knew and who gave me their affection, without tiring of my reluctance to associate myself closely or far from their missionary activities.

There are several million Nichirenite Buddhists in Japan, divided into numerous sects with very different physiognomies. The Nihonzan Myohoji group is one of the smallest in number, comprising a few hundred monks, nuns and active supporters. However, it is well known in Japan and elsewhere, distinguishing itself from all traditional religious groups by an unequivocal political commitment, the main emphasis of which is the struggle for peace, anti-militarist action and, more particularly, anti-nuclear action. At the time of the Vietnam War, it was the only Buddhist group (unless I am mistaken) which clearly took sides against the Americans, and which fought against the presence of American bases in Japan (which served as logistical support for the continuation of the war in Vietnam). In recent years, Fujii Guruji has also been in close contact with the leaders of the Indian liberation movement in the United States, the AIM (American Indian Movement). Monks from Nihonzan Myohoji have participated in Marches organized by American Indians, not to mention other Peace Marches in various places around the world. Indian chiefs have

(*) I do not feel like I am a member of any particular religious denomination. Through the education received by my parents, I was an atheist (with an anti-religious nuance) until the age of fourteen. A remarkable presentation by my natural sciences teacher, on the history of the evolution of life on earth, made me understand, without the slightest doubt, the presence of a creative intelligence at work in the Universe. This understanding, which then remained at the level of the intellect alone, broadened and refined during my subsequent maturation, continuing after my departure from the mathematical scene in 1970.

(**) I notably refrained from singing the prayer at the weekly meal that I took at the Faculty, in the company of a few students or colleagues, not being sure that one or the other of them would not feel a kind of constraint, which I would impose on him thanks to my position as eldest or “boss”

was visibly attracted and impressed by the unusual personality of Fujii Guruji.

The fact that this man of indomitable energy, approaching his hundred years old, appeared as a great missionary of a religious faith different from theirs, did not seem to bother them in the least. On the contrary, the religious dimension in the venerable Master's ironclad "anti-American" options was surely, in addition to his age, one of the causes which made them welcome Gu-ruji as they would have welcomed one of their own, like a father. or a very respected grandfather, and in whom we recognize ourselves (*).

Surely, this religious dimension worked for me in the same direction - it made Fujii Guruji closer to me, even though I do not claim any well-defined religious faith. If I ask myself what attracted and struck me most about him, I see several things.

The most apparent is an inner joy. This joy seems to arise spontaneously from a unity in his person, or rather perhaps, from a fidelity to himself. We feel that this man is happy, because all his life, he has done without hesitation what he felt he had to do. It does not appear to me to be free of contradictions, but free of ambiguity. The meaning of some of his acts or omissions escapes me, but at no time did I have any doubt about the total integrity of the man. If this is so, it is not following an analysis of what is known to me about him through intermediaries. You only need to have met him once to know that he is a man who knows no ambiguity, a man in deep agreement with himself. This is what the Indian leaders of the AIM must have felt, to give him the place they gave him among them. It is surely in this that also lies his extraordinary ascendancy over those who claim to belong to him, men and women whose ideological and philosophical options cover a spectrum going from pure and hardline Marxism-Leninism to the good-natured conformism of the CEO of a department store chain. What unites them is not the

(*) To give an idea of the bond of trust and respect linking Indian chiefs to the person of Guruji, I point out here that during the great annual initiation festival, taking place around the "sun dance", he There was the participation of monk disciples of Guruji, beating the large prayer drum from sunrise to sunset, to the haunting rhythm of Na mu myo ho ren ge kyo! These large drums, hollowed out of a single trunk covered with ox hides, have an unusual power of sound, and (I presume) are hard to endure for twelve hours straight. (I had the experience for two hours, during the inauguration of the temple in Paris, an experience which was conclusive...) Still, Robert Jaulin (who was, with the monks, among the few non-Indians invited to participate in the celebration) told me that the Indians stoically supported the sacred drum of Grandfather Guruji, from the beginning to the end of the initiation, of which the Guruji tom-tom was one of the many tests...

veneration of a certain Sutra that perhaps none of them had the audacity to read (*), nor a certain prayer of Pali origin, restored in Japanese via the Chinese translation, and who professes the reverence of this Sutra. What brings them together (or should we say: what brought them together?) is a man, exercising an ascendancy over them that he no more sought to exercise than the sun sought its planets.

I also saw that this man was alone, and that solitude did not weigh on him. It was his natural condition, perhaps always. This solitude, and this integrity, or this agreement with himself, appear to me as so many different aspects of one and the same thing. Yet another aspect of this same thing is that of strength—strength without violence, and which does not care about being or appearing “strong”. It is that of the sun, again, which is enough to be itself so that this field of forces is created around it, and these orbits that the planets travel through.

Surely, this is also the force of which I spoke more than once in Harvests and Seedlings, as “the force” in us - with this difference, that in such a man it is fully apparent and sensitive to all those who approach it, and in another it is buried more or less deep, to the point sometimes that one could believe it to be non-existent. But if some of my monk friends seem to deny it in themselves, this Sutra which they profess to venerate, and the very Prayer which they chant day after day, clearly proclaim that such a force lives in every living thing in Creation, promised like them, and just like their venerated master Osshosama himself, to the destiny of the Buddha.

(161) (January 13) (*) It's been four more days since I had the leisure and calm to

(*) More than one of Gurujii's disciples made it clear to me that he would consider it impudent to pretend to read the Lotus Flower Sutra, even though there is a translation into Japanese. Only a man of great depth of mind, such as his master Fujii Gurujii himself, would be fit and worthy to read this sacred text, which goes infinitely far beyond the intelligence of the layman. Visibly, the faith of these men and women is directly focused, not on some more or less deified historical figure, such as Buddha, or the perfect Boddhisatva and prophet Nichiren, but on Fujii Gurujii himself. (*) (January 23) The entire

first part of this note was written against strong resistance to mentioning the disturbances interfering with my work. These seemed vaguely ridiculous, and even mentioning them was a bit like graciously providing the rods to get me beaten!

On the other hand, these disturbances, “which can literally saw you apart”, had become so grating and invasive in my work, especially for a week or two, that it would have been a sort of cheating, an inauthenticity in the testimony, that to pass them over in silence as if nothing had happened. I'm coming back from elsewhere

work — to continue the notes, I mean. The main reason for this is the rather incredible difficulties I have in getting this third part of *Récoltes et Semailles* typed neatly. In over thirty years of having typing work done, I have never experienced anything like this. Obviously, the fact of having in their hands this text of a very highly personal nature, not to say intimate, triggered reactions in the people in charge of the typing (surely unconscious) of considerable force, going each time in the sense of a real sabotage of the work entrusted to them. In the space of a few months, the same scenario is repeated three times in a row, with variations, with three consecutive secretaries, who nevertheless did not give each other the word (**)! This third time in addition, there is added a sordid note, because the secretary, Mrs. J., pretends to use the rather unusual manuscript which had been entrusted to her care, as a means of blackmail to extort a sort of ransom. She is a former executive secretary, with great experience in the profession. The first eleven pages of typing were impeccable and almost without a typo, just to show what she could do; and in the next fifteen pages alone, there were eleven skipped lines — it's rare that I've seen a text so crippled! I did not ask what the ransom was (beyond the agreed price for the text already struck) to recover my manuscript and the typing, having no desire to encourage this type of process. This means that I will probably be forced to resort to legal action.

Fortunately I still have a draft of the manuscript, which I can use if necessary. However, this kind of circus, especially when it becomes repetitive, can literally “saw” you. When I imagined the difficulties and antagonisms that my modest meditative and autobiographical piece would undoubtedly raise, I certainly did not imagine that it was from that side, from the brotherhood of secretary-typists (instead of that of my honored fellow mathematicians) that the first troubles were going to come, and in nature

on my disappointments ten days later, in the note “Jung — or the cycle of “bad” and “good””.

(March 7) This last note, the first of a whole series of “reading notes” on the autobiography of CG Jung, was finally rejected in a final part of *Harvests and Seedlings*, formed from the part of the reflection provoked by this autobiography. (**) those who wish me well

will have no problem here in accusing me of delirium of persecution - after the brotherhood of movers, here is that of secretaries-typists who are mobilizing to wish me ill. See, for the preceding ones, the note “The massacre” (the name of the note already says enough about me...) p. 538, about the move of my friend Ionel Bucur...

a sort of war of attrition! Now I am no longer very keen to entrust this same text (once recovered) in the hands of a fourth secretary, while nothing allows me to predict that she will have more compassion for him than those from whom she would take over. And doing the secretary work myself would require a time investment of well over a month, which I am absolutely not willing to provide.

Perhaps I will be reduced to giving up a clean typing of this third part of *Récoltes et Semailles*, which I would entrust directly to the publisher in the form of a draft manuscript. (I don't foresee the same kind of problems with the professionals responsible for composing the text for printing!) This would mean above all that I renounce including this third part in the limited pre-edition of *Récoltes et Semailles* which must be done by my university, USTL, to be distributed personally among colleagues and friends. Or maybe I'll shoot it later, if I end up finding a secretary who does a decent job. I will only send this part (surely the most "difficult" of the three) at the express request of those really interested in receiving it, among those who have received the first two parts. I'm really looking forward to getting these printed and sent out (while I feel less rushed for part three). The strike of these two parties was completed months ago, it had been carried out (and without problems) by the care of secretaries of the USTL. They could have been printed a long time ago, if I had not wanted to include a table of contents for all three parts of *Récoltes et Semailles*, whereas for more than three months I have believed that I was on the verge of finishing this endless third part. There I am going to give myself until the end of this month to finish, or otherwise, take care of the printing of the first two parts (*Fatuity and Renewal*, and *Burial I*, or the dress of the Emperor of China), without including a complete and definitive table of contents of the third part (*The Burial II*, or the key to yin and yang).

And now, after all these unpleasant incidents, I must somehow find the thread of a reflection that had been cut short.

The death of Fujii Guruji in his hundred and first year, on January 9, was an opportunity to evoke, with him, an aspect of my life that I had not touched on previously. Not having the opportunity to see Guruji again on his deathbed, and to participate in a funeral wake in the company of his loved ones, I spent the night that was. followed his death in a solitary vigil, noting until the morning some of the reminiscences and thoughts aroused by the event. Afterwards, I thought it would be good if I also tried, on this occasion, to say what

brought me the meeting with Fujii Guruji, and with those of his disciples whom I frequented familiarly.

In the notes from five days ago, I already spoke of the song Na mu myo ho ren ge kyo, which for many years has entered my life, and which is a blessing. There is also the affection received by Fujii Guruji himself, and by several of his disciples, young and old. It's this affection, surely, which gives its price and its beauty to the song that I received from them, which is itself an act of respect and affection for all living things in creation, including included their person and mine.

Also, my contacts with them. monks and nuns of Nihonzan Myohoji were my first and only close contacts with men and women whose main, if not total, investment goes towards religiously motivated tasks (just as for a long time my own investment was in the work of mathematical discovery). It was a opportunity to realize that, as elsewhere, beyond a certain affinity by a common vocation (called religious) and allegiance to the same strong and endearing personality, differences in temperament, conditioning, and even profound choices, remain all as marked, and all as active in person-to-person relationships. To put it another way, the efforts of some to mold themselves according to some ideal religious (here that of the "Boddhisatva", the tireless propagator of the teachings of the Buddha) lead to more or less skin-deep attitudes and not to a process of interior transformation, on maturation. Furthermore, the adoption of a "creed" (however sublime it may be) and the full investment in a so-called "religious" activity, seems to have no impact. essential on the play of habitual ego mechanisms. The conflict is no less present in monasteries, convents, temples and other religious communities of all denominations, as well as anywhere else in the world. And often the religious vocation is taken as a means, among others, to evacuate the conflict, by convincing oneself that it has disappeared through virtue of the creed.

It is also true that on different occasions, in one of my monk hosts there was a peace and an interior joy which radiated from him, sensitive to me as to all those who approached them, and beneficial to themselves as to all. Obviously, such a state of harmony and fullness, of deep agreement, is foreign to any effort to be this or that - it is a state "effortless", a perfect state of naturalness.

For four of the monks in whom I felt such radiance, I have the impression that

this had been their customary state for many years, even decades. This is particularly the case for Fujii Guruji himself. For two other friends of mine, I saw them on other occasions as knotted and as torn as anyone else, it was as if this state of harmony in which I had known them, and a certain spontaneous understanding of things which was there one of the signs, had become null and void — as if they had left no trace in them. I am convinced, however, that there is indeed an indestructible “trace”, deeper than a simple mark recorded in memory — a trace in the nature of knowledge.

Like everyone else, these friends are free at any time to take into account the knowledge deposited in them at the creative moments of their existence, to let it act and bear fruit; as they are also free to ignore it, to bury it, to “play the fool” in short. It is, after all, the most common thing in the world...

The thought came to me that this state of perfect naturalness, of deep harmony with oneself, and this radiance that accompanies it, are not such common things, on the other hand. It is quite a remarkable fact that in the fairly small group of monks that I was able to welcome into my home, whether for a few days or for a few weeks, there were so many in whom I found this state of inner harmony, of strength in the full sense of the term, that in which humility and fortitude, the gentle and the incisive, are united. Wouldn't this ultimately be the action of a creed, or of the Prayer which expresses it? Although this clearly cannot by itself create a state of grace, perhaps it nevertheless tends to favor the appearance of such a state, and its renewal day after day? After all, the mere fact of singing a beautiful song, putting one's whole self into it, is already somewhat of a “state of grace” - and the mere beauty of a song (or a prayer) already incites us to “put our all into it”.

It is also true that the most beautiful song, when we rehash it with our minds elsewhere, remains inactive, because we do not open ourselves to it. Or to put it better, what we rehash in this way is not the song we think we are singing, and our soul is not nourished by it, any more than a rose made of paper or plastic is a rose, and that 'a bee wouldn't come and collect it.

(162) (January 14) As I finished the reflection from a week ago, I felt like I had “hit the ground running” on something important. That same night, I wanted to express concisely this “something/something” in the name given to this note, “The cause of violence without a cause” (note n° 159). I also knew that this flash of sudden understanding was in no way an outcome, or even an end point, of a reflection which had been circling for more than a month (*)

precisely around the mystery of “violence without cause”, we “gratuitous violence”. On the contrary, this new “perspective” that suddenly appeared was more like a new starting point. The mechanism of “displacement” of a grudge or resentment for wrongs and damages suffered in distant days, towards an acceptable “target” in place of the real responsible person(s), felt as out of reach or as “taboos” — this mechanism, which I had first recognized sporadically, in this and that isolated case during my life, and tacitly taken for a sort of strange and erratic aberration of the unconscious, is finally recognized as one of the “basic mechanisms of the human psyche”. At the same time, it appears to be responsible for the countless and disturbing manifestations of “violence without cause”; both that which rages between wife and husband, between lover and lover, parents and children, as well as “anonymous” violence, which reaches its peak in times of war or great social convulsions.

I don't know if these links have long been part of the BABA of psychological or psychiatric science (assuming that there is such a “science”), or if what I say here will appear as phantasmogories of a “dilettante in psychoanalysis”. As my aim is not to present a doctoral thesis in psychology, nor even to break lances for some old or new theory, but to understand my life through the situations in which I am involved, I would like to The “status” of what I happen to put my finger on, or the “perspectives” that I suddenly see opening up here and there matters. I know well that in any case, if I want to understand the smallest of things, I cannot do without personal reflection, whether in mathematics, or in my life and in those to which my life is linked. one way or another. And it is all the more so when what is to be understood immediately seems to defy reason, and when I see everyone, around me and elsewhere, evading it like the plague, with reassuring clichés. (And it seems to me that psychology professionals are no more an exception than any others, at least as long as their own person is directly involved.)

I was well aware that the “sudden conviction” that appeared at the turn of “a last dot on a last i”, namely that “I had just put my finger on the common source of all situations of “gratuitous violence””, in no way relieved me of the task of examining on evidence, and from every angle, this new intuition arriving in the field of view

(*) Precisely, since the note of December 7 “Velvet paw — or smiles” (nŷ 137).

conscious, still in no way free from the diffuse halo of what has just emerged from the mists.

On the contrary, this was precisely the first work to be done, where I already saw a host of new questions arise, both specific to specific cases and general. If there was any certainty in this cookie-cutter "conviction", or to put it better, a core of certain knowledge, it in no way told me that the formulation I had just given to this conviction was "true", "correct", without reservations or significant alterations perhaps; but rather, that I had just put my finger on a new (for me) and essential fact, that a new perspective on violence had indeed just been established (*). Stinking in the precise and nuanced sense of this new fact and this new perspective, its ex-act scope and also, perhaps, its unforeseen extensions and repercussions, they cannot fail to emerge, from the moment I invest the necessary work. The "knowledge" that had just appeared told me, in particular, that the time was ripe for such work, to enter

(*) In writing these lines, the comparison with the "standard conjectures" on algebraic cycles, which I had presented at the Bombay Conference in 1968, was imposed on me. They appeared to me then (and still appear to me today) as being, with the resolution of singularities, one of the most burning problems posed in algebraic geometry. By drawing out these conjectures, I clearly felt that a "new perspective... had just been established" this time on algebraic cycles, their relationship to Hodge's theory and Weil's conjectures. What struck me above all was that I saw the emergence of an approach to Weil's conjectures which would be "purely geometric", I mean, without having (apparently at least) to go through a theory. cohomological.

As I have already underlined elsewhere (in subnote n° 1061 of the note "The muscle and the guts"), the reality of this "new perspective" and its scope, is entirely independent of the question (which remains in the nimbus of the future) whether this conjecture will turn out to be true, or false. A conjecture, for me, is not a bet (whether we win or lose), but rather a probe — and whatever the answer, we can only come out "winners", I hear: with renewed knowledge. (Compare with the reflection in the section "Error and discovery", n° 2.) Assuming that the conjecture turns out to be false, I can already see two or three, "less optimistic" variants of it, which from then refine it, and the weakest of which is practically equivalent to the existence of a "reasonable" theory of semisimple patterns on a body.

Identifying these variants, for someone even slightly in the know, is an exercise of an afternoon or two (and perhaps a starting point for a long journey into the unknown...). Identifying the first statement (inspired, as usual, by an idea by Serre, presented in his article "Kählerian analogues of the weil conjectures"), was not an exercise, but indeed a discovery; or again (to use the expression from Zoghman Mebkhout's letter, cited in the note "Failure of a teaching - or creation and conceit", n° 44) a creation. And it was an understatement when Zoghman timidly ventured to say that "my students don't know very well what a creation is" — or rather, I would say: that they knew it but have forgotten it for a long time, absorbed as they were in pushing the wheels of a funeral cart...

further in an understanding of violence, and in any case, in that of "gratuitous violence"; that each hour and each day that I devoted to this task, to follow through on what had just appeared, would make me penetrate further into this understanding.

I do not remember that such a feeling of the appearance of a new and essential thing (even though it would still remain diffuse and approximate), and the intimate conviction of being able to penetrate further into understanding of this thing, has never deceived me. If in my research there has been a sure guide to "place" my investments in one direction or another, it is the feeling of the appearance of the new, and this intimate conviction which tells me when the time is ripe to enter further into this "new" glimpse and to know it (*).

This does not mean that, every time the time is ripe to launch myself in a certain direction, and to know certain things, I actually launch myself into it! It was already impossible at the time when I invested all of my energy in mathematics, when gradually, I found myself with ten irons, then with a hundred at the same time in the fire! (*) And it was the same in meditation, that is to say, in the discovery of myself. At the level of conscious work, we can, unfortunately, only do one thing at a time (which is not bad, however, when we take the trouble to do it well...). This work on one of the "hundred irons in the fire" can, it is true, following the mysterious paths of the unconscious, also benefit all the others, or at least several of them — it can "heat them", make them more welcoming to the hammer blows on the anvil of conscious attention, from the moment we turn towards them. You still have to know how to choose from the outset "the right" iron among the hundred — the one whose shaping will also advance the work on others, who are heating like it.

(¹⁶²) During the reflection on the Burial, I encountered many "irons" who asked that I work on it, more or less hot depending on the case. It seems to me that they all got warmer during the work, some more, others less. The very first of these "irons" was the question of self-contempt in the case of my own person, posed first as a matter of conscience, on the margins of the first embryo of *Récoltes et Semailles* (**). It remained rather tepid, until the reflection of December 13 (a month and a day ago), in the

(*) Compare with the note "The child and the sea — or faith and doubt", n° 103.

(*) See the note "A hundred irons in the fire, or: there is no point in drying!", n° 32.

(**) See note (n° 2) referring to the section (from June 1983) "Infallibility (of others) and contempt (of oneself)" (n°

note “The violence of the just — or the release of steam⁰” (n 141). It was the first time in my life, I believe, that I devoted a reflection, however summary it may be, to the few cases in my life where I myself carried out and caused “violence without cause” to be suffered. , violence “that surpasses understanding”. I had happened to think about it in recent years, but always in passing, without stopping, and above all: without devoting a written reflection to it.

However, the violence-that-doesn't-speak-its-name had profoundly marked my life — it was one of the crucial things, indeed the crucial thing of all, that I had to understand as deeply as I could* to understand my life, and “life” in general, human life. But that this is indeed so, something that is obvious as soon as I take the trouble to think about it, had remained hidden. This ended up emerging, as if by chance, on the margins of the reflection in the days which had preceded that of December 13, continued in all four notes gathered under the name “The claw in the velvet”¹ (nes 133– 136). It is in these notes that for the first time in *Récoltes et Semailles* “violence” is named, and becomes the object of attention. It has remained the center of attention until now, or at least, until the note of January 7 (a week ago), “The cause of violence without a cause”.

This promising title may give the impression that this last note is a sort of culmination of reflection on violence, continuing throughout the past month. And it is true that it is one of its main fruits. However, I know well that if there was suddenly the appearance of this new perspective, and this feeling of intimate conviction concerning a certain link suddenly glimpsed, it is because my own person was also directly involved in what had just appeared, among this “crowd of fragmentary and heterogeneous impressions stored throughout my life”. The last and freshest of all these impressions, felt then as very “fragmented” and insufficient in fact, went back precisely to this reflection of December 13 on the violence in myself. This reflection, which to the superficial reader may seem like a digression among many others in the investigation into the Burial, appears to me, on the other hand, now and with hindsight, as a neuralgic moment and a crucial turning point (potentially at least) in my reflection on myself. That very day, moreover, I felt that I had just taken, finally, a first step in a direction that I had until then evaded, and which would lead me straight to the heart of the conflict in my person. This “warm iron” which had been placed there as a reminder for ten months

4).

already, suddenly it was red hot - I just had to stop there to blow and knock, for it to turn red and white and reveal to me a shape and a message. And it is still like this today.

But it is clear that this is not the place to work on this iron. Of all those who appeared during Harvests and Sowing, it is certainly he who is the most burning for me, and after him, the closely united one who appeared with "The cause of violence without a cause". If the child did not have a terribly adult boss on his back, stubbornly attached to long-term tasks and the "priorities" that they impose, it is certainly in this direction, leading me to the heart of the conflict within myself- even and in others, that I would now rush forward, without having to probe myself!

But as its name suggests, it is most often the boss, and not the child, who places orders and decides on investments. The "enigma of Evil" will therefore wait for the more auspicious moment when the boss is on vacation (a very rare thing), or when he will not be too encumbered with cutting-edge "priorities", such as finally finishing the writing of Harvest and Sowing!

(¹⁶²) But before returning to the Funeral, I would like to at least note one of the associations of ideas aroused by the reflection of a week ago - an association perhaps less obvious than others, and which for It risks disappearing without a trace if I don't write it down now. It is linked to the Hindu idea of karma, and goes in the same direction as the association appearing in the note "The Enemy Brother — or the handover" (nř 156): in the sense of the tenuous intuition of a sort of "law of conservation of karma".

This original diffuse resentment in a person, which subsequently translates into seemingly "gradual" impulses of aggression and violence, does not arise from nothing. It is the response to deep aggressions that have indeed been suffered, and especially to those suffered in early childhood. We can consider, it is true, that many of these attacks, of a repressive nature, are not "acts of violence" in the strict sense of the term, that is to say, resulting from an intention to injure or to harm, particularly among parents towards their child. It is also true that such an intention (almost always unconscious) is nevertheless present in many more cases than is admitted by current consensus. But perhaps from the perspective of a creation or transmission of karma, the question of intentions or motivations (manifest or secret) is incidental, when "violence" does indeed take place, which inflicts "harm", which causes "damage". I would not know how to say it.

Still, in most cases, a superficial look can have the illusion that such “evil” suffered is null and void, that it has been received and that once received, it has “disappeared” without leaving of traces. And it is a fact that it is not very common for those who have sowed in their children their anxieties and their powerlessness to be themselves, end up reaping directly, from the dwarfs of these same children, what they have formerly sown; or at least, we have the impression that they only collect a tiny part! Or to put it another way, of the diffuse resentment that they have aroused in their children there is only a tiny portion which condenses into a “hard” resentment, directed towards them – and of which they complain head-on. with cries, as if from the blackest of ingritudes, it is a thing understood! But the rest of this accumulated grudge or “karma” is not lost. It can be used effectively, and in a way that may seem inexplicable, by this mechanism of “displacement” of resentment towards makeshift targets; sometimes erratic targets, and sometimes also specially matched targets, assigned, pampered so to speak, brooded for a long life!

In ordinary times, this intense work of karma, like an abscess deeply implanted in the lives of men, takes place in the dark, and everyone makes it their duty to ignore it, to only agree to see it as a “blur”. occasional here and another there, compared to what is considered normal and healthy.

It is in exceptional times, when war or poverty rages (or in exceptional places, such as penitentiaries and asylums), that this underground work bursts out and spreads freely in the full light. of the day, in a frenzied outbreak of contempt and murderous madness, exalted by the grandiloquent flags above heroic mass graves and over bare and cold cities...

Doors to the Universe

(Appendix to The Key to Yin and Yang)

1. Rock and sand.

(March 17, 1986) It's been two days that I've spent mainly getting my repertoire of yin-yang couples straight, making a few last minute adjustments. I have tried to be as comprehensive as possible, including all the couples I have noticed and noted since I first thought about this theme seven years ago. The bulk of my current list (perhaps four-fifths) had already been noted at that time, in the spring of 1979. Since these first beginnings of my reflection on the "masculine" and the "feminine" (when I still knew the consecrated Chinese names "yin" and "yang"), there was a progression much more qualitative than quantitative: my understanding of the yin-yang dynamic appeared particularly interesting which had initially escaped me, such as "life - death", "good - evil" (*). But above all, as I explain elsewhere (in the note "the dynamics of things" (nǚ 111)), I carried out a more rigorous and more natural grouping of the yin-yang couples into "groups of couples", according to the affinities that connect them. Each of the groups thus formed appeared to me as a sort of "door to the Universe", of which the yin-yang couples which form it would be so many different "keyholes" through which to look (**). These groups (or "gates") are not arranged in a natural way in a "linear order" (i.e. in a single file), but (as I explain in the note already cited) they can be represented by the vertices of a "graph", whose "edges" represent the most striking affinity relationships of a group to groups felt to be "neighbors". Readers will find below (***) this "vaguely Christmas tree-shaped" graph, and, following it, the description of the

(*) In accordance with custom, I most often speak of "yin-yang" couples, and not "yang-yin", which nevertheless (unless otherwise stated), I name a couple in the yang-yin order, as in the two previous couples.

(**) This image of "doors to the Universe" and "keyholes" appears at the beginning of the note (of October 21, 1984) "The Act" (nǚ 113). It was eight days after I resumed my earlier reflection on yin-yang couples, with the note already cited "The dynamics of things" (nǚ 111).

(***) (March 31) See page PU 110. The reader would benefit from reading this diagram, and going through the descriptive list of the different groups, before embarking on reading the comments which will follow, and which one thing leading to another will lead to an unexpected reflection on the play of yin and yang in the movement of "thought that explores". Comments and reflection on the one hand, and diagram and lists on the other,

twenty-two (*) “vertices” of the graph, by enumerating the yin-yang couples forming the groups corresponding to each of the vertices.

By making available to the reader the very provisional result of this (“combinational”, or “topological”) aspect of my reflections on yin and yang, my intention is in no way to claim to establish some new “canon” in the philosophy of yin and yang, quite the contrary! But only to provide him with rich and suggestive material, still in a more or less raw state, to fuel his own reflection on this fascinating theme. Each of these two hundred or so yin-yang couples lined up there without any other comments, like so many concise names following one another on a civil status file, nevertheless appears to me in itself to be rich in resonances of all kinds, for little that we take the leisure to ask about him even a little. Listening, probing and noting these resonances would always represent fascinating work. For two of these couples, I did it in *Récoltes et Semailles* (**), in a few very summary pages. Doing it for everyone would require a volume - and whoever writes it (if such a book is ever to be written) will learn a lot about the world and about himself, by writing it! And he will also know that an entire library would not exhaust even the theme and the questions posed by a seemingly innocuous couple, such as (for example) “good - evil” or “creation - destruction”. ..

In the presentation that follows, there is an inevitable element of subjectivity, even arbitrariness. Saying this, I am not thinking about the existence of each of the couples listed (as an authentic “yin-yang couple”), nor about the distribution of yin-yang roles within each. On the contrary, it is very clear to me that the other, existence and distribution of roles, have a perfectly precise meaning and which is “universal”, I mean: independent of everything

are likely to enlighten each other.

(*) In the note “The Act” (cited in the previous note by b. de p.), it is twenty-one vertices (or groups of couples) that are in question. Under the pressure of the requirements of internal coherence, I have just added a twenty-second one, the “space – time” group (reduced to this pair, plus the almost identical “extended – duration” pair). This had the slight drawback, unfortunately, of slightly disrupting the symmetry of my graph.

(March 31) In the days that followed, I further split six of the groups in the initial diagram into two. This brings the total number of “groups” represented by the vertices of my diagram to twenty-eight.

(**) These are the “action – inaction” and “refusal – acceptance” pairs. I ask a little about the first of these couples, in the note “The annemis spouses” (nŷ 111'), and about the second, in the series of notes “Refusal and acceptance” (nŷ s 116-118).

cultural context which decides and fixes the traits, attitudes and functions considered specific to either men or women (*). This meaning is no less precise nor less universal than for a mathematical statement: the question whether the statement is well stated, and if so, whether it is true or false, is essentially independent of any cultural context (**).

(*) I know very well in writing these lines that they cannot fail to provoke a mass raising of objections and misunderstandings. It would be a hopeless task to try to dissipate them. It is in no way a question here of the preliminary question whether a given aggregate of two vaguely opposed terms, such as “beauty – ugliness” or “intelligence – stupidity” let’s say, do indeed form a yin-yang couple, thing that almost everyone who has heard the words “yin” and “yang” pronounced will tend to accept it as a matter of course!

But it is the distribution of yin-yang roles, interpreted (whether we like it or not) as an imperative assignment of feminine (for women) - masculine (for men) roles, which will give rise to disputes. the most vehement. The most commonly used “argument”, and which would apply with irrefutable “evidence” to all (real or false) couples without exception, is that my interlocutor knows many women for whom this is the term wrongly described as “yang” which dominates. The same thing would still be true, of course, if we reversed the attribution of yin-yang roles, by decreeing (let’s say) that it is yin which represents action, and yang inaction! This type of “argument” simply marks a refusal (which remains unconscious, of course), to establish contact with the reality of the incessant marriage of yin and yang qualities. Entering into such arguments (to explain why and to what extent they are “off the mark”) is always a waste of time.

The blockage always comes from the (often tacit, but always imperative!) valuation of yang qualities to the detriment of yin. This valorization is deeply internalized by everyone, including (and above all, I would be tempted to write) by women, who are supposed to bear the brunt of it (while in fact both women and men bear the brunt of it). weight heavily). Also yang-yin couples as innocuous as “fast - slow”, “courage - prudence” or “assurance - humility” are most often felt by women (or by well-meaning men who believe they must support them in their just cause) as deeply unjust: it is the term haloed with prestige which, every time and as expected, is infallibly attributed “to the man”. Without even looking for couples that are much more substantial, not to say catastrophic from a “public relations” point of view, such as “action – inaction”, “life – death”, “creation – destruction”, or even (keep in mind you good!) “good - evil”! You really have to be a racist bastard and a delusional phallocrat, yes, to overwhelm half of humanity like that with all these unpleasant, even infamous qualities (sic!) and epithets. Many thanks, sir, for your famous dialectic of yin and yang, we felt the wind, and that’s enough for us. You can repack!

(**) In writing this line, I had in mind that even in mathematics, where (in principle at least) all mathematicians accept the same “rules of the game”, the question whether (let’s say) a mathematical statement has a meaning (in the purely technical sense of the term, ie if it is indeed a “mathematical statement”, without prejudging either its interest, or whether it is true or false), or if such reasoning is written in black and white which is supposed to establish it in

This in no way prevents the fact that in this question of yin and yang, it can happen that we make a mistake, just as we can make a mistake in mathematics (one of the most frequent things even), by hastily writing a statement which does not have of meaning or whose meaning is not the one we had in mind, or by believing to prove that it is true when it is false, or vice versa. But in one or the other case, yin-yang dialectic or mathematical, as long as we continue further, sooner or later the error ends up being revealed by some patent contradiction or by some incoherence. It is identified and corrected, leaving room for a deeper and more solidly based understanding.

It is therefore in no way a question here of a new "sex of angels" (oriental style), but of a reality, just like that of mathematical things and in an equally "sure" way, provided only that we are there. interested enough to allow the kind of attention, intuition and faculties that respond to them to awaken and develop in us. It is true that the delicate interplay of yin and yang cannot be grasped through "definitions", "statements" and "demonstrations", as in mathematics the interplay of shapes, numbers and sizes.

It is not less "knowable" for all that, nor less "real" – quite the contrary!

I also have a good presumption that each of the yin-yang couples in my repertoire is indeed "correct". But I cannot guarantee this with complete certainty, any more than if it were a question of rather complicated mathematical work, where I would not have taken the greatest care to verify everything down to the smallest detail and up to at the end (something that few

indeed constitutes a demonstration, in no way brings consensus, even today. I know several eminent mathematicians, with whom I have more than once felt in this strange situation of contradiction, when it seems that we absolutely do not operate on the same "logic". What they will call a "definition" or a "statement" often implies a whole rather vague cloud of presuppositions difficult to explain, so as to give a precise meaning to what they state. The disturbing thing here is that they obviously don't even understand the meaning of the question, asking them for details, even though everything seems perfectly clear in their minds! It's a bit like a dialogue of the deaf that would take place between a mathematician of today, familiar with the canons of precision popularized by Bourbaki, and a mathematician of the last century - and in fact, I rediscovered this feeling of wrong while browsing certain works of Riemann, the substance of which was supposed to be familiar to me! And I found this feeling again, but in a somewhat reversed situation, in my relationship with most of my Faculty students, when they visibly do not understand why I go to the trouble of entering into such explanations. , the necessity of which for me is nevertheless an obvious fact of simple mathematical "common sense". Needless to say, in such a situation, my "explanations" go completely over their heads - or rather, the students in question "drop out" by the time it passes and we finally come to the tangible calculation r

mathematicians never take the leisure to do so). What I know without any nuance doubt, on the other hand, is that what I present here is substantial, and that for the most part, this substance cannot be affected by such errors of detail which may have crept in here or there.

When I was about to speak earlier of "subjectivity" and "arbitrariness" in my presentation, it is something completely different. On the one hand I was thinking about the choice of yin-yang couples included in my repertoire: there are surely interesting couples that have escaped my attention (*). But above all, there is an inevitable arbitrariness in the constitution of "groups" (of couples) which are "significant", that is to say in the "cutting" of the "doors to the Universe" among the profusion of all these "keyholes" which give us a glimpse of it. These groups seemed to me to form quite naturally, through the relationships of affinity between couples felt like (more or less...) "neighbors". These affinities within the same group will be undoubtedly obvious to any reader, at a simple "glance", by simply browsing the list of its member couples. But such affinities still continue beyond the group envisaged, towards couples from "neighboring" or "adjoining" groups (and it is precisely this fact which gives rise to the famous diagram called "doors to the Universe", or "Christmas tree"). On the other hand and in a somewhat opposite sense, the typographic arrangement to describe each of the groups reveals, within the majority, different "packages" or "sub-groups", formed of couples linked by some common "sense", around some common association. This shows that we could, perhaps also in a "natural" way, have made a "division" which would give us larger groups, or on the contrary (even more reasonably, it seems to me) smaller groups - or even, askew groups, which overlap squarely with those which I have cleared and which I have stopped at.

For example, I included the two pairs "south - north" and "summer - winter" in the group "light-day - shadow", and the pairs (visibly related to the previous ones) "east - west" and "print- emps - autumn" in the group "the top - the bottom" (**). Another grouping, just as natural, would have consisted of constituting with these four couples a separate group, formed with the four cardinal points on the one hand, the four seasons on the other (**).

(*) (March 31) This was confirmed by the reflection over the two weeks that followed, revealing many new couples.

I have made no effort to avoid the same yin-yang couple being included in two different groups - on the contrary. But in the division at which I stopped, such encroachments of one group on another are rather exceptional (*). The "high - low" couple is included in the "high - low" group, but I refrained from also including it in the "movement - rest" group, because the association between a "high" note and a rapid movement (vibratory in this case), and between a "low" note and a slow movement, perhaps already relates to a relatively sophisticated "scientific" apprehension of sound (as a vibratory phenomenon), which is absent (I presume) from the unconscious layers of the psyche. The "learn - unlearn" couple was included in the two groups "knowledge - ignorance" and "the top - the bottom" (**), but I refrained from including it in the "action - inaction" group. where we could also have considered including it (***).

I would not be at all surprised if we could find more judicious and more delicate groupings than the one I have stopped at, so as to achieve a clearer and finer understanding of the overall structure (or the "pattern") formed by the profusion of all these "holes

(**) (March 31) Among other reasons, the critical reflections in this section led me in the following days to make some adjustments in my groups. So I detached from the old group "the top - the bottom" (of prohibitive dimensions) a group "rise - decline", of which the two previous pairs "east - west" and "spring - autumn" now belong. . On the other hand, "to make it pretty" I hung in the Christmas tree a sort of compass rose (in the shape of a cross) marked by the four cardinal points, and which represents the hypothetical group "cardinal points and seasons" mentioned in the paragraph commented here.

(*) When a couple appearing in a given group also appears in another group, I follow it (in parentheses) with the Roman numeral (possibly provided with accents or indices or both) which designates the other group in which it appears.

(**) (March 31) It should read here "the "rise - decline" group" instead of "the "top - bottom" group", see penultimate footnote.

(****) I did not want to include the "learn - unlearn" couple in the "action - inaction" group, because I feel that "unlearn" is itself an action, and in no way a state of inaction. In fact, apart from learning in the purely mechanical or routine sense (learning, in particular by "forgetting"), we only really learn the new by unlearning, by "forgetting" the old which kept us prisoner. And it is very often in this act of unlearning, of separating oneself from something felt as an acquired knowledge, as a "good" which would be dear to us, that the difficulty lies in the act of learning and renewing oneself. .

“lock” on the Universe.

This would then be expressed by a graph with a undoubtedly quite different appearance, and more striking and more convincing perhaps than my slightly askew “Christmas tree”, with collected airs...

2. Polyandrous things and polygamous things.

The yin-yang couples discussed so far in principle concern qualities, expressed either by qualifiers (which I most often present in substantive form) as in “hot - cold” or “the fast - the slow”, or by verbs like

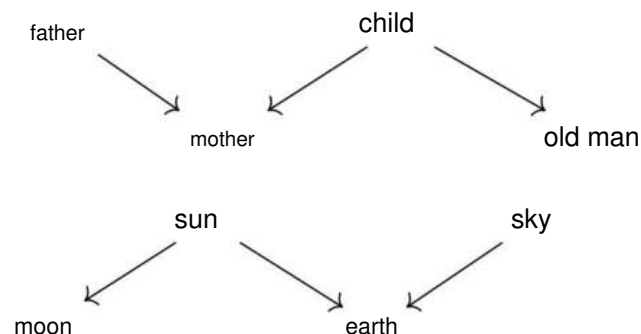
in “know - know”, or finally by nouns as in “passion - serenity”. There is however a small number of cases where I included two “things” in a yin-yang couple, one playing the role of yin and the other yang, and both having the value of an archetypal symbol, that is to say a symbolic image, coming from the deep unconscious layers of the psyche and having a “universal” value, being found (in a multiplicity of possible forms) from one person and one culture to another. If I except the “master – servant” couple (which is perhaps only a personification of the “authority - obedience” couple, rather than an authentic archetypal symbol), I noted eight such couples (involving twelve archetypes (*)).

These are the two couples

man → women

fire → water

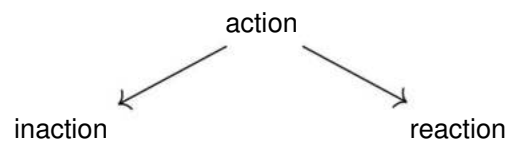
and the two groups of three each, which are represented by the two diagrams below:



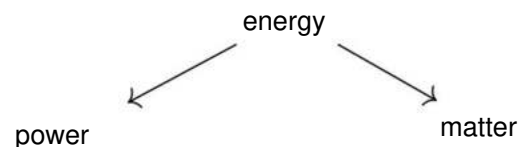
(*) (March 31) In the meantime, I have added the two pairs of archetypes “god - demon” and “giant - dwarf”.

It is understood that in these diagrams, as in those which follow, an arrow connecting two terms indicates that they pair as a couple, and that the arrow goes from the yang term to the yin term.

These last two diagrams highlight an interesting fact, which we touched on in passing previously. This is the phenomenon of “polygamy” and “polyandry” of some of these archetypes: the child and the sun are polygamous (matching one to the mother and the old man, the other to the earth and to the moon), while the mother and the earth are polyandrous (pairing one with the father and the child, the other with the sky and the sun). Such phenomena, contrary to the good morals of our country, are in no way restricted to the areopagus of archetypes, which would enjoy the privileges that mythologies reserve for the gods (including that of incest). I noted in my repertoire two other cases of patent polygamy, for the terms “action” and “energy”, fitting in fact in the two three-term diagrams

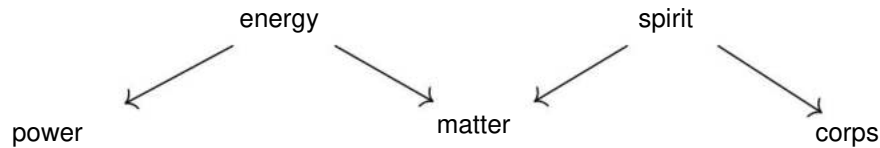


And



They give rise to four yin-yang couples, which I included in three distinct groups (namely the “action – inaction”, “forward – backward” and “movement – rest” groups). As a result, this last diagram, by associating itself with the “mind - body” couple, suggests to me a yin-yang couple (yet very familiar) that I had forgotten in my list, namely “spirit - matter” (which I will therefore add to it immediately) (*). Thus, the diagram is completed in a beautiful zig-zag diagram with

five peaks:



This provides us with another bigamist, namely the spirit (who would have thought that of it!), matching itself both to the body (which surely was only waiting for that) and to matter; and at the same time, a polyandre again, namely lady matter, matching itself to energy (which is still part of the same world as it, namely that of physical entities) and to the spirit (supposed to belong to a more recorded). Moreover, while looking for where to insert this new couple “spirit – matter” (a misalliance, according to some), I noticed that it practically already appeared in my list, under the name “letter – spirit” (where “the letter” is obviously a symbol for “matter” (*), in the “form – substance” group. So, bigamy or not, everything is back to normal!)

3. Creative ambiguity (1): pairs, strings and circles.

(March 18) Last night it got really prohibitively late. In a hurry to finish, I made a monumental last-minute misinterpretation, by assimilating the “letter – spirit” pair “to chic” (which, in my list, immediately follows the “form – substance” pair which gives its name to the group), with the so-called “matter – spirit” couple (all you had to do was change “letter” to “matter” and that was it!). “Matter” would therefore play the yang role, and “spirit” the yin role (**). In doing so, I did not realize the “mortal sin” of confusing the yin and yang roles, even though it was clear in my mind that what I was trying to fit in was the “spirit – matter” couple. and not the other way around, with the male mind as it should be, and the feminine matter (also in conformity with the desiderata of grammatical gender). Reflection

(*) (March 18) This way of “adjudicating” the “spirit – matter” couple in a sentence is definitely a little casual! By taking the trouble to pose on him even for a few moments, we realize that this is a couple “that makes the weight”. In fact, I don’t “feel” it very well yet, even if I have little doubt that this couple “exists” indeed, as a yin-yang couple. This conviction does not have the quality of knowledge, it is not yet the fruit of understanding.

(*) (March 18) The deliberate intention of casualness persists! (See previous b. de p. note) In a hurry to finish, I “end” in fact with a gross misinterpretation, which I will correct in today’s note.

done, its true place seems to me to be in the “action - inaction” group, because “spirit” embodies the principle of action which animates matter, by itself inert.

This confusion precisely highlights an important particularity in the di-alectic of yin and yang, to which I thought I would return today. This is the essential ambiguity in the yin or yang nature of all things, including in the case of qualities and other entities which are capable of entering into one or more of the yin-yang “cosmic couples” of which it is question here. This ambiguity is exemplified here by the linear diagram

letter $\longrightarrow$ spirit $\longrightarrow$ matter

comprising two yin-yang couples both involving the entity “spirit”, which enters as a yin term in the first pair “letter – spirit”, and as a yang term in the second, “spirit – matter”.

To use a learned name in Greek, we can say that the spirit is androgynous in nature, that is to say both “male” and “female”, “maculine” and “feminine”. This is, moreover, something which seems deeply satisfying to me (for the mind!), and which I had never stopped to think about until today. No doubt I lived on the unexpressed conviction that the mind (just as its grammatical gender indicates) could only be masculine. However, it's been a while (since I started paying attention to these things) that I realized that love is androgynous too, as is creation (as an act and process), or finally God (*).

(**) Note that in each of the two neighboring pairs

the form - the substance, the letter - the spirit,

as if by design, the distribution of yin-yang roles is opposite to that suggested by the grammatical gender of the two terms. We should not be surprised by these apparent anomalies. As it is explained more based on another example, it is not because the “form” entity makes a couple with the “ond” entity and assumes the yang role there, that this entity by itself must be seen as being essentially, or even exclusively, yang in nature. As a potential “enveloping matrix” of an infinity of possible substantial “realizations”, “form” can well be seen as something of a “maternal”, yin, nature. On the other hand, as a structural element which orders a substance, or as an “abstract” quintessence extracted from a concrete reality (when we speak of the shape of a face, a vase, etc.), the same entity manifests its yang characters, expressed precisely in pairs such as “form - substance” or “form - substance”.

This essential ambiguity in the yin-yang nature of all things is superimposed (without contradicting it) on the essential univocity of nature, either yin or yang, in each of the two terms of a “cosmic couple” yin- yang. In the pair “letter - spirit”, for example, there is no ambiguity on the fact that it is “the spirit” to which the yin role is assigned (notwithstanding the grammar), whereas in the pair “ spirit - matter”, there is no ambiguity either on the role this time yang of the same entity “spirit”. As to whether in the latter, it is the yang nature which prevails over the yin nature, or vice versa, I suspect that this is a question which is more akin to that of the sex of angels, than to a question of philosophy.

In the three similar cases (love, creation, God), I don't even have any doubts about it!

It is very common that between two things, notions or entities which are in relation to each other, this relation is perceived as establishing a “couple” (*), in which one plays the role yin, the other yang role, and this without any “essential ambiguity” in this distribution of roles. Thus, the earth, horizontal and nourishing, and the tree rooted in it by

(*) Note that the word “love” is of the masculine gender in French, of the feminine gender in German (“die Liebe”), which goes well with its “androgynous” character. On the other hand, “God” (“Gott” in German) is masculine in both languages. I suspect that it still is in all languages admitting gender differentiation, and where the notion of “God” (simply, as opposed to “a god” or “a goddess”) exists. This seems to me to reflect the cultural bias giving preeminence to yang. As for “creation” (“die Schöpfung”), this notion is expressed in both languages by the feminine form. The reason is, I believe, that in both languages, the primary meaning of the word “creation” does not concern the creative act or process, but the Universe formed by all created things, including all these things, and we too are part of it. This meaning is therefore close to that of the “All”, or “the Mother”, which (in their relation to “the part”, or to what is created or “given birth”) are indeed of a yin nature. On the other hand, we spontaneously think of the one who creates (whether God or man) as “the Creator” or “the creator” (“der Schöpfer”), and never as “the creator”. This seems to me to reflect the same cultural prejudice, in both languages, as for the notion of “God”.

In the couple

creation - destruction,

neighbor of “to be born - to die”, and an understanding of which seems essential to me for an understanding of ourselves and the nature of the creative processes in us and in the Cosmos, creation represents the yang principle, destruction the yin principle. Both principles are present in every creative process in the full sense of the term. As in the example examined in the previous note by b. p., this yang role in no way means that “creation” is, in itself, a thing of yang nature, or “more yang than yin”. This is what is revealed in full light, when we remember what is the act par excellence: the coupling of the male and the female, whose embrace transmits and renews life...

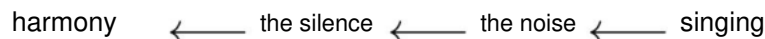
all, even if it was at the level of a perception which would remain unconscious. If on the other hand we attach his attention to the tree, embodied before anything else by its trunk, then to the branches of the tree which is part of it as a whole, and which emerges from the trunk and is nourished by it (all as it arises from the earth and is nourished by it), it appears that tree and foliage form they too are a couple, in which this time it is the tree which plays the yin role, the branches being yang in his relationship with him. If finally we look at the antler as a whole, in its relationship to a fruit carried and nourished by it, we find yet another couple, or the branches this time plays the yin, maternal role, and the fruit that comes from it plays the yang role.

We can represent these multiple relationships by a diagram, which this time is no longer “zig-zag”, but “in a string”:



This string diagram highlights the yin-yang ambiguity (or the “androg-yne” character) of both the tree (yang in its relationship to the earth, yin in its relationship to the branches) and the branches (yang in its relationship to the tree, yin in its relationship to the fruit). This makes us sense at the same time, through the virtue of graphics, that the yin-yang ambiguity of all things is a creative ambiguity, that it is an essential aspect of the own creativity, inherent in everything in the Universe. In particular, it allows the thing to enter into relations of couple in a multitude of very different situations, and this as well as “the spouse” as “the bride”.

As another instructive example, I offer to the reader’s attention this other bunch with three pairs,

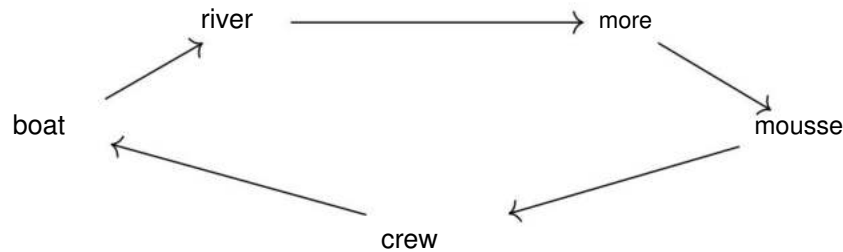


by allowing him the pleasure of formulating in his own words, if he feels prompted to do so, how each of these three pairs do indeed form a “couple”.

To end this digression with graphics, on the ambiguity of yin and yang in all things, here is finally a string that closes, in other words a round of yin and

(*) Subsequently, to avoid any confusion with so-called “cosmic” couples, it would seem preferable to me here to speak of “pairs”, rather than “couples”.

you who:



This round (just like the two previous strings) is taken from the In Praise of Incest (*), the description of which I limit myself to reproducing here:

“The river flows into the sea which welcomes it. The boat is immersed in the river which surrounds and envelops it. The crew is carried by the boat which encompasses and shelters them. The young cabin boy is a member and part of the crew that includes him. And in his eyes the sea is reflected, through his eyes it penetrates into his soul which welcomes him into itself. Thus the male and the female - Eros and the Mother - are constantly intertwined in an endless round where everything, at the same time or in turn, lives both its virile impulse and its maternal impulse.”

4. Creative ambiguity (2): the reversal of roles.

The couples that appear in the previous round and in the two rows do not appear as yin-yang “cosmic couples”. Such a couple represents the two modalities of existence, one yin the other yang, of the same type of quality, which we will find in an infinite multiplicity of situations in every place of the vast Universe. To avoid any confusion, perhaps it would be prudent to reserve the name “yin-yang couples” only for “cosmic couples”, limiting ourselves to the name “pairs” (yin-yang) for cases of more occasional marriages, without “cosmic” or “universal” vocation. These are the first of course, the authentic “couples” or “keyholes on the Universe”, which are above all the center of my attention here, with a view to drawing up a sort of “map” of the multitude that they form. - a multitude so rich that it disconcerts us at first sight!

(*) See, on the subject of “Eloge”, the note “L'acte” (n° 113), in particular pages 507-508. It is of course understood that in this text of high literary quality, I would not have dreamed of including something as unpoetic as a diagram From which shackles I am freed!

Several times, in my efforts as a methodical cartographer, I found myself confronted with unforeseen contradictions which seemed to snub me, sometimes insistently, before resolving into a less superficial understanding. It is in no way my intention to gloss over, by means of a "list" or a peremptory "map", my perplexities of yesteryear. Such difficulties present themselves here, as with any other somewhat delicate substance with which one must become familiar, whether (let's say) "science" (or even mathematics), or "philosophy". ". It is only by confronting it in complete naivety that an understanding that does not remain entirely verbal or superficial can mature, and an intuition, a "feeling" can develop...

Earlier I insisted on the character of non-ambiguity, of univocity ("essential", I said), in the distribution of yin-yang roles within each of the cosmic couples - an independent distribution of any kind of choice, whether "individual" or "cultural". Now is the time to disabuse the reader who would believe that once the two hundred or so pairs of a list have been memorized, everything else would be reduced to ready-made "black and white"! Alongside this "essential univocity" that I have put so much effort into emphasizing, there also live what we could call "inessential" or "secondary" ambiguities, which (to repeat myself, or almost (*)) "overlap without contradicting it" on this fundamental univocity of the couple.

We had already encountered an example, with the couple

refusal - acceptance,

where "refusal" represents the term yang. I had observed that in certain situations, acceptance "is born" from refusal, which would serve as a sort of "nourishing foundation" – that there is therefore, then, a real "reversal" of the yin and yang roles, inside the couple in question (*). This is indeed what one could call a creative reversal, which I had likened to that which occasionally occurs in the game of the loving or marital couple.

Such a reversal does not, however, call into question the "essential univocity" of the biological sex of either of the two participants. But it allows the impulse in both to express itself according to its own nature, with all the richness that is its own in resonances as feminine and maternal, childish or paternal.

(*) See top of page PU 11

(*) See the notes "The cycle" and "The spouses - or the enigma of "Evil"" (nǚ 116, 117), and in particular the footnote on page 534. The latter will be tacitly alluded to in the following sentence.

We also noted in passing (**) another case of reversal, partial and more discreet, in the case of the couple

the child - the mother.

When the mother is perceived as having the function of protecting the child, who takes on the role of "protected", this perception assigns to the mother a (protective) role of a yang nature, while the child (for this distribution of roles "secondary") assumes the yin role. From the "mother" side, this yang tone in her relationship to the child must be seen as a "yang in yin" tone (the yin remaining dominant). Symmetrically, on the child's side, his role as "protected" by the mother must be seen as a "yin in yang" tone (while the dominant remains yang). (***) Always about the same archetype of "the Mother" or the "Maternal". "The Mother" is universally felt as the giver of warmth, of a beneficial carnal warmth, transmitted by the intimate contact of her body, surrounding ours. This heat is felt, surely, as forming a contrast with the "outside", "elsewhere", perceived as "cold" and (perhaps also) as vaguely hostile, or at least foreign. But this couple

hot - cold.

is indeed a cosmic couple again, in which "the hot", without the slightest possible ambiguity (not at the "essential" level, at least!) plays the yang role, once again. This means that the connotation of warmth associated with the archetypal image of the maternal (image living in each being), is yet another tone of "yang in yin".

The image of the Mother represents, however, at the same time, the most complete and deepest incarnation of yin, an incarnation present in every being, and which encompasses all the other archetypal symbols of yin, such as the earth, the sea, the water. It is what is close, what is familiar, what is known, what carries us and what nourishes us, what conceived and gave birth to us and what gives birth to us again; and she is the one also ready to welcome us, when we

(**) In the note "Archetypal knowledge and conditioning" (n° 112), in the footnote

(***) page 504 (dated two weeks ago).

(****) It is well understood that these comments concern the archetypal "mother - child" situation, and that they would be entirely "off the mark" in a large number of real situations of a mother - child relationship. The case where this tone of "yang in yin" takes an undue place, so as to obliterate the low yin tone, is by no means rare. This is the case of maternal overprotection, a sign of an anxiety imbalance in the mother, which is transmitted to the overprotected child.

let us long for return and rest. It is through all this above all that the knowledge of the Mother lives in us, that She assumes in us her striking and unique traits, which are indeed yin. And in our relationship with Her, we are and remain eternally “the child”, or “the child-born”, the child Eros-with-the-arrow - whether to leave her, to meet the Elsewhere , or, at the end of our race, to return to Her. This is so, whether we are children or old people, men or women, mountains, rivers or seas, and whether we have just been born or are about to die...

5. Creative ambiguity (3): the part contains the Whole.

I didn't go all the way, sometimes, far from it, to probe the yang, even “phallic”, aspects of the archetype of the maternal in us. All things are given birth by the Mother, and there is nothing in the Universe that is not already present in Her. But this is not the place to pursue this theme, in these pages intended only to shed light on a certain cartographic work, which I propose to submit to the curiosity of an interested reader.

It must be said that the maternal archetype, and the deep relationship of the creature to the “maternal”, constitute a yin-yang couple entirely apart from all the others, and of a scope which exceeds any other such couple. (At least that is my deep conviction.) As such, one could say that he is as “atypical” as possible. As for “yin-yang” couples in general, it is only for a small number of them that I have taken the leisure to examine a dynamic of “reversal” (occasional, or secondary, or “inessential”) of the yin and

Which.

Without being able to guarantee it, I nevertheless suspect that such a dynamic must exist for all yin-yang couples, or very close to it, and I am sure in advance that I could at least highlight it on a good number.

Here is yet another example, that of the couple

the part – the Whole,

where the part is yang in its relation to the Whole, which is yin. But it is something quite familiar, it seems to me, to anyone inclined to philosophical reflection, that very often, the part “reflects” faithfully the Whole, and thereby “contains it”, just as it is contained in him. Thus, man is a part of the Cosmos, but some have understood and assure us that the entire Cosmos is reflected in us, and that each being contains It.

At the more down-to-earth level of the physiology of the human body, all of the organs of our body are found finely inscribed on the sole of the foot, in the lobe of the ear, or in the iris of the the eye. The expression of a face, the lines and shape of a hand, the features of writing, for those who know how to decipher them, each reveal the whole person.

And it is the same with the sound of the voice, the posture of the body, and each of the hundred and one different ways in which we express ourselves, often without our knowing it, through body language. The innumerable divinatory techniques that man has imagined and discovered in the body of the ages, all appear to be based on this same principle, which the part (however imperceptible, however insignificant it may appear to a superficial glance), expresses faithfully, and by there “contains”, the Whole.

And just one of our cells contains all of the chromosomal information that we carry within us and that we pass on to our descendants. I believe that I could continue for pages to accumulate other illustrations. This is not the place!

6. Creative ambiguity (4): the extremes touch. (March 19) I
would like to come back a little more to the couple

hot - cold (or lukewarm)

met in passing yesterday. “The cold” is associated with winter, with the long winter sleep of nature, with rest, with silence. So many aspects which highlight its “yin” character. “Heat” is associated with the heat of summer, with the exuberance of plant and animal life, with the movement and rumors which are part of this exuberance – and through these associations its “yang” character is revealed. ”.

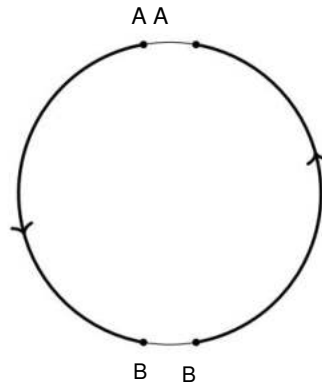
However, as the heat increases and becomes torrid, here is this exuberance of life dozing off in a torpor which closely resembles the sleep of winter, while the only audible sound, that of the tireless cicadas, seems to weave like a shroud of sound which would surround us on all sides and encourage us to rest. So, extreme heat brings us back to yin. This is so, at least, when it manifests itself in a form which remains diffuse. Fire, which represents its concentrated form, remains the undeniable and universal incarnation of yang. But as the heat of the fire itself, and of that which is in immediate contact with it, increases and reaches extreme intensities, here are the solids which begin to melt and transform into liquids, and these xi at their turn to gasify, to finally disintegrate into a confused chaos of

particles swirling in all directions, in which all form and structure seem to have disappeared without return. Thus, by intensifying the yang-heat to its most extreme degrees, we pass to states which appear as yin, then as very yin, to finally arrive at the extreme yin of the original chaos.

Conversely, extreme cold seems to bring us back to yang. The cold weather of winter already, in the countries with which I am familiar, causes supple, living water to freeze into hard, sharp and brittle ice - from the yin element par excellence that it was, here it is transmuted in yang! And those who experience harsh winters know as I do that the intense cold “bites” and “burns” just like fire. This is also why the sparkling snows at the height of a mountain winter can appear “fiery” to us. Let the cold increase further, and the air itself will take liquid form, then solid. For the physicist, the most extreme state of cold, the extreme-yin state therefore of the cessation of all intermolecular movement, is at the same time an extreme-yang state, where all gaseous or liquid fluidity has disappeared without return. It is the state of greatest concentration and absolute solidity of all things.

Such “anomalies” or “paradoxes” are typical in the dialectic of yin and yang. Even less than twenty years ago, when I had not heard the words “yin” or “yang” pronounced, they would surely have made me reject outright, like a vast, inconsistent phantasmagoria, the whole so- so-called “philosophy” of yin and yang, if anyone had chanced to speak to me about it. One day I had to experience the discovery of my dual “feminine” and “masculine” nature, to also open myself, in the years that followed, to the reality of the play of yin and yang in myself and in everything...

The kind of metamorphoses that I have just tried to describe here on a particular example is certainly well known and has existed throughout history. They say that “extremes touch”. For a mathematician like me, this immediately gives rise to the vision of a circle. This then suggests the following geometric image:



The direction of travel on the ABBA circle represents the “yang to yin” direction. The arc AB represents a particular “realization” of a yang (A) - yin (B) couple. When A varies towards A to occupy an “extreme-yang” position or B towards B towards an “extreme-yin” position, or both at the same time, the new “pair” (say (A,B)), represented by the shortest arc of a circle which joins A to B towards A (and not the other way around), so that this time the new position A of A becomes the . is this time reversed: the direction of travel takes us from B yin pole, and the new position B of B becomes the yang pole.

But as to whether this simplistic image of a mathematician is capable of stimulating a apprehension of the nature of the relationships between yin and yang, that's another story...

7. My perplexities “container – content” and “the heavy – the light”.

In the few previous yin-yang couples, the question of yin and yang roles does not seem to me to present any particular difficulties. If I have introduced them here, it is mainly to illustrate through them certain particularities in the play between yin and yang, which are found in a similar form in many other couples, if not in all. To finish these preliminaries, I would like to point out a few cases of couples where the distribution of roles led me to certain perplexities.

We had already encountered the case of the couple

containing - contained (or enveloping - wrapped) (ỹ),

neighbor of less problematic couples

exterior - interior, surface - depth, shape - background,

(*) See the beginning of the note “Archetypal knowledge and conditioning” (nỹ 112)

where the distribution of roles (yang-yin in this case) hardly gives rise to perplexity, and suggests to us (rightly) that “the container” has a yang function, and “the content” has a yin figure. What initially misled me was the analogy with couples (yin-yang this time)

womb - embryo, vagina - penis.

In these, the exterior - interior geometric relationship appears as accessory in front of other more important aspects: the matrix nourishes the embryo, which lies and takes root in it; and the vagina receives the penis, which penetrates it (even disregarding the direct sexual connotation, which leaves no room for any ambiguity!).

In many other cases, for two things one of which appears to surround the other, the yin-yang relationship is not determined by this configurational aspect alone.

A striking example is given by that of the two pairs

husk (of a nut) - kernel,

And

pulp (of a peach or apricot) - stone.

In the first case, the hard pod has the function of protecting the interior, which represents the nourishing element, it is a distribution of yang-yin roles (in accordance with the configural-rational aspect). It is the opposite in the second case, where it is the pulp which represents the nourishing element, the nucleus playing the role of the embryo which would be nestled in the pulp-matrix.

In the two neighboring couples

presence - absence, fullness - emptiness (or plenitude - emptiness)

(also neighbors of the “affirmation – negation” and “positive – negative” couples), the distribution of roles is yang-yin, and it is the same in the couple

concentration - availability,

where concentration is perceived as a state of “fullness”, and availability as a state of “emptiness”, in accordance with the second of the two pairs introduced just now. However, the state of concentration can be seen as a state of absence (to anything other than that on which one concentrates), and availability as a state of presence (to anything which could

request our attention). Also this couple could suggest to us the existence of a yang-yin couple which would be

absence - presence.

This is indeed a couple, but yin-yang (the opposite of the yang-yin couple from earlier "presence - absence"). This apparent paradox is resolved, it seems to me, by the observation that the translation of "concentration" by the related notion of "absence" is approximate and neglects an essential aspect: it is that this so-called "absence" is only partial, and that with regard to the thing on which we concentrate, there is on the contrary a "presence" that is all the more intense, which compensates (in some way) for the absence in 'other directions.

This example, among others, shows us that the game of analogies, which is a precious and visibly essential guide for recognizing oneself in the dynamics of yin and yang, is however not infallible, and requires that we be handled with skill and a certain amount of caution.

Here are three neighboring pairs of "concentration - availability",

the heavy - the light, the dense - the diluted, the concentrated - the diffuse,

for which I had some difficulty convincing myself what the distribution of the yin and yang roles was. (I felt, however, without any possible doubt, that these were indeed pairs of complements.) One of the reasons for my perplexity is that the heavy, the dense, the concentrated, just like water, has tendency to go downward (which is a typical yin character), while what is light will tend to go upward, yang character. A second perplexity comes from the comparison with the couple

the abstract - the concrete,

where it was very obvious to me that it is "the abstract" which is yang, and "the concrete" which is yin, in conformity with couples such as "mind - body", "reason - sensitivity", "logic - intuition". Now, rightly or wrongly, it is "the concrete" which is associated for me with an idea of density, weight, and "the abstract" on the other hand with the idea of the diffuse and the imponderable. These are all concordant indications, which made me presume at one point (without total conviction, it is true) that the heavy or concentrated was yin in relation to the light and diffuse which would be yang. However, this is the opposite of what I ended up settling on (and which is consistent,

it appeared, to the traditional Chinese conception). It is, I presume, the associations with other couples (which I ended up placing in the “group” that I call “the heavy - the light”) which ended up removing my perplexities as best I could. . But I recognize that even at this moment, I do not feel that I have really understood how the two analogies that misled me are indeed fallacious.

8. The quest for Unity.

The couple that I have just pointed out, “the abstract - the concrete”, should be confronted with the couple, neighbor on certain sides (*)

the particular - the general

(which can be seen as a variant of the couple already considered yesterday, “the part - the Whole”). It is still a yang-yin couple, although at first glance it could suggest a simple reversal of the terms in the previous couple. In other words, push-button reflexes would tend to make us assimilate “the concrete” to the “particular”, and “the abstract” to the “general”. As long as we take the leisure to spend a few moments on one or the other of the two previous couples, we realize however that they express very different relationships. The relation of the “particular” to the “general”, as I have just recalled, is that of “the part” to the “Whole” – the general “contains” or “implies” the particular, as the Whole contains the part. This is in no way the relationship that exists between “the concrete” and “the abstract”. The concrete thing can be seen as a “realization”, or an “incarnation” or a “manifestation” of some abstract notion that it reminds us of in one way or another. Thus a copper cauldron, or rather its rim, is a realization of the notion of circle, and the surface of a leather ball (or that of the planet earth...) is a realization of the notion of sphere. No one would dream of saying that the notion of sphere, let us say, “implies” or “contains” the concrete object which is a football that I point to with my finger, and whose shape (approximately spherical) is only one aspect among an infinity of others, none of which, and probably all together, cannot exhaust it.

(*) I had first included both of these two couples “the abstract – the concrete” and “the particular – the general” in the same group “the part – the Whole”. Now the first of these two couples is part of the group “the simple - the complex”, which I ended up detaching from the initial group (see b. de p. note (*) page PU 2).

It is true that the characteristic of thought is to apprehend as best it can “the concrete” through “the abstract”, that is to say precisely through thought, the privileged (and perhaps unique) vehicle of “abstraction”. That said, depending on the temperament of one or the other, thought will tend to follow forms of a greater or lesser degree of abstraction.

Mathematical thinking is certainly one of the most abstract. But in mathematical thought itself, there are a large number of different degrees of abstraction (*), depending on the type of reflection pursued. But whatever level of abstraction we place ourselves at, this level (it seems to me) is in itself neither “general” nor “particular”. In fact, it always includes both “general” and “particular”. Everything that is known in general applies ipso-facto to the particular. But in the particular, there are also “individual” traits, different from one “case” to another, and which mean that it is not reduced to a simple “conformal copy” (on a smaller scale). of “genera

In a given science (such as mathematics), depending on the individual temperament of the researcher, and following the spirit of the times or the fashion of the moment, his work can focus on things which are more or less general, or more or less particular. . In all cases, this work will take place in the context of necessarily “abstract” thinking.

But regardless of any fashion and any spirit of the times, it seems that scientific thought cannot help, by its very nature, from constantly returning to research.

(*) In mathematics, the degree of abstraction of a notion can be explained to a certain extent using the technical notion of “structure” (introduced by Bourbaki). Each “kind of structure” is associated with a natural integer, which we can call its “rank”, and which expresses to what “step” we must go up in the “scale of types” of (virtual) structures. , associated with the “basic sets” which are involved in the description of the type of structure envisaged. This rank can be considered as measuring the degree of “complexity” or “abstraction” of it. A mathematical notion (whether it is a type of mathematical objects, or a property for objects of a specific type) can then be considered as being all the more “abstract”, as it involves higher-level structure types. This description seems to me to correspond approximately to the (subjective) impression of “more or less great abstraction” of a mathematical notion. However, it fails in the case, more and more numerous, where a mathematical notion is rooted in the language and specific intuitions linked to the point of view of “categories” (where it is the “equivalence” of categories , and not “isomorphism”, which constitutes the standard of comparison between different categories). To give just one example: the notion of topos (as a category satisfying certain properties) would be amenable to the notion of “law of composition not everywhere defined”, which no professional mathematician would dream of qualifying as terribly abstract. However, there must hardly be a mathematician to whom the notion of topos (as the incarnation of a topological intuition, called to replace the notion of space), would not seem very abstract!

of what is common in the disconcerting multiplicity of particular situations, therefore of discerning “the general” which connects and encompasses the infinite profusion of the particular. To put it another way, it seems something inherent to the very spirit of “scientific thought” to seek unity through the inexhaustible diversity of phenomena. The same thing can be said, perhaps, of any reflective thought, striving to probe and know the World in one or other of its aspects. This is perhaps even a universal trait of the drive for knowledge within us, constantly pushing us, whether we want or know it or not, to seek the One through the many. And in the yang-yin couple which expresses this quest,

multiplicity - Unity

or

the multiple - the One,

I cannot help but feel as myself being this “multiple” in pursuit of unity, elusive, elusive - “at once distant, and very close, at once well-known, and full of mystery”...

9. Generality and abstraction – or the price to pay. (March

20) After pausing in notes last night, my thoughts continued to dwell on “the abstract” and “the general.” I had just declared (more or less) that it had nothing to do with each other - proof that the two couples into which they spontaneously fit,

the abstract - the concrete, the particular - the general,

are very different in fact, not to mention that “the abstract” plays a yang role, and “the general” plays a yin role! However, there remained in me a diffuse dissatisfaction, an impression of not having yet clearly seen a certain situation, constituted by these “qualities” present. Although I had dismissed the connection between “abstraction” and “generality”, calling it a “press-the-button reflex”, it still continued to lurk in my head! For “the concrete” and “the particular”, okay, they seem to be very different qualities of nature. But I couldn't help but feel an affinity, or an attraction (who's to say if it's one or the other...), between “abstraction” and “generality”. It is this feeling that I would now like to try to define.

What is certain is that I am not attracted by abstraction, for its own sake, in my mathematical work, let's say. The increasingly advanced abstraction, manifested by the introduction of increasingly "sophisticated" notions, has never put me off, that's a fact. But this is an aspect of things that I never really paid attention to. More or less abstract, for me it's the same thing (in mathematical work, I mean), and, to be honest, I don't even notice it. It is not me, nor any desire or impulse within me, that is in charge in this matter. But these are the things that I am probing, which dictate to me what I have to do, and thereby, what is the "level of abstraction" at which I must work. It's like with the gears in a car - it is not the driver who controls the speeds (following his preferences and predilections), but it is the road which tells him: here you drive in fourth, there you shift into third etc.

I know that my relationship to abstraction in work is not typical among mathematicians. Almost everyone has some sort of personal "threshold," a certain degree of abstraction that they are willing to "tolerate." Beyond that, they "drop out". Depending on their temperament, they do it with feelings of regret, as if for a failure ("sorry, I can't keep up with you in that game..."), or in a tone of more or less morgue veiled, which implies: it's all very abstract and it can hardly be anything other than humbug, since it doesn't even make me want to follow...

Today is the first time that I have come to the obvious observation of this "threshold". So I would be very hard pressed, like that "at face value", to say to what extent this "threshold" is determined by a temperament, and to what extent it is the consequence of a choice (in which the influence of ambient environment will, most often, be very heavy). I can still say that among the mathematicians I know personally, there are three in all for whom I have the impression that this threshold does not exist any more than it does for me (*). In these three cases, however, I was able to note at a later period a deliberate disdain towards an abstraction considered "excessive", "free", "useless"...(**). There are therefore choices there, linked (among other things) to a fashion of the moment

(*) The mathematicians in question are Pierre Cartier, Pierre Deligne and Olivier Leroy. I assume that they are not, with me, the only ones of their species. But in the limited circle of mathematicians I have personally known, they seem alone to me.

(**) It seems to me, moreover, that in such an attitude there is always mixed the eternal confusion between "generality" and "abstraction".

(which I had occasion to speak about). In these very particular cases, these choices play, from a practical point of view, the same role as the "threshold" which I have just spoken about.

In my work as a mathematician, I have never sought or avoided abstraction. I can say, however, that if there is one thing that has always attracted and fascinated me, it is the search for unity in the multiplicity of phenomena. To put it another way, the force that constantly pushes me, like an obscure instinct, is to constantly apprehend and identify what is common to situations that may seem dissimilar. To make an aphorism: I discovered, or I have always known instinctively, that "difference" belongs to the surface, and that kinship appears deep down. This is how the quest for unity has often led me, without even having sought it, or even bothering to realize it, to dive deep.

To seek commonality in the disparate, or kinship in the dissimilar, is also to seek "the general" through the particular. At a time when mathematical fashion is in contempt of generality (equated with gratuitous "generalities", even with bombing), I can see that the main force manifest through all my work as a mathematician has indeed been the quest for "general". It is true that I prefer to emphasize "unity", rather than "generality". But for me these are two aspects of one and the same quest.

Unity represents the deep aspect, and generality, the superficial aspect. These aspects are manifested, one by the perception of "kinship", and the other by that of a "similarity" or a "resemblance".

The preceding pages clarify for me the difference in nature between "abstraction" and "generality" (which represents the superficial "pendants" of "unity"). I would also add in this regard that I have never perceived in anyone a "threshold" regarding the degree of generality that they would be willing to tolerate without breaking down! It would be difficult (for example) to find a statement "more general" than that which says that everything in Creation must come into being and must die. Its meaning is clearly perceived by you, without it being necessary to know how to read, write or count. Everyone has a certain apprehension, more or less superficial or deep, of the very simple fact that it expresses. On the other hand, the much less significant statement "two plus one equals one plus two", because of its character of abstraction (however modest it may be for a mathematician), is undoubtedly incomprehensible to the vast majority of people. human beings (except to laboriously explain it on a certain number of concrete examples).

But the remarkable thing that I wanted to come to above all is that it would seem that at the level of scientific thought at least, the search for generality is necessarily accompanied, whether we want it or realize it. account or not, of a growing abstraction. I note it here as a simple truth of experience, of which I am aware first and foremost through my own work as a mathematician, but which is also confirmed to me by what I know about mathematics and the other sciences, and on the history of scientific thought. My purpose here is not to probe the reasons for this fact (*), but above all, to make an observation.

In terms of a yin-yang dynamic in the progression of scientific thought, we could reformulate this observation as follows. The search for “unity” through diversity, “the general” through the particular, is also the search for a certain yin tone in our apprehension and our understanding of things. The pursuit of this quest would therefore seem to lead us towards a “more and more yin” modality in our understanding of things.

This pursuit, on the other hand, seems to be necessarily accompanied by an increasing abstraction, that is to say also by an intensification of a certain yang aspect in our apprehension of things. This would therefore become, through this same quest, “more and more yang”.

It would be tempting to see these two progressions in opposite directions, one towards yin and the other towards yang, as being likely to maintain a yin-yang balance of thought. However, I doubt that this interpretation is relevant. For it to be so, “generality” and “abstraction” would have to form a yin-yang couple, which is by no means the case. The dynamic that connects them to each other, obviously, is not that of a couple! Rather, we would like to say that “generality” (or “unity”) is what we seek, instinctively it seems, beyond the fluctuations of fashions and spirits of the times; and “abstraction” would therefore be “the price” that we must pay, whether we want it or not - at least, as long as we confine ourselves to scientific thought, or even to thought at all...

As I said, within my work as a mathematician, this “price to pay” has never weighed on me. But it seems that in this respect, my case is rather atypical - and the fate of my work, thanks to my premature “death”, is there to confirm it. In any case, I see many other “prices” still to be paid, and which seem to me to be very different.

(*) (April 1) The reflection returns to “abstraction” in sections 20 to 24. Without having looked for it, I seems that it also sheds light on the “fact” noted here of a certain close link between “abstraction” and “generality”.

consequence that this one (**). But this is not the place to examine them.

10. Stories of icosahedrons and Christmas trees.

(March 21) I continued this night to turn and turn a little in all directions, in order to fully understand the yin-yang couples which represent modes of apprehension of reality through thought. I am especially stuck on the couple

the simple - the complex,

and on its relationships to the couples already examined yesterday and the day before yesterday. This also led me, one thing leading to another, to bring to the rescue a few other remarkable couples. (I think I'll come back to that later.)

After that, my reflections took a quite different direction, driven by the desire to achieve a global ("formal", or "mathematical") apprehension of all of these "couples", revolving around this reality. delicate and complex that is thought.

(*) There are "external" prices ("outcomes" of science), and "internal" prices, which also deserve to be examined closely. The one I was thinking of above all others is the fragmentation of knowledge, which is felt within a particular science like mathematics, and (a fortiori) throughout our scientific knowledge of the world. If I seem to present here this fragmentation as the "price to pay" for our "search for unity", this may seem a strange paradox. I'm only noticing it now, and therefore have never yet thought about looking into it more closely. In any case, we are forced to note this phenomenon of the fragmentation of knowledge, even within a specific science like mathematics.

We would like to "converge" towards an elusive unity, towards an understanding which is at the same time an overall vision, which would embrace the essentials of what is known and anticipated in mathematics. Now I doubt that there is anyone today in whom such an understanding and such a vision lives. We have the impression, on the contrary, of a "divergence" in the process of progression of thought, mathematical in this case.

This phenomenon seems to me to go beyond any question of fashion fluctuations. We sense that it manifests a certain limitation inherent in thought itself, or at least in "scientific thinking", as a tool of approach and as a mode of knowledge of the Universe. That in the thought of a person, the "extent" of the knowledge that the thought imparts, and the "depth" of this same knowledge, can both grow while marrying each other, only by within certain limits, which it would be impossible for us to transgress in the current state of things. To claim to transcend these limits amounts to relying on the progression of "collective knowledge", replacing individual knowledge, and the personal understanding that it embodies. It is precisely this "collective knowledge" that appears to me to be "fragmented", "parceled", "divergent" in essence. Such knowledge does not have the quality of "knowledge", of understanding, of vision. This quality is of the order of the person, it is foreign to the group, and even more to its "data banks" and its computer fleets.

I had previously been led to divide all of these couples into six groups - the couple "the simple - the complex" had just become autonomous, by splitting from the group "the part - the Whole" (aka "the precise - the vague", aka "precision - generality"). This brought to six, precisely, the total number of these "doors to the Universe", open to reflective thought.

I noticed first of all that any two among these six groups were linked by some undeniable direct affinity - so that makes $6 \cdot 5 / 2 = 15$ edges already, just to connect the corresponding vertices of my Christmas tree diagram together. . So, this led me to redo the outline of this part of the diagram, to obtain a hexagonal star pendant of the most beautiful effect, on the left side of the tree.

To do it well, I should perhaps even have drawn a regular icosahedron instead of a hexagon, interpreting my six vertices as the six pairs of opposite (or "antipodic") vertices formed with the twelve vertices of the icosahedron. The fifteen "cormic" edges would then correspond to the fifteen pairs of opposite edges (ie corresponding by symmetry in relation to the center of the icosahedron), formed with the thirty edges of the icosahedron. In other words, the part of the graph that interests me here (which we could call the "Thought" subgraph) can be interpreted as being formed from the vertices and edges of a polyhedral configuration which is well suited to me. familiar, and which I call "left icosahedron". It is that deduced from the ordinary icosahedron (seen, say, as forming a "tiling" of a surface of spherical shape) by identifying two "antipodal" (or "diametrically opposite" points), ie symmetrical ones. one from the other in relation to the center).

This interpretation would have little philosophical interest unless this representation of the graph that interests me (the "Thought graph") as the "1-skeleton" of a left icosahedron (*), was "canonical" (in a meaning which will be obvious to any mathematician who has developed the intuition of the "canonical" and the "non-canonical"). This also means that among the twenty possible "triples" (or sets of three elements) of vertices that can be formed with the six vertices considered, there would be a natural way of choosing ten of them (which would be qualified as "faces"), which would precisely correspond to the ten faces of the left icosahedron (themselves corresponding to the ten pairs of opposite faces that can be formed with the twenty faces of the ordinary icosahedron (**). In fact, for a set of six elements, there are twelve ways to

(*) We call "1-skeleton" of a polyhedron the configuration (of dimension 1) formed with only the vertices and edges, forgetting the faces.

(*) Of course, the "triple" thus associated with a face (which is always a triangle) is none other than that

choose a pack of ten triples, so as to obtain an icosahedral configuration (left).

If I speak here of a “natural way” of choosing one among these twelve icosahedral structures, this means, of course: in a way which is linked in some “obvious” and undeniable way to the meaning of each of our six vertices and the whole they form.

The first idea that comes to mind on this subject is this. A triple of vertices corresponds to three among our six groups of cosmic couples, and the union of these three groups itself forms a set (or a “grouping”) of such couples. This unambiguously describes the triple summits from which we started. In other words, the twenty possible triples correspond well (“one-to-one”) to twenty different “groupings” of cosmic couples qualifying “thought”. I presume that by looking at these twenty groupings one by one (which I have not taken the leisure to do), some will appear, given the meaning of the different couples that compose them, as “artificial”, like a grouping “made of odds and ends”. Others, on the other hand, will have a “reasonable” appearance, they will represent some interesting aspect (philosophically speaking) of the “discursive” apprehension of reality (ie of apprehension by means of thought) (*). That said, it is not unthinkable (but, as it stands, it is probably too good to be true) that this second favorable case, of a triplet of which

made up of its three peaks.

Please note that any “package” formed of ten triples among six “vertices” (which triples would be called “faces”) does not correspond to an icosahedral structure on this set of vertices. The number of such “packs of ten” is very large, of the order of a thousand billion, while there are only twelve icosahedral structures on a set of ten vertices. The characteristic property, for a “pack of ten faces to describe an icosahedral structure well, is that each “edge” (ie each two-element part of the set S of vertices) is contained in exactly two “faces” .

(*) For example, this is the case for each of the two triangles inscribed in the hexagonal “pendant”, and which there form the “Star of David” inscribed. One, described by the three couples

the part - the Whole, multiplicity - Unity, effect-cause,

can be seen (in terms of the reflection which follows, “Desire and necessity” - or the way and the end”, PU n° 11) as representative of “desire”, and the other, described by the three couples

the simple - the complex, structure - substance, order - chaos,

as representative of “necessity”. This already shows that the “it is not unthinkable” in the following sentence is indeed “too good to be true”. Because a triple and its complement cannot represent the faces for the same icosahedral structure.

which we could call “significant” (philosophically speaking), occurs exactly ten times, and that the ten triplets or “trainlets” in question are indeed interpreted as the “faces” which correspond to one of the twelve structures icosahedral (left) on our set of six vertices.

It's a shame that Kepler is no longer here to read me, because surely this story of a cosmic icosahedron, however hypothetical it may be (that's not what would bother him, quite the contrary!) would not fail to 'electrify immediately! I have also thought of him more than once, since I started drawing my graph, telling myself that in my place, surely he would not fail to produce a colossal graph, where all the polyhedra would appear. regular at a time if that happens. And now, without having done it on purpose, it seems that I am already coming across an icosahedron. So surely I'm being unreasonable...

However, I did not continue to try to put my finger on the hypothetical “icosahedron of thought”. Yesterday and today, I continued the momentum, reviewing the diagram as a whole. I fleshed out the right side of my Christmas tree, making the two pairs of couples into separate groups, one revolving around “rise - decline” (and also “birth - death”, and “creation - destruction). ”), and the other around “good - evil”. (These packets were part of the “high - low” and “joy - sadness” groups until yesterday.) Furthermore, this led me to create from scratch the new “greatness - smallness” group (aka my friend “the giant - the dwarf”!), so as to form with the two previous new groups, and with the group “joy - sadness”, a nice pedant again, square this time. From this is finally suspended, as it is, the package formed with the five groups concerning “the four directions” in space-time. The initial symmetry between the left (yin) and right (yang) side of the tree has frayed over time. On the other hand, it's really becoming more and more of a Christmas tree!

For good measure, I still hung in the tree a sort of rosette representing the four cardinal points (and at the same time, tacitly, the four seasons), connecting the “light - shadow” group (where the couples “south - north” and “summer - winter”), on the trunk of the tree, to the “boom – decline” group (where “east – west” and “spring – autumn” appear), at the end of the branches. It's just to look nice, I didn't give it its own number.

Finally, reviewing my lists, I saw that I would also do well, on the trunk of the tree, to empower an “authority – obedience” group (aka “master – servant”) which was included in the group “faith – doubt”, and likewise the group “the strong – the weak” (aka “intensity – finesse”), which is part of the “firmness – firmness” group. So that makes eleven vertices on the trunk at

instead of nine, and seven on the left side, ten on the right side, i.e. $11 + 7 + 10 = 28$ vertices in all (*).

I think I'm finally there, and that I'll stop there, for the outline of my tree!

And too bad for the icosahedron!

11. Desire and necessity – or the way, and the end.

I would like to continue my exploration of exploratory and reflective thought somewhat further, following the irreplaceable thread provided by the dynamics of yin and yang. During the reflection continued “while scribbling”, last night, the two “bundles” of yin-yang couples emerged as follows. They seemed to me to clearly highlight two tendencies (or forces, or impulses...) in some way complementary, which seem to me inherent to “thought”. Here are the two packages:

the part - the whole

the particular - the general

multiplicity - unity effect

- cause

purity - fertility

And

the simple - the complex

the abstract - the concrete

the precise - the vague

order - chaos

structure - substance

I have italicized, in each of these ten pairs, the one of the two terms which seems to me to constitute, in a sense which I will have to specify, a sort of “pole of attraction” for thought - a tone which she seems to search instinctively. It will be noted that in the first

(*) (April 15) There is a 29th group which was added at the last minute a week ago. (See beginning of the section “The Doors to the Universe”, n° 25.)

package, it is the “yin” terms which appear as “attractors”, while in the second, it is the “yang” terms.

It is understood once and for all that in this reflection, when I speak of “thought”, I imply that it is a question of thought “at work”, as a tool in the hands of the child worker who works through us. This is one tool among others that can be used to explore the world. I know well, moreover, that this tool is not at the disposal of the sole drive for knowledge in us, far from it. Much more often than exploring the World and discovering how it is made, thought serves us to create of this World and of ourselves, and to maintain against winds and tides, an image made to satisfy us and for us. secure, and apart from that, to help us as best we can achieve certain ambitions that are dear to us, if possible. There is thought that discovers, just as there is thought that covers (or eludes). They can live together in the same person, and it certainly happens that we mistake one for the other - yet they hardly look alike!

One is driven by the thirst for knowledge, and the other by the fear of knowledge. But, failing to discern visually which of these two forces is at work, it is by their fruits that we can distinguish them. In what I am about to say, nothing applies to “second way” weighing (by far the most common!), thinking in service of the “boss” in us. When it is he who sits in front of the workbench, and even though one would be the most intelligent, the most cultured, the most learned man in the world, there is no tortuous syllogism or begging of principle, nor gross confusions which are not good and welcome, to “demonstrate” or justify what must be “demonstrated” or justified. Abstraction and generality (at that moment, I mean) serve him (sometimes masterfully) to drown a fish that could seem undrownable; simplification, to put in the same bag things which obviously have nothing to do with each other, and precision, to assert with a peremptory air and “with the best” faith in the world” things of which he knows deep down that They are false. It is not this thought of which I will now try to identify some striking aspects. (*)

(*) In making here this very necessary distinction between these two types of use of thought, which we could call “disinterested” and “interested”, I was aware that the way in which I formulated it was a little too “White black”. Even “working thought”, driven by a thirst for knowledge, is rarely free from all conditioning (if it ever is). More than once in *Récoltes et Semailles*, I was led to note to what extent even the “mathematician at work” (let's say) can be a prisoner of deliberate remarks, of prejudices and blinders, hindering the free development of his knowledge of things. Often these are collective blinders, shared by most or even all of its peers. They are the ones who trace these “invisible circles”

The attraction exerted on us by the “attractors” of the first group, and those of the second, does not seem to me to be of the same nature. If I try to describe this nature by a single suggestive term, in both cases, I would say that in the first the attraction is of the order of the drive, that it has the quality of desire, and that in the other, it is of the order of a necessity, of a constraint, imposed by the very nature of thought and by the limitations which are specific to it. It is this double intuition that I would like to try to clarify now a little (*).

I have expressed myself on various occasions already in *Récoltes et Semailles*, and as recently as the day before yesterday and yesterday again, about the powerful fascination which accompanies this sort of “archetypal prescience” in us of an essential unity behind the the apparent disparity of things. At the level of the drive for knowledge, I believe I recognize in this fascination the main force at work in the progression of scientific thought, occurring through successive syntheses, each striving in its own way to capture this elusive unity. Certainly, the success of the scientific mode of thought, and of its “method”, the end word of which is perhaps “precision”, is undoubtedly due, in large part, to its tactic of methodically examining “the particular”, before venturing to speak “of the general”, to make a rigorous observation of “the effects”, without prejudging too much about their anticipated common “cause”, to list “the multiple”, while pretending to forget the prescience of the underlying unit. The approach specific to precision would be to clearly mark the particularities and differences, rather than leaving them in the background, in favor of what would be anticipated or recognized as common, by a perhaps more hidden relationship. But if this has been the approach and method of scientific thought, there is no doubt that it is not in this direction that the thirst for knowledge spontaneously arises. It is rather that thought is incapable (it would seem) of directly apprehending “the Whole”. He

which I have spoken about elsewhere, some without much consequence, and others which, in hindsight, appear like thick walls! And yet, it happens that these “walls” are transgressed by someone like no other, as if they had never existed! And a hundred years later, no one in fact remembers these imaginary walls, which had held everyone back for generations, until the day when this weirdo, casually, passed through to go beyond. It is hardly necessary to specify that it is precisely this oddball - and at the precise moment when he goes beyond - who for me embodies this “thinking at work”, or free thinking, that of the child, which will be discussed in the following pages. (*) (March 25) The following reflection on the theme “desire and necessity” overlaps with that touched upon in passing in “Desire and rigor” (n° 121). See also, in

the first part of *Récoltes et Semailles*, the two sections “Desire and meditation” and “Beautiful night, beautiful day” (nos. 36, note 39), where, in different lights, this same theme (at very close) is still brushed against.

he must make the detour through the particular to apprehend the general, through the multiple to apprehend the One, through the multiplicity of effects to apprehend the unity of the cause. Only once we have completed this detour are we able to return to where desire takes us, to the common cause and root of things. And in doing so, achieve an understanding that gives meaning to what, at first glance, was little more than observations, repertoires and descriptions.

This new understanding is of the order of the Whole, and not of the part. Through it, our view of things has changed, or to put it better: it is our "eyes" which are no longer the same. And by this same token, these same things that we previously looked at, however, are no longer "the same". They have not ceased to be "particular", "multiple", "different", certainly. But we approach them now with expectations (more or less precise), and questions (more or less pressing). "THE method" has remained the same: precision above all! - and the "questions", we are careful not to ask them "to the Whole", to the great Silent One, but rather to the part, always eager to answer all the questions that we want to ask it – the stupid ones as well as the intelligent, the superficial as well as the deep, she is not close to that! And when we have filled our bags and our notebooks with the answers of the many, it is time again to return to the One, to the All. For a new pair of spare eyes.

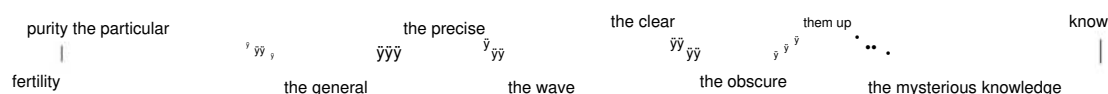
This seems to me to be the back-and-forth movement between desire and necessity, between the flesh of knowledge and the framework of knowledge, between the Beloved, and the things she inhabits and which lead us to Her. .

In this movement, "purity" belongs to the method, to the chosen path. It manifests itself through a clear vision of the constituents of a Whole, their own particularities and their mutual differences. It lies in the precision of this vision. Fertility comes from elsewhere. It resides neither in the method, nor even in the things we question, but in the One who inhabits them and who answers us through them.

To put it another way: the pure is a means to lead us towards the fertile, towards the fertility specific to the Beloved, the Mother. When the pure ceases to be a means, to become its own end, thought finds itself cut off from the source and dries up, for lack of renewal. Although she may accumulate works and fill entire libraries, these are not the works of Love. They will perhaps speak of the glory of the boss, but they have no part in the fertility of the Mother.

12. Precision and generality – or the surface of things. (March 22)

Yesterday I began trying to identify the back and forth movement, in the thought of discovering the World, between “desire” or “the end”, embodied in the fertility of “the Mother”, and “necessity” or “the way”, embodied in the purity of the method, of the very mode of knowledge that “thought” represents. This movement seems to me to be evoked quite well by the “zig-zag diagram” which follows:



I have drawn the zig-zag diagram, in which there are seven couples (represented by seven arrows) connecting four yang qualities and four yin qualities, between the two separated couples

purity $\tilde{y}\tilde{y}$ fertility and knowledge $\tilde{y}\tilde{y}$ knowledge,

These two couples express a dynamic relationship common to the seven couples of the zig-zag, which can all be seen as representing one of the multiple aspects of the “dynamics of desire”: that where “knowledge” which catalogs and explains is the means and the path towards knowledge “in understanding”, and where “the purity” of the intellectual approach is a means and path towards the fruitfulness of an intuition of the Whole. This intuition plunges deep into the unconscious, and none of the formulations that it inspires in us to describe it and define it in the field of consciousness can fully capture or exhaust it...

The six yang terms that appear in the total diagram are on the same line (the top line, as it should be), and the same for the six yin terms (which form the bottom line). The yang terms of the zig-zag are

the particular, the vague, the obscure, the known (captured by “knowledge”),

they represent the pole of “knowledge”, and that of the “purity” which is specific to it - the pole specific to thought as a mode of knowledge. The yin terms are

the general, the vague, the obscure, the mysterious,

they represent the pole of “knowledge” which apprehends and understands, and the fertility specific to the intuitive knowledge of things.

In the sequence of the four yang qualities, we perceive a progression towards an apprehension that is more and more clear, more and more better circumscribed, until the final stage of what is well and truly known, "seized", "appropriated" in some way. comes out through thought. It is a progression in the direction of yang.

In the sequence of the four yin terms, we also feel a progression in the opposite direction, from "the general", distant and almost devoid of any particular tonality, which begins to reveal a substance when it is perceived as "the vague", this substance becoming closer and more carnal in "the obscure", to finally reveal itself in its true nature, as what is closest and most intimate, in "the mysterious".

What attracts us by the force of desire is indeed "the mysterious", revealing itself to us by this familiar perception of "vague", of "darkness": and at the same time, by a strange paradox, we never rest until we probe it and survey it in all directions, to transform it into something "known", or to put it better, to transform the diffuse knowledge of the mysterious, into something expressed and known.

This paradox seems to me peculiar to thought. This dynamic could give the impression that the human mind has a horror of the vague, the obscure, even of the mystery, and that what spontaneously attracts it would be everything that presents itself in a precise and clear form, as an object of 'impeccable knowledge! And this is surely what the consensus of the group, depository of knowledge, transmitted from generation to generation, would tell us. But the reality is quite different. The thinking mind is yang, and what attracts it is its complementary yin, it is mystery. It is in its confrontation with what is obscure, or to say, in its ever-renewed espousals with the mysterious, that the spirit itself is renewed and draws fruitfulness. If in his mode of expression and communication, he chooses precision, and not vagueness, and if he constantly seeks the clear and not the obscure, it is because he knows instinctively (or of ancestral experience, which has become like second nature...) that this is his surest means of penetrating the unknown and of apprehending the mysterious and constantly consummating the nuptials with the beloved.

Among the four yin qualities from earlier, the only one which acts as an "official" concubine of "the spirit", it is the least yin of all, it is "generality". Certainly no one will find fault with it (at least it was not until recently, in more lenient times...), that a researcher (or even, a "scientist") "searches for the general". It is also the only one of these four yin qualities, which is not generally felt as "opposite", or even antagonistic, to each of the

four yang counterparts, with the exception at most of “the particular”. Also the tacit ideal that scientific thought seems to seek, it seems to me to reside in a close alliance of generality and precision, an ideal expressed by the couple

the precise ㄩ ㄩ the general

shown in the diagram earlier. This couple does not seem to me to appear, traditionally, as a pair of opposites, as is the case for neighboring couples

the precise ㄩ ㄩ the vague or the particular ㄩ ㄩ the general,

and for the four other couples who follow in our zig-zag. I suspect that even today, there will be few scientists who would think of rejecting this couple as expressing the ideal harmony sought in the scientific approach.

For my part, if someone had thought to ask me the question, there is no doubt that I would be recognized in this ideal, without thinking twice. Even today I would not deny him. But, like any ideal, this one only touches the pure surface of things. It is not in the ideal, but in the rich reality and in its mother, the dream, that the depth and the fecundity which is his reside.

13. Harmony – or the marriage of order and mystery. (March 23) Last

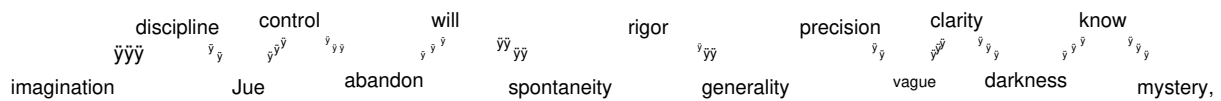
night, following the associations of yin-yang couples sparked by reflection, I saw our pretty zig-zag of yesterday continue further on the left, so as to enter into types of qualities which are not specific only to thought. In the initial diagram, I replaced the terms “the general” (therefore “substantivized” adjectives) with the corresponding nouns “generalities”, etc. This then leads to extending it as follows (*):

(*) (March 25) Before extending the zig-zag of the day before, I had been led to replace the term yang “the particular” (coupling with “the general” or “generality”, and making almost double -use with its neighbor on the right “precision”) by the term “rigor”, to form the new couple

rigor - generality,

coming to perfect his neighbor (or “partner”) on the right

precision - generality.



where the top line is still made up of yang terms, the bottom line of yin terms. I have represented by “bold” arrows the couples which appear in my directory (given below) (*), which are considered “legitimate couples”. These are the ones that seem particularly well “matched” to me, the others looking a bit like “cohabiting couples”.

(It is probably useless to specify that I do not imagine that this distinction has a strictly objective character!)

This time there are seven yang qualities, ranging from “discipline” to “knowledge”, via “control”, “will”, “rigor” (the latter here taking the place of the term “the particular” in the zig-zag from yesterday). The eight yin qualities that make them face each other “in staggered” range from “imagination” to “mystery”, via “play”, “abandonment”, “spontaneity”... We can see “the imagination” as being the direct, intuitive approach to the mysterious, or also, as the path of access from the conscious to the unconscious. The discipline of rigorous thought constitutes the indirect path, which is also the path specific to thought, the “yang” path par excellence.

Each of the new seven couples that I have just introduced appears to me to be rich in meaning, and deserves our attention, to listen to what it has to tell us. But I'm not going to do it here, since already yesterday, I didn't take the leisure to question separately the first seven couples who had just appeared, contenting myself with noting down what they suggested to me in their

It is indeed the first of these two couples that seems the best “matched” to me. If it is true that we often lose in precision what we gain in generality and vice versa, such a situation never arises for the “rigor – generality” couple. Rigor tends, it is true, to move from the particular to the general. But it is exercised, without losing anything of its own nature, both in the context of the “general”, or the “fuzzy”, as well as in that of the “particular” and perfect precision. I speak on the subject of rigor, for the first time in the section “Rigour et rigueur” (ReS I n° 26), then in the note (already cited in the previous note by b. de p.)

“Desire and rigor” (n° 121).

(*) The reflection aroused by the presentation of this “directory” (and the famous “Christmas tree diagram”) led me to expand it en route, by including “couplings” which had initially escaped to my attention (like “rigor - generality”, mentioned in the previous note by b. de p.), or which I had tended to neglect or dismiss, in favor of others who “judgmentally” seemed better matched. New couples that have been introduced during this discussion will be indicated by parentheses. These in no way intend to suggest that these pairs are less important or “significant” than the others, but above all to serve as benchmarks to mark the progression of reflection.

together. Today, I would rather like to return to the reflection from the day before yesterday, which remained unresolved. I had written two groups of five couples each, with five yin "attractor terms" in the first, and as many yang attractor terms in the other, declaring that the attraction towards the first had the quality of desire, and that that towards the latter, the yang attractors, represented the necessity inherent in thought, the path towards the satisfaction of desire. We therefore "interrogated" the first "pack" of couples, the "yin attractor pack", under this particular bias. Today I would like to turn to the second, the "yang attractor package", which I recall here for the record:

the simple - the complex the
abstract - the concrete (or the real) the
precise - the vague
order - chaos
structure - substance.

Among the five yang attractors which appear in this package, there are two which seem to me to play a primordial role

the simple (or simplicity), and the order.

Abstraction, precision, and the search for the structure of things (the substance of which so stubbornly eludes thought), all three appear to me to be subordinate qualities, which the mind does not really seek for their own sake - even. Rather, they are the means specific to thought, to enable it to apprehend "the simple" in the disconcerting complexity of things and events, and to discern or bring out the anticipated order, behind the apparent chaos (in the eyes of the thought which scrutinizes, at least) that the raw perception of reality reveals to us.

"Simplicity" and "order" are closely linked qualities, to the point that one would be tempted to declare them identical. However, the order that we detect in things can itself be more or less "simple", or more or less "complex", depending on the degree of depth into which it takes us into our apprehension of the harmony of things. . But however subtle and complex the order perceived and expressed by thought may be, it always embodies, by its very nature, a "simplicity" itself more or less "simple" (even "simplistic"), or more or less

less delicate or “complex”. And conversely, recognizing the simple in the complex means having an order appear there that had hitherto escaped us. And when we manage to “simplify” a conception of things (or also, a reasoning which supports it), it is also more or less bringing us closer to the order inherent in the things themselves, whereas “order” that we knew there was only a sketch, more or less crude. Perfect simplicity is that which perfectly expresses and embraces the hidden order inherent in the things themselves.

Also, we could say that “simplicity” and “order” are like the soul and the body of one and the same quality. This is in no way a creation of the mind or thought, or a quality which is inherent to them and which they would project elsewhere. It inhabits the things of the Universe, both the “concrete” and the “abstract”, independently of the “spirit” or “thought” which strives to apprehend them. And we clearly feel that this quality, however “yang” it may be in its relation to the substantial complexity of these same things, or to the feeling of chaos that this arouses in us when the hidden order ceases to be perceived - that this quality is intimately linked to this “yin” quality par excellence, evoked by words like “totality” (or “the Whole”), “unity” (in the multiple), or “cause” (common, linking the multiplicity of effects by a deep relationship). After all, every order establishes a unity, expressed by this very order, which both governs and connects the multiplicity of things it concerns. At the same time, it also appears to us as the common cause of the multiplicity of relationships that this order establishes, and of the multiple consequences that these imply. And conversely, it is also true that the unity which resides in the deep kinship of things, a unity apparent through and beyond their sometimes disconcerting diversity, is none other than precisely this hidden “simplicity” to which we relate. let us hang up (even if it was still only anticipated), to find our way in the confusing complexity of appearances and phenomena.

Thus, without having expected it in the least, it seems to appear, in the course of reflection, a deep identity between two types of qualities which, the day before yesterday, appeared to me as almost opposed, or at least, as being the very different essence: on the one hand the Unity, the mystery, with deep carnal resonances embodied by the Mother and by the fertility which is hers; and on the other hand the Order, and the simplicity it embodies, which first appeared to me as representing the proper path of thought, in our incessant quest for the Mother. But here the Mother and the Order appear in turn as two inseparable aspects of the same essential quality inherent in things, as representing, one

side of shadow, and the other the side of light.

If I look for a name for this quality of life, manifested by the fertility specific to the One, the Mother, and by the pure simplicity of the Order, it comes to me: harmony. It is the quality among all which is neither yin nor yang “tonality”, but which expresses precisely the perfect balance between yin and yang, between the Mother, in her inexhaustible fecundity, and the Order, expression of immutable laws.

This double aspect of the harmony inherent in things, that of mystery, source of fertility, and that of order, expression of the law which governs the Cosmos, seems to me present in things from all eternity, independently of the presence of the human spirit, striving to comprehend this harmony. And thought is certainly not the only path open to the mind, nor especially the most direct, to this end. It's the “yang path”, that's for sure – and until today, it's the one I've mainly followed. It is the path which approaches the harmony of things from the side of midday, that of order: by what can be (however little) expressed and grasped by language, even if it means reshaping it from day to day. up to date, as needed.

In this approach, the order anticipated in things, and the means to express it precisely in terms of structures (even if it means climbing as high as necessary in the scale of successive abstractions...) - these are them that at all times we feel “within reach”. And without ever being told to us, they are the ones who, obscurely, act as a way, not to say, as a tool.

Certainly, the worker is attached to the tool, which is for him like another himself. This However, it is not the tool that is invested with his desire, but rather the substance that he works with.

And it is not in this slope that we climb under the midday sun that the desire is invested which constantly pulls us forward, towards the heights. If it pulls us like this, it is towards the other anticipated slope, the shadowy slope, and towards the deep valley from which it comes and where it ends...

14. The temperamental and the characteristic – or the Cosmic Accordion.

(March 24) It's been a while since the Dreamer has had fun, almost every night, teasing me about my work on yin and yang. Of course, I am so caught up in this work that I hardly take the time to question the meaning of any of his pranks, which apparently only provokes him more. This night I was treated, among other things, to a very discreet flash (while half asleep), of an accordion. Visibly,

this represents my endless zig-zag of yin and yang of yesterday and the day before yesterday, which I had found a way to extend a little further to the left, already in bed and before falling asleep. . The accordion was also named “harmonica” for the occasion, in such a peremptory way that it took me a moment to convince myself that there was definitely something wrong, that that was not what the accordion was called. bellows instrument that I had just seen. It was only then that I understood the joke - this bellows represented nothing less than the harmony “of order and mystery” which had just been discussed!

Less happy than Pythagoras in the past, I did not have the privilege of hearing this harmony, only of seeing it, in the form of a most down-to-earth symbol. The Dreamer definitely has no regard for high poetic dress! And the breath suggested by this bellows is surely none other than the breath of life which animates all things and which connects the side of light to the side of shadow. I know this breath well. It is neither a poetic fiction nor a metaphor, but a tangible, omnipresent reality, even if I sometimes forget it a little. The idea would certainly not have occurred to me to create a symbolic representation of it, through some familiar object - only the Dreamer is capable of such ingenuous irreverence! And again, he put some skill into it - he decided against showing Madame Lamère and Monsieur Lordre in the flash, one holding one end of the accordion-harmonica and the other holding the other, and pulling and pushing with a perfect whole, thus giving a convincing image (“ein treffendes Bild”) of the perfect harmony reigning between the two supposed spouses animating and governing the Universe.

There was also a more elaborate dream, where I go down a sloping street while typing on my machine (I can't say how). I type yin-yang couples there, which can be seen appearing in very distinct characters, across the street, about fifteen steps away. To tell the truth, they were more, I believe, couples each made up of a vaguely derogatory or disapproving term, followed by an empowering term which seemed to straighten things out. Each time I hit it on my invisible machine with the intimate satisfaction of the musician, who would strike a well-felt chord to “resolve” in beauty a dissonance, brought there expressly for the needs of the cause. There have been several couples following each other like this, like a series of provocative dissonances, each resolved by the harmony it calls for (here we are again, in harmony!). But when I woke up (just after the dream ended, if I remember correctly), I only managed to remember one. It's the couple (I'll give it to you

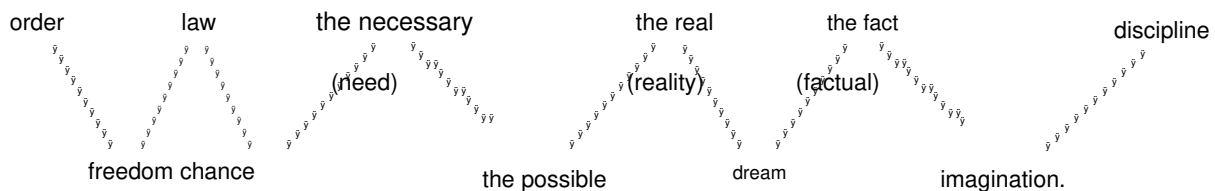
which!) :

the character - the characteristic.

I laughed, yes. This laughter (which has just come back to me just now) rose straight from invisible depths, without me knowing exactly "why I was laughing" - a laugh from the belly, and not from the head. Or, if I "knew" it (and perhaps still "know" it now), I would still not have and would not be able to explain it to myself in clear words. Never mind ! What is clear in any case is that it is none other than my modest self who is being targeted by this teasing...

The dream continues, and it would have been well worth writing it down in black and white for my information, just to understand it a little more, if not "explain it to myself". But I gave it up, so eager was I to return to these new, unexpected notes on the yin and yang in exploratory thought - notes that I never stop (famous chorus!) being "finishing".

Here I first want to come back to my accordion-harmonica. It becomes so long that there is no longer any question of including it on a single double line. This time, I saw the bellows extend (again to the left, towards the "past") not by seven notches, but by no less than nine. Here I limit myself to indicating the rabiote part, relating to the left section "discipline - imagination" of the bellows of our harmonic zig-zag. So here is this thing:



There is a small change of perspective in passing from the yang term on the right, "discipline", which ended the yang side in yesterday's zig-zag, to "the fact", because we are moving here from a quality or tone "inner", concerning the mind or thought, to an "outer" quality or "optics", concerning the world observed and reflected in the scrutinizing mind. It is to make "the joint" between these two perspectives that I added, above this term "the fact", the essentially equivalent term (except for the optics) "factuality", which I had to be invented for the occasion (it is not in "Little Robert", sorry!). This term makes sense

designate the dispositions or attitude of one who sticks strictly to the facts, which also has a certain connotation of "objectivity". There is a common German word for this thing, "Sachlichkeit" (*). For a similar reason, I thought it would be good to add one under the other "the necessary" (which corresponds to "the possible") and "necessity" (which corresponds to "chance"), and to even for "the real" and "reality".

I will not linger here trying to describe in any way the rich cloud of associations surrounding this host of new terms, both "yang" and "yin" which has just appeared, and the couples they form between them. . To do this well, we would need volumes (just as for the terms and couples already appear in yesterday's portion of the cosmic accordion)! I will only note here one particularly strong association. Yesterday I noted that "the imagination" represented "the path of access from the conscious to the unconscious" (and thereby also, "the direct, intuitive approach towards "the mysterious", towards the unknown.. .). The following yin term, "the dream", precisely designates the privileged realm of the imagination, freed in the dream from the constraints (yang and superyang) which keep it prisoner in the waking state. And it is also the dream which is the messenger par excellence of the "possible" (which, as luck would have it, is the following yin term). Therefore, as long as we know how to listen to him and trust him, he is also the secret source of inspiration and vision which fuels our creator, to transform this "possible" into a tangible and living reality.

But my point now is again that of the mathematician, in love with structure - and this elongating harmonica (sorry, accordion) represents a fascinating structure, indeed.

Already the day before yesterday, I seem to remember, when the seven-notch zig-zag had just lengthened by another seven notches, I told myself that to do well, it would have to close in on itself- even - then I didn't think about it again then. To tell the truth, this zig-zag appeared a little on the sidelines, like a sort of curiosity, a bit like the famous Christmas tree digraph, but at the same time very suggestive, my goodness! As for the part of the bellows that I just connected to it earlier, its last notch

order ỹỹ freedom,

"hanging" the term "order" on the bot that remained free having the name (as if by chance) "liberated", he

(*) This word is formed with "Sache", meaning the object, or thing; therefore "Sachlichkeit" designates the attitude which sticks "to objects", that is to say to the facts. I note that the German word for "done" ("Tatsache") is formed with the same root "Sache".

only came to me this morning in passing, while going about my business. I was very happy - so here is hanging on the accordion this famous "order", which had appeared only yesterday as an important character - the most important of the day, to put it better, with lady "mystery" with which he had just married before my eyes (*).

It didn't click right away, though. It must be said that I was in a hurry to go to the market, and had not had enough sleep. It was only now, just before going back to the machine, when I took the trouble for the first time to scribble black and white all the new piece of bellows which was connected to that of yesterday, that "the miracle" happened. There was, at the far left of the long bellows, the remaining free term that I had just added mentally that very morning, "order". And on the far right, which I had had time to forget a little in the meantime, the term remaining free, yin this time, was "the mystery". Now, it was precisely (again by chance) these two terms, or rather the important characters they represent, that I had seen pairing up only yesterday, without having noticed it then. less expected! And so, without me expecting it, the cosmic accordion-harmonica closes! And there is no longer any need to connect superimposed double lines. To represent it, this time it is no longer a question of lines, but of cycles: two concentric circles, one yang, exterior, the other yin, interior. (However, it was not circular, the accordion of this teasing Dreamer.)

I did not wait, to quickly trace my circles, freehand, and transfer the yang terms to the outer circle, the yin terms to the inside, this corresponding in a staggered pattern to make a diagram suggesting the sun , or the corolla of a flower with its

(*) This remarkable coupling

order - mystery

did not appear in my famous repertoire, it only appeared to me through yesterday's reflection. The couple

order - freedom,

although very common in political jargon, had also escaped me until now, and only appeared this very morning. The reason for this is probably that I was inhibited by the fact that the presumptive "order" spouse was already "taken", by the well-known couple (forming a push-button association)

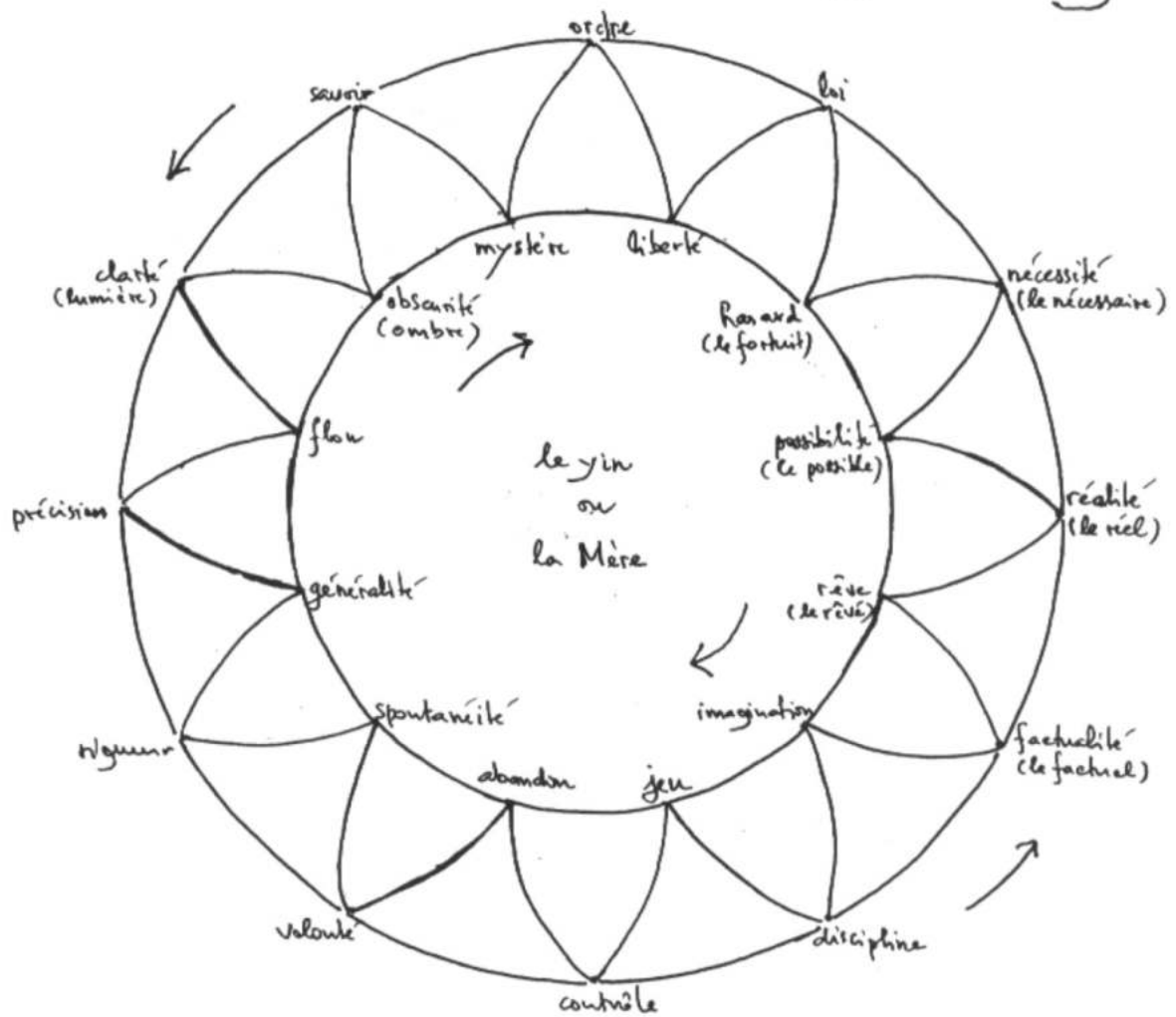
order - chaos.

This is what the famous "cultural conditioning" is!

petals (a sun, why not). And they are twelve petals, corresponding to twelve yin terms and twelve yang terms, as many as signs of the zodiac, I swear I didn't do it on purpose! It must be characteristic (of the cosmic harmonium, to give it a name), but not characteristic (for my modest person, this time emulating Kepler the Esotericist!).

That was not at all what I intended to talk about, however, as I sat down at my work table. But it's not me who is in charge - here I have to deliver the seventh wonder straight away, with a beautiful, clean outline. We will call it, as desired, the comic accordion, or the cosmic harmonica, or (to make everyone agree) the cosmic harmonium.

le yin



ou l'esprit
(alias E r o s)

15. Discovery or "invention"? – or the scribe and "the Other".

I admit that I remain a little stunned by my discovery from earlier. I had time to make a nice line drawing, with compass, ruler and everything (it's been ages since they served me), then to have a meal, and after that, for an hour or two, to contemplate this outline and to penetrate it a little (*). I have difficulty "placing" it, I admit. Is it a more or less absurd "invention" of my mind, or is it really a discovery of something that really "exists", independently of my modest person?

When I do maths, I have never asked myself such a question - I know well, without ever having to tell myself, that I never invent anything, but that I discover things that exist - things which existed at all times. Even the good Lord never had to create them, and if it turns out, He perhaps didn't know them any more than I did, before I brought them to light. And this time, with my extension accordion which suddenly, by this kind of miracle which is very familiar to me, metamorphoses into something completely different - blossoming into a sort of "cosmic flower" with twelve petals, inscribing itself petal by petal in a twelve-zodiac yin and yang - this time again I had this irrefutable feeling of the one who "discovers". From the "subjective" point of view of lived experience, in any case, no difference.

And yet I remain perplexed. Someone other than me, who by chance would have thought to play with the kind of yin-yang couples that I was examining (in this case, those mainly concerning thought, and the knowledge of things that 'she gives us), to assemble them in a zig-zag and with the vague idea that it should close well - would he not have arrived at one or more "cosmic flowers" of his own, all different, with eleven petals or at fifteen or whatever?

It is true that by adding all these couples one after the other, at no time did I have the impression that I was going there "on the fly"; that instead of "hanging" another term on the end that remained free, I could just as easily have added another one. If "arbitrary" there was, it was only at the level of the "vagueness" inherent in all spoken language, and which means that we can hesitate between quasi-synonymous expressions, like "necessity" and "the necessary", which (as I wrote earlier) essentially designate the same "thing", but seen from slightly different angles.

(*) There was a power cut, which forced me, willingly or unwillingly, to take a break from writing the notes.

The least I can say then is that the diagram I ended up with says something something about how my mind perceives the Universe, and the play of yin and yang in the qualities of things in the Universe, and in the mind that probes them. As to to what extent, and in what sense, this strange structure that I have just updated has an “objective” meaning, independent of my person and the mind that inhabits it, I feel quite incapable of understanding it. answer “by infused science”. Undoubtedly, the answer to such a question can hardly come than experience, just like (for example) the similar question one could ask about the subdivision of the zodiacal band in the celestial sphere into the twelve zodiacal regions, with the particular meaning attached to each of these regions; and the “inventor” of this subdivision, and the divinatory art which is based on it, was perhaps also founded on ask such questions. (It is true that my aim is in no way to identify the principles of a divinatory art, a type of thing absolutely not in my ropes...)

In my perplexity, however, I see two tangible and positive intuitions emerging. One is that the diagram to which I have just arrived, through the qualities of perfect balance, of harmony that I feel manifesting in it, must be at the very least a wonderful guiding thread for further exploration in the direction I have just come to begin: that of the modalities of perception and action of “thought”, or even, of those spirit”. Moreover, I now feel how this (relatively crude) task of “release structures” (in the mathematical sense of the term), in the set of “terms” (or “spouses”) which appear in my (entirely provisional) repertoire of yin-yang couples - to what extent this task obliges me along the way to affirm my perception of the meaning of each of these couples, and of the meaning of the qualities or entities designated by its two terms; and by there, also to refine my intuition of the play of yin and yang “in general”.

This brings me to the second “positive intuition” that emerges from the work of the week elapsed, culminating today in the unexpected appearance of the “cosmic harmonium”. It is the quasi-conviction that there must exist, within this heterogeneous set of “terms” and “couples”, a great richness of structure (where I take “structure” here in the mathematical sense of the term), of the kind that I have seen emerge so far. First there was the famous “Christmas tree” diagram, the appearance of which was certainly nothing extraordinary, at least in the eyes of the mathematician - not to mention that the choice of both “groups” (of couples) forming the vertices of this diagram, that of “affinity links” between groups, represented by the edges of the diagram, was to a large extent subject to

arbitrary. However, this did not prevent the drawing of this diagram, seen as a first draft of an overall “map” for the “doors to the Universe”, from revealing itself to be a work very useful, in the sense precisely specified in the previous paragraph.

The first truly remarkable mathematical object resulting from reflection was the subdiagram that I called “Thought”, represented by six vertices, including any two are linked together, thereby suggesting the existence (for the moment still hypothetical) of an icosahedral structure (left) associated with these six vertices (*). Finally, the second remarkable structure (by its richness in symmetries, but also by the connotations extra-mathematics associated with the number twelve) has just appeared today, with this famous “cosmic flower” or “double-zodiac”. However, I have only just begun to hardly a job - or to put it better, I was simply prepared to accompany with a commentary of a few pages a directory of yin-yang couples and a certain diagram of affinity groups formed by these couples. I wasn't thinking of looking for others diagrams than my innocent Christmas tree, and even less clever icosahedral or bi-zodiacal structures! That they have nevertheless appeared is a sign that there must be here an ignored mine, waiting to be brought to light.

The initial mathematical structure, from which it is a question of deducing “derived” structures that are interesting from both a mathematical and philosophical point of view (by the meaning associated with the “vertices”, “arrows” and “links” which come into play), seems to me to be the following. “The basic set” on which we work is the set T of “terms” which intervene in a certain repertoire of yin-yang couples, which will have been drawn up as exhaustive as possible. (This will be, for example, my repertoire given below, which has also been revised and expanded several times over the last few days...). On this basic set, I discern at first sight two distinct structures. One is a “directed graph” structure, described by the yin-yang couples of the repertoire, interpreted as “couples” (a, b) (in the mathematical sense of the term) of (distinct) elements of T second the yin term of . the first of which designated the term yang, the the couple. Graphically, representing the “vertices” of the graph by points (in a plane, or in space - be careful, there will be a good number of them, in the three or four hundred!), the “couples” will be represented by “edges” joining the two vertices corresponding, with in addition, on this edge, an “orientation” or a “direction of travel” on

(*) See on this subject the section “Stories of icosahedrons and Christmas trees”, n° 10.

the edge, "going from yang to yin" (**).

As I pointed out from the beginning of this reflection, it seems that once the set T of "terms" has been chosen, representing the cosmic qualities and entities that we propose to study, the structure of the oriented graph corresponding is determined without ambiguity. That is to say, for two terms a and b in T of a "philosophical" nature, visibly extra-mathematical) if these two terms "form a couple", we can decide (by intuition or reflection and if yes, which of the two terms plays the role yang (or, must appear as the "origin" of the oriented edge joining the two vertices representative of a and b).

The second structure that has intervened so far, superimposed on the first, is the affinity structure. In current mathematical language, it is still a graph structure (but not directed this time), consisting of the prescription, among the set of all possible "pairs" of elements of T (ie of parts of T reduced to two elements a, b), of a certain subset, formed of the pairs $\{a, b\} = \{b, a\}$ for which a and b are considered to be "neighbors", or as "presenting affinities". This notion of affinity is also of a "philosophical" nature, but this time much less clearly defined. There will hardly be a reader who will not detect, without a hint of hesitation, an "affinity" between "dream" and "imagination", or between "dream" and "the possible". On the other hand, the question if "dream" and "imagination", or between "dream" and "the possible". On the other hand, the question whether "dream" is close to "chance", or "game", or even "freedom" or "abandonment", will surely have very different answers from one person to another, and even with the same person, according to the arrangements in which this question will be addressed. In fact, what a more or less practiced philosophical intuition reveals to us is not so much information of the "all or nothing" type ("a and b are neighbors", or: "they have nothing to do") but rather of the "more or less" type (like: "a and b are very close", or "fairly close", or "vaguely related"...). It is this "vague" inseparable, it seems, from the notion of affinity (in the context that interests us), which is also the cause of the arbitrariness that I pointed out from the beginning, for the training "groups" of couples and "affinities" between such groups, thereby forming the (unoriented) diagram of "doors to the Universe", aka "Christmas tree diagram".

(**) But we will pay attention that, contrary to what our magnificent bi-zodiac might suggest, there is not a subdivision of all the "summits" or "terms" into two disjoint packages, one " yang" and the other "yin". The same term can be yang in its relation to another, and yin in its relation to yet another. On this subject, see the section "Creative ambiguity (1): pairs, strings and rounds" (n° 3).

We are therefore in a somewhat lopsided situation, where the mathematician used to working with well-defined structures, would find himself confronted with a sort of “fuzzy structure”, where he is supposed to take advantage (we still don't really know what purposes...), among other structures, of a so-called graph structure (called “affinity structure”), without it being too sure at any time whether a given pair of vertices really represents “an edge” (ie if its two terms are considered “neighboring”), or not!

But such a situation will not seem so strange to the mathematician (let's say) who would be experienced in the task of building theories, where the very notions with which we will be led to work still remain in the limbo of the uncreated. It is then a matter of cutting them into pieces precisely, one by one and patiently, to be able to give meaning to some shapeless cloud of intuitions, which may all seem evanescent and impalpable, but of which we nevertheless feel, with “evidence ” so to speak carnal and beyond all doubt, a tangible texture and a warm substance.

It is the unborn then who whispers to us at each moment, as the work of birth progresses, what should be this portion of form which is about to be born, and by what end to take it for the to see emerge from nothingness and be. The very groping of the hand which grasps the still unborn thing to bring it to light is neither indecision nor wandering, but the taking of knowledge from which all hesitation, all perplexity is absent.

And these things that we write as if someone else wrote by our hand, and that we believe we learn by writing them - somewhere in us, in unknown depths, they were already known long before our hand wrote them, and were waiting for the intense attention of the listening scribe, who was willing to record them.

16. The Flower and its movement – or: the further I move away, the closer I come.

(March 25) A few more comments on our cosmic flower, before leaving it to continue the interrupted thread of reflection.

The twelve yang terms, placed on the outer circle, also form the points of the twelve petals of the corolla: these join two by two, at the twelve insertion points on the inner circle, representing the twelve yin terms of the “harmonium”.

Each petal, looked at separately, also presents itself as a sort of “mount” with an ogival shape, whose yang summit forms a couple with each of the two yin terms, representing

ted by the lowest points (*) of both sides of Mt. These points at the same time mark the bottom of the “valleys”, or “ravines”, formed between our mountain and the two adjacent mountains which adjoin it on either side. I gave up marking on each of the two sides the direction “yang towards yin”, therefore the downward direction, towards the interior of the central disk surrounded by the corolla of the cosmic flower.

Among the two sides, we can distinguish the left side (or “yin side”) and the right side (or “yang side”). It would seem that it is this last side which, each time, corresponds to the cosmic couple appearing as a “legitimate couple” or “main couple” (*), while the one described by the left side or yin would appear as a “cohabiting couple”. Yesterday it seemed that there were two exceptions among the twelve cases, for the two adjacent mounts (or petals) “law” and “necessity”. Among the four sides of these, those which were in my repertoire were in fact

law - freedom, necessity - chance,

which correspond to the yin slopes, and not

law - chance, necessity - possibility,

which correspond to the yang sides (those now presumed to be “legitimate”). But I suspect that this anomaly is only apparent, and that the choices in question in my repertoire are accidental. On the conditionally cultural side, political jargon would lead us to associate “freedom” with “order” as well as with “law” - and in the first case, the term “law” then remains “available” (psychologically speaking, for the afflicted of the monogamous cultural reflex) to mate with “chance”, so as to force the hand (by the same monogamous reflex) to mate “necessity” with “chance”, suggested by the justly famous aphorism (of Dem-ocritus, if I remember correctly): “everything is the daughter of necessity and chance” (**). However, the meaning of this aphorism would hardly have been changed, if a more far-sighted Democritus had used

(*) It is understood here that the direction “down” is that towards the center of the yin circle of the Flower.

(*) This would be consistent with the common association between “legitimacy” or “ought” on the one hand, and “right side” or “right direction” on the other.

(**) It is a strange thing that in this aphorism, “chance” and “necessity” have genders that are in opposite directions of the distribution of yin-yang roles. The same thing happens in German (“der zufall”, “die Notwendigkeit”). I don't know what it is in Greek, the original language of this aphorism.

the term “law” rather than “necessity”. (It is true that this variant, more in line with a “scientific” understanding of reality, takes away from the aphorism part of its lapidary force...)

As for deciding rigorously, in each of the two cases presented here as doubtful (and for that matter, for the ten others as well), whether there is indeed reason to distinguish, among the two sides, the one of the two which would correspond to a “legitimate” couple (the other being “cohabitant”), and (if so) if it is indeed yang as expected and not yin, this would require diving each time in a more in-depth way in the cloud of meaning of one and the other couple, than I have done so far and than it is my intention to do so here.

In the reflection of three days ago (*), where I began (without knowing it yet) the description of the cosmic accordion with a first third of the bellows, I noted, when we go from the left towards the right on one and the other of the two lines yang or yin, a double progression: we went towards “more and more yang” on one, and towards “more and more yin” on the other. If we stick to the graphic convention that the arrows represent the direction of passage from yang to yin (or also “from more yang to less yang”, or “from less yin to more yin”), this double progression would therefore be indicated, on the upper yang list, by an arrow going from right to left, and on the lower yin line, by an arrow going in the opposite direction. This is the heuristic (or “ontological”) meaning of the two directions of travel that I indicated on the graphic representation of the cosmic flower: a direction of travel “clockwise” for the circle exterior yang, and a direction of travel in the opposite direction, on the interior yin circle. A quick examination gave me the impression that the phenomenon recalled just now, observed for a third of the cosmic flower, is in fact valid for the entire circumference, and this as well on the circle of yang (outer), than on the circle of yin (inner). In other words, it would seem that the entities represented by two adjacent yang “vertices” are in a mutual relationship where one plays a yang role in relation to the other which plays a yin role (relative to it), that is to say that they are in a yin-yang “pair” relationship (in the sense of the reflection from a week ago “Creative ambiguity (1) - or pairs, strings and circles”, PU n° 3) (**), and that moreover the

(*) See “Precision and generality - or the surface of things”, n° 12.

(**) We will be careful not to confuse these “pairs” with pairs of complementary qualities or entities, which I call “cosmic couples”. Obviously, none of the twenty-four pairs in question here is such a couple.

yang term is that which is upstream (in relation to the direction of rotation which we have just specified on the yang circle). And it seems that the same thing is happening for the yin entities represented by the "valley points" on the yin circle, this time using the opposite direction of rotation indicated for said circle. Here again, verify in detail the validity of this impression, by examining with the care they deserve each of the twenty-four pairs of adjacent summits or adjacent valley points, and (if necessary) put highlighting the exceptions to the rule, would require more in-depth work than that which I now feel encouraged to invest in philosophical research of a general nature.

The few preceding comments, inspired by the cosmic flower, seem to me to clearly highlight all the delicacy of the play of yin and yang, the one that I had already tried to evoke, on more crude examples, throughout the beginning of this reflection. Thus, we see that qualities or entities perceived (in the context represented by the Flower) as being yang, can nevertheless enter into a "pair" relationship where one appears as a yin term in relation to the other - and vice versa. among the qualities and entities perceived as yin. Here we find the differentiation between such "pairs", and what we called "couples" (called "cosmic"). But in addition, we saw the appearance in the Flower of an additional differentiation, between so-called (a little "rapid", perhaps) "legitimate" couples (which we could also call "main", to be less facetious). ...), and those called "co-cubins" or "cohabitation" (or "secondary", to be more serious...). Assume without any residue of doubt that there are notions there which have nothing "scholastic", which do not represent a simple game and conventions of the mind, but which they reflect well (as I have the impression) realities that are so to speak "tangible" (for the mind), namely realities belonging to the world of qualities, modes of perception and modes of action of the human mind - this would require developing and refining an intuition of this world, through patient, rigorous, in-depth work. The Flower could play the role of both inspiration and focal point for such work. Perhaps I will do it one day, or I will do it again if someone else has already done it before I get started.

It would seem that the Flower also highlights another phenomenon that we had already touched on in passing. I will express it here by saying that the artificial "hierarchy" instituted by society, that of "more and more yang", when we look for its reflection (or rather, an archetype) in a "hierarchy" similar to level of cosmic entities, reveals itself as being an "order" which is in no way "linear"; an order therefore for which, in all

sequence of terms succeeding one another in the hierarchical order, there would be a “largest” term (qualified as “leader”, or “God”, or “ideal”), and another which would be the “smallest ” or the “lowest” (qualified as “slave”, or “demon”, or “calamity”). But it is an order on the contrary which tends to take cyclical form: by progressing towards “more and more yang”, we end up falling back on terms “less yang” than the initial term, to finally return to this one (*).

The interior of the “yin circle” forms the “fleshy” part of the flower, its “fertile” part, that also formed of the seeds of the “sun-flower” or sunflower. It is also the hidden, invisible, deep part, for those who approach from the outside. She represents “yin” or “the Mother”. The twelve qualities or entities inscribed at the twelve “valley points” located on the circle of yin, are all typical attributes or manifestations.

The part of the space outside the flower, that is to say the outside of the “circle of yang”, represents “the yang” or “spirit” (human), in its impulse of knowledge to the meeting the Mother. The twelve “summit points” on the yang circle represent as many modes of perception and action.

The dynamic of the quest suggested by the cosmic flower is that of the exterior reaching out to meet the interior, of the surface seeking depth, of light seeking the night and melting into it without ever exhausting it.

And it is also Eros the child, who is constantly reborn from the Mother and rushes out to meet the World, the Unlimited, to find Her again. Thus in the morning light is born from the mists and the night, only to return there in the evening and disappear there. Thus the order is separated from the original Chaos, to return to Chaos when a Universe dies - before being reborn from its ashes at the Dawn which follows the Evening. Thus the order in gestation in the obscure matrix of the mysterious, reveals itself to the mind eager to know, and this knowledge immediately becomes its sail, carrying it forward for a new plunge into shadow and mystery. And the invisible order which governs true freedom, once recognized and assumed by the mind, becomes a means of greater freedom, governed by an order even more hidden and more refined.

(*) The idea of the cycle to express “the round of yin and yang” appears in these notes first at the end of the section “Creative ambiguity (1): pairs, strings and rounds” (n° 3), then at the end of “Creative ambiguity (4): the extremes touch” (n° 6). This idea is associated with a striking aspect of the traditional Chinese concept of the “five elements”. Between these elements is in fact observed a relationship of “domination” which is also in no way “linear”, but cyclical.

Yes, it is two movements and not just one that I detect, two inseparable movements, in opposite directions to each other. The first that immediately came to my attention is that of return - the movement of the spirit scanning the Universe, that of Eros returning to the Mother. But in this return, which irresistibly evokes the image of a death, there is also a birth, there is a renewal (*). After each dive into the Unknown, the mind emerges different. He forgot, and he learned - and "to forget" and "to learn", in the full sense of the term, is also to die and to be born, it is also to change.

Rather than talking about two movements, it seems to me that it would be a closer look at reality than talking about one and the same movement. We perceive it by its two tones, one grave and the other clear, closely intertwined: that of a "return" or a "death", in the dark lap of things yet to be born - and that also (which I had tended to forget at first) of a "departure" or a "birth", in the clear light of day.

It may seem difficult, even impossible, to represent with a geometric image a "movement" which would take place in two opposite directions at the same time - a starting direction which moves away from the center, and a return which brings back to it. The very idea of such a move might seem at odds with sound logic. However, this is not the case. We can imagine the cosmic flower as a figure immersed, not in the plane, but in a sphere, with the two circles of yang and yin still represented by concentric circles. The most beautiful figure, the richest in symmetries, will be obtained by tracing the yin and yang circles on either side and equidistant from the same equator (**). This done, if we take the "starting" movement in a direction perpendicular to the yin circle, this movement would continue along the "meridians" coming from the "yin pole" (or north pole), moving away from this pole. We then see

(*) These terms "death", "birth", "renewal", each loaded with a very strong meaning, can (with reason) seem excessive, when the "work" of thought, and the "quest" of the mind, find themselves locked in the field of an exclusively intellectual research. This is what takes place in particular in "scientific" research, in the common sense of the term. The "renewal" in question here only affects the most peripheral layers of the psyche, and may very well be accompanied by deep spiritual sclerosis.

It is this phenomenon of sclerosis that Pythagoras must have observed, and which he endeavored without success to prevent through the institution of the Pythagorean brotherhood.

(**) While we're at it, we can take as the angular distance between the circle of yin and that of yang, that of the bordering circles of the zodiac band on the celestial sphere. If we also take, for the outline of the edges of the "petals" of the cosmic flower, arcs of large circles (so as to achieve the minimum distance between valley points and vertices), the spherical figure is thus fixed without any ambiguity ("up to congruence").

that by continuing this movement all along such a meridian, starting to move away from the yin cap, we end up returning to it (after crossing the yang cap). This is therefore a movement where “while moving away (from the yin pole), we get closer” – but “from the other side”.

We find again, in a different light, the image from earlier of a “cy-clique” movement, as a symbol of the dynamic relationship between yin and yang. This time, instead of a movement along the two “parallels” represented by the yin and yang circles, it is a movement along each of the “meridians”. The first expresses the “hierarchical” progression from “less yang to more yang” or from “more yin to less yin” (*). The second is a symbol of the common dynamic which links birth and death, desire and satisfaction. It is also the one that we feel at work in the work of “thought that explores” (**), as a tool of the mind, to discover the mystery of things.

17. Chaos and freedom – or the terrible sisters.

(March 26) After the unforeseen (and welcome) interlude of the Cosmic Flower, I am nevertheless eager to resume the reflection where I left it three days ago (***), to carry it out finally towards its (provisional) end. It was then a matter of looking a little more closely at the “attractor package

(*) (April 2) To tell the truth, it is in the form “yang towards yin” that this movement came to our attention. It is therefore a downward movement, in the opposite direction of “hierarchical progression”. It is also the movement “towards the root”, the one that I had already recognized as spontaneously mine, in my work as a mathematician: “Instinctively and by nature, my path was that of water, which always tends to descend, the path towards this trunk, towards these roots...” (See the note “The nine months and the five minutes”,
p. 124, notably page 560.) (**)

(April 2) It would have been more judicious here to write “thought which explores and thought which builds”, so as to suggest by this very name this double movement -in-one discussed here. This return to the text made me recognize this movement, as also being the one that I had already mentioned, two months ago, in a different context and in a different light, at the end of the “Walk through a work”. See the two stages “Discovering the Mother” - or the two sides” and “The Child and the Mother” (p. 17, 18) and more particularly pages P 49 - P 54.

(***) It was in the section “Harmony - or the marriage of order and mystery”, p. 13.

yang", made up of the five couples

the simple - the complex

the abstract - the concrete (or the real)

the precise - the

vague order - chaos

structure - substance,

which were "pendant" to a "yin attractor package" (which I do not recall here). Both packages had been introduced the day before, in the section which took the name "Desire and Necessity - or the Way, and the End" (nǚ 11). It is these ten couples, and the types of qualities (some perceived as "yin", others as "yang") that they imply, which during the past five days served as a focus for the continued reflection (even if it might have seemed, with the interlude of the Flower, that they were a little forgotten). Among these twenty yin or yang qualities, only four are found in the Cosmic Flower (namely, generality, precision, vagueness, and order), which has twenty-four (*).

Among the five yang attractors which appear in the "package" recalled just now, we have already featured two

simplicity, order,

to which the other three appear as subordinates. Then we realized that the qualities they represent are, in truth, "like the soul and the body of one and the same quality". It is "the body" and not the soul, the most yang aspect of this common quality, that I then felt encouraged to put forward, "the order", to see it immediately marry its spouse. predestined yin, "the mystery".

Seeing these marriages consummated, I did not let myself be too troubled by the fact

(*) This means that sixteen of these twenty "qualities" do not appear directly in the Flower. When we review all the qualities that appear in the six groups of couples revolving around "thought", we find many more that are not included in the Cosmic Flower.

It is by no means excluded that many of them still group together in one or more remarkable diagrams. We could group them, with the Flower itself, under the name of "mandalas", or ordering principles. Compare with the comments from the day before yesterday in the "Discovery or invention? - or the scribe and the Other" (nǚ 15).

that in the couple

order - chaos

by which I had just introduced "order" into our famous "package", it appears as the husband of chaos, and in no way of mystery. I only paid attention to the thing afterwards, as the marriage of order and mystery seemed to flow naturally! I thought about it afterwards - how it was that the "chaos" seemed to have disappeared from the reflection. There is no trace of it in particular in the Cosmic Flower. Order appears there as the central yang term, as the highest "summit", the one around which all the others seem to be grouped, with the "ravines" or "valley points" which correspond to them. And this master summit mates with "mystery" on the yin side, with "freedom" on the yang side, while pretending to superbly ignore "chaos".

This made me notice first of all that among the forty different qualities and entities which appear either in the Cosmic Flower, or in one or the other of our two "attractor packages", there are two exactly who stand out from all the others as a sort of "anti-attractor", not to say "repellant". These are precisely two of the three wives of the order (resolutely polygamous...) whom we have met so far, namely the ladies

chaos, freedom

- therefore excluding lady mystery, who, on the other hand, exerts an attraction of exceptional force.

It would seem that the very idea of chaos arouses in the human mind an almost insurmountable repugnance. We feel it, "viscerally", as an irreducible thing opposed to order, the object of our incessant quest, just as we feel "destruction" as opposed to "creation", or "evil" opposed to "good". Feeling the complementary nature of order and chaos, and the reality of their marriage, comes up against powerful conditionings, which I can see both in myself and in others. For many people, the horror of chaos must be combined with the fear and horror of death, felt as the negation of life, as its powerful and implacable enemy.

The relationship of the mind to "freedom", and more particularly, to its own freedom, appears more ambiguous to me. It would rather be in the nature of an instinctive distrust, that

that of a real repulsion, comparable to "the horror of chaos" (*). I have had ample opportunity to observe this distrust or this unease, particularly in myself, in my work as a mathematician. Perhaps this propensity is even stronger in me than in other mathematicians or scientists. But generally speaking, I believe that the mind, in search of the hidden order in things, likes to feel constantly held (not to say, constrained) by the feeling of a necessity, which would be "dictated" at each moment by the very things he questions (*), when it is not by the uses and habits of thought bequeathed by tradition, and by the peremptory rules of a secure method; whereas he would rather be reluctant to move freely in the unlimited field of the "possible", when the imagination is given free rein and all control coming from the conscious is abolished (**).

I suspect that this repugnance is not inherent to the very nature of the mind, that it is rather part of the "weight" with which it finds itself weighed down by powerful conditioning, the product of a repression that we find in all human societies. This "distrust" of one's own freedom, and this craving for "control" in the thought process

(*) However, "the horror of freedom" (of one's freedom, I mean) does exist, and more than once I have been struck by perceiving it in others...

(*) In writing these words, I realized that this "image" of "dictation" has come back many times under my pen, when I have had to talk about my work. The idea would not have occurred to me then to try to avoid "repeating" myself, as this term "dictation" seems to me far from being a simple image or metaphor, but describes an everyday reality in the work, and which always imposes itself with the same force, almost every time I am led to talk about the work of discovery. (April 2) In the more limited field of

scientific thought, I believe I detect this same "instinctive distrust" of the mind, with regard to the very idea of freedom, in its almost tyrannical predilection to inscribe the observable reality in rigorous mathematical "models" of a "deterministic" nature, in which we even end up believing hard. This propensity sometimes takes on grotesque, even obsessive, dimensions in fields such as molecular biology, where the fashionable "dogma" is that the appearance and flourishing of life on earth has occurred and continues. "by the merest chance" ! (As Lewis Mumford wrote, this "chance" of the biomolecularists would represent a "miracle" infinitely more incredible than the one they strive to eliminate...). In the field of social or socio-psychological sciences, this obsession with evacuation takes delusional forms, with the mania for tests and "measurement" of qualities (such as intelligence) which are clearly not intended for be expressed by decimals. (**) (April 2) I return to this "unlimited field of the "possible"", from which the very structure of "logical thinking" (and of language which is good) seem to want to cut us off

without return, in the reflection of three days ago "THE language of images - or the way back" (n° 24).

and discovery (whether this control comes from an interior center, or external to the person), appear to me as inseparable from our "alienation through distrust" of the very sources of creativity and creation in us. These sources are deeply buried in the unconscious, and (I believe) forever hidden from conscious view (*). And the distrust that lives in us, when it is not a little (which will never say its name...), is also, almost always, confined to the unconscious, in less deep layers it is true. (**), accessible to a curious and penetrating gaze.

In recent years, I perceive with increasing acuteness this heaviness of the spirit within me. Seeing it disappear now appears to me to be the decisive step before me, on the path to my maturation - a door heavily locked and lined with iron, which would suddenly open wide...And it is also to find the lightness that the dream reveals to us, knowing how to seize in flight the iridescent bubbles that the Dreamer never tires of raising from inaccessible depths and launching us casually, and while laughing under his breath...

As for the "chaos" in all this, again it has disappeared! However, I do not believe that these stubborn disappearances are due to the horror that my mind feels for him. (After all, a reflection on chaos does not expose me to chaos, but would rather be a way of distancing myself from it!) I have the impression rather that "chaos" represents a superficial reality of things only, not to say a simple appearance, which disappears under the effect of a more penetrating look. Thus, behind the chaos of random shocks of delirious particles at the heart of a conflagration (and where the good Lord himself, if it turns out, would be hard pressed to predict or prescribe the course of any of the participating molecules), the attentive mind nevertheless discerns the action of immutable laws, both physical and mathematical, governing the evolution of the system as a whole. And behind the chaos of desires, feelings and ideas fighting in the psyche, we can nevertheless discern an order: both the order of causes and effects, as well as that which resides in the presence of

(*) (April 2) Hidden from direct view, at least. I don't mean to say that we can't know anything about it. Thus, the molecular structure of matter is hidden from direct perception by sight or touch, but can be detected and even described with precision, through its directly perceptible manifestations. It is true that we are very far from even the slightest precise or delicate knowledge of the deep creative layers of the psyche. I even suspect that such knowledge is forever inaccessible to discursive thinking, to "surface" thinking – that the surface of being can never know its own depths.

(**) See also on this subject the note "The two knowledges - or the fear of knowing" (n° 144).

deep creative forces, and in the option open to free will to use them, or not.

18. The vague and the precise – or the landing net and the Sea.

To finish (courage!), I still have to look a little more closely at the three “yang attractors” that I had described as “subordinate” (to “simplicity”, and to “order” including this one this is the soul...). It's about the qualities

abstraction, precision, structure.

They appear to me to be closely related. I have already had occasion to point out in passing that precision was the quality par excellence, characterizing the approach of so-called “scientific” thought, and the (open) secret of its spectacular successes for more than four centuries. (*). This quality appears to me to be very different in essence from simplicity.

Depending on the case, the simplicity inherent in a situation or context will be understood most finely using the precise language of practiced thought, or by the language (“blurry” in appearance) of the inspired poet, the visionary, or the mystical. The deliberate aim of scientific thought, and at the same time undoubtedly its main limitation, is to limit itself precisely to the aspects of things accessible to precision (**). And it is in this field, deliberately restricted, that precision also reveals itself as the means par excellence to access “the simple”, that is to say also, to apprehend and to define the order, hiding behind the confusing chaos of appearances.

This “precision” means is implemented by the dynamic of “back and forth”, of “double-movement-in-one”, which is now familiar to us (***). At the beginning, thought is confronted with “the vague” (aka “the vague”), with the unknown (or more or less known) substance that needs to be known (or known better). The “work” of gaining knowledge then manifests itself as a “decantation” of the “precisely formulable”, laboriously separating itself from the formless, and immediately grasped (as if by agile hands...) by thought,

(*) See the section “Desire and necessity” - or the way, and the end” (nǚ 11), page PU 31. It would be appropriate here to remember that these “spectacular successes” were accompanied by serious setbacks, which are becoming more and more apparent...

(**) From there to declaring that there are no other important aspects than these, there is only one step, happily taken by the majority!

(***) This movement appears first in the section “Desire and necessity - or the way, and the end” (nǚ 11), then in “The Flower and its movement - or: the more I move away, the closer I come” (nǚ 16).

by means of language. And it transforms and recreates itself at the same time, like new fingers pushing us, under the unrestrained push of needs.

At the end of this work, we are now in possession of baggage, or rather new baggage - a conceptual "tool kit", coming to the rescue of the panoply of those of which (perhaps) we provisions before. Thus "our means" have diversified, refined, re-tempered, by this dive into "the vague" (*). And these new tools are in turn the means of a new dive into "the vague", into this same sea of mists again, whose nearest folds have only just become lighted and dissipated, for us reveal others even more vast, and just as "vague" and just as obscure...

An obscure presentiment, confirmed by millennial experience, tells us that this sea of waves and mists is bottomless and without shores, and that our ingenious landing nets and our panoplies of probing tools, that we never tire of imagining and to assemble, are all and always "just a bit too short". It is just as much the case today as it was at the dawn of the human spirit, stammering its first words. Today, as a million years ago, it is the limited, the finite, striving to apprehend the infinite, the unlimited - without ever exhausting it and without ever reaching the bottom or the shore.. .

Such is the immemorial movement back and forth between "the vague" and "the precise", between "the unknown" and "the known", between "the mystery" (even, the chaos of total ignorance, the one who still ignores herself) and the clean lines of "order". And now here's the really crazy thing: in the vast literature which, for centuries and millennia, is supposed to account for the adventure of the mind in the discovery of things, nothing is apparent from this movement, except is at most between the lines. Always (**) we are given "the precise", as if it had come out in one leap and been handed over from head to foot from the brain of the "Savant" (like from a trapdoor, or from the "output" of a infallible megacomputer...), to fit neatly into the boxes-paragraphs, paragraphs and chapters specially provided for this purpose, and constitute in canonical order the learned memoirs, notes and communications where we have every leisure to read them.

(*) This term "the vague" often tends to take on pejorative connotations - this is the name given to the misunderstood, to the mysterious, thought equipped with the patented blinders of precision...

(**) This "always" should be taken with a tiny grain of salt. There are certainly exceptions, but they are extremely rare. The only one I know is Kepler, a decidedly different figure in more than one way. He has no complexes about talking about himself, including his gropings, his illusions, his errors, his wanderings...

As for what inspires us, what inspires us over the hours, days and years, what we have to do in each moment, and that too (perhaps) which has made us go in circles for years, or for a whole life, even for generations - the vague, the unknown, the mystery, and the shoreless sea of the elusive, insistent, insidious dream - of all this, every trace seems eradicated, as if by a prudish Censor, sullen and implacable.

It's one that I'm starting to recognize, under its thousand and one faces! And more than once, throughout the pages of *Récoltes et Semailles*, I saw his worried and tenacious shadow looming. From the first pages already, after "the child" and after "the good Lord" who opened the dance, the first character I had to talk about was him. It's in the section "The Child and the Good Lord" (aka "Eros and the Mother") and "Error and Discovery". So here I am, unexpectedly back where I started!

19. Order and structure – or the spirit of precision.

But I come back to the two "yang attractors" who still remain behind,

abstraction et structure.

The first (or "the abstract") forms a couple with "the concrete", and the second is the spouse in the couple

structure - substance.

The bride, "the substance", exerts a powerful fascination on the mind, incapable of ever "grasping" it directly, by means of thought alone, however precise it may be. So he strives to apprehend it through ever tighter meshes of finer and finer structures, "sticking" to the substance and marrying it more and more closely. We would like to say that the "order" inherent in the substance of a thing (whether it be "concrete", "palpable", or "abstract", living in a world of concepts), would tend to manifest there in the form of "structure". But perhaps it would be more accurate to say that it is through this order that it can be grasped by the mind and expressed, communicated and transmitted by means of language. This is, visibly, the "spirit of precision", or "the spirit of geometry" that Pascal spoke of - the one who makes precision are $\tilde{y}$ and its $\tilde{y}$ to apprehend the unknown and the mysterious, through the order manifesting in them. We could say that the search for "structure" is the mode

privileged by the “spirit of precision” (and very particularly, by so-called “scientific” thought) to apprehend “order”, and through it, the very substance of things.

So if we were looking for some mini-cosmic Flower, to express the yin-yang dynamic of the qualities apprehended by the “spirit of precision” (rather than that specific to “spirit” or to “thought” tout court), the “master term” yang, the one around which all the other qualities would be grouped, would undoubtedly be “structure”. He would convolve there with “substance” on the yin side (the side of the heart...), in place of “mystery”, and with “movement” (*) on the yang side (the side of reason), instead of “freedom”. And already it's tingling in my hands to continue the mini-Flower, “movement” convolving with “form”, promoted as a yang term adjoining “structure” (instead of “law” adjoining “order”).

But I'll cut it short anyway...

I now believe I see quite clearly the relationships between the qualities of order, structure and precision. It only remains for me to examine the last yang attractor,

the abstract (or abstraction),

in its relationship to the other four in particular. I have already had the opportunity, moreover, to look at it somewhat, in the two consecutive sections “The quest for unity” and “Generality and abstraction - or the price to pay” (n°s 8, 9). But it was very clear then that I had only just begun the theme opened by this rather strange thing, in truth, which is “abstraction”. And it was above all the desire to delve further into this thing, which led me to release from my scribbles, then to “throw on the table”, these two famous “packets of attractors”, of which I am here finishing up a very first lap.

(*) In the couple “movement - rest” (associated with “action - inaction”), “movement” is perceived as a yang quality. Here we take “movement” in a somewhat different sense, as meaning not the very fact of being in motion (instead of being at rest), but rather the “quality of movement” (rapid or slow, circular, rectilinear etc) or even its precise conformation, such as it could be expressed by “the equations” of movement. (In German there are two different expressions for the two things, “Schwung” and “Bewegung”. Movement in the second sense seems to me to couple with “form”, to make the couple

form - movement,

where this time he plays the yin role. The zig-zag that begins here could continue, perhaps, with “form - substance”...)

20. The abstract and the concept (1): birth of thought.

(March 27) So here I am returning to the theme of abstraction, started today exactly a week ago. I had left it unresolved ever since, without ever really forgetting it.

In this reflection from a week ago, "Generality and abstraction - or the price to pay", I noted that the relationship of the mind to abstraction is most often fraught with ambiguity. This clearly distinguishes this thing from the four other "yang attractors" (which were introduced the next day, in the wake of "abstraction"). It is a given that we would have difficulty doing without it, this misfortune - even to the point that the mind, launched in pursuit of the elusive flesh of things like Ahab in pursuit of the White whale, passes from one level of abstraction to the next and the next again (like so many violas that he would hoist one after the other to capture the forces of desire...), without seeming just to notice it! But the "cold" mind often seems weighed down by an almost insurmountable repugnance to leave a familiar floor of the Abstraction building, where it had created a cozy nest, and see itself called to go up again. 'a floor or two or even three, where he will find larger windows and a transformed view, which he would often have difficulty recognizing. "Simplicity" agreed (because nothing is more tiring and less funny than ingesting "complex", always a little "complicated" around the edges...), and "generality" again agreed, from moment that "it doesn't cost more" and that often even simplifies things, by pruning out redundancy - but for abstraction, it is against his will that he will resolve to go up another notch. The additional abstraction is "the price" that we often only pay with reluctance, after having trampled on the spot for a long time or gone around in circles, to finally get out of a dead end or an impossible mess. - and even !

In most people's minds, there is a button-pushing, almost visceral assimilation of "abstraction" with "complication". Remarkably, even mathematicians, these so-called masters or specialists in abstraction, are no exception. Above all, I see a tacit rationalization of this reluctance to "change floors" (and thereby, ever so slightly, Universes...). At a very superficial and hasty glance, this assimilation may seem justified. However, it consists of a very gross confusion, which seems to me to deserve to be brought to light.

In the process of the mind to understand the world, abstraction has been the means, not to "complicating" what would be simple to grasp directly, but rather to arrive at apprehend the simple in what appears irremediably complex, by releasing "the co-

mun", "the essential", through the countless avatars of the "different" and the "accidental". It has been like this, since the first groping step, in the mists of time, with the invention of language. It is surely a banality, but one that we tend to forget, that thought is inseparable from the language which expresses it and gives it form (*), and that language is already an abstraction. To think is to express through language, and who says "language", says "abstraction". Creating language is nothing more, nothing less than "abstracting". All language is a vehicle of abstraction. Of an abstraction that "climbs" more or less "high", created one day, and then used. And to the extent that thought is not limited to moving within the field of a routine, to living on acquired knowledge, but where it is creative, the work of thought and its progression in the knowledge of the Universe are inseparable. of the creative renewal of the language which gives substance to this work. Such renewal is, each time, a new act of abstraction.

The first step of the human mind in its adventure of knowledge, I see it in the appearance of the first word, with the understanding of its meaning: a "symbol", representing something "common" to an unlimited multiplicity of situations different, whether present, past or even in the limbo of the future... This is the first step in the adventure of the individual, as in that of the species - one has had place in early childhood, and the other is lost in the night of ages, both erased, undoubtedly forever, from conscious memory...

The first word of all is surely "mom" or "mother". This phoneme (or "sound-type" formed by the voice, recognizable as being "the same" when it is pronounced at different times and by different people...) becomes "word", i.e. symbol for an unlimited, an indeterminate, at the moment when it appears that it designates not a certain familiar person that we feel as the very foundation of our universe, but also and at the same time any other person who would play a similar role vis-à-vis it. towards someone other than us. This act of naming, with the understanding that what we name is not only the thing we touch or point to, but at the same time any other thing (even if we should never see or touch it) which shares with it such particular "qualities" that this name is now supposed to express and embody - this is the creative act par excellence at the level of the spirit, the archetypal act of the human spirit. Conceive these "particular qualities", name them, and "abstract" the general or "the abstract" from the particular or

(*) (April 16) I remembered afterwards that this is only true for a certain type of thinking - the only one, in our culture, who has the right to an official city... See the note by b. from p. (*) page PU 74.

of the “concrete” which constitutes the immediate and tangible given - these are three aspects of one and the same act, the original act of the mind in the discovery of things. And it is also the ever-renewed embrace of the spirit with the flesh of things...

Step by step, we end up making progress! The words come together in “sentences” or “propositions”, and these in “discourse”... Compared to the first steps, a proposition like “two plus one equals one plus two” represents a degree of prodigious abstraction. Let us imagine a child of a year or two, who is starting to speak and who knows the meaning of the words “one” and “two”, to whom we would pretend to serve her! Should we therefore reject it as “too abstract”, and qualify it as “complicated”? It is true that in almost all situations of everyday life, such a proposition has nothing to do, and to want to introduce it (for example, to make it ramble on to recalcitrant children) is to introduce a artificial complication. This does not prevent certain paths open to thought leading us to situations which we would be entirely incapable of apprehending, if we did not have a clear understanding of the proposition, much more general and much more abstract still: “for two numbers a and b , we $a + b = b + a$ ”. In such a domain of thought, this statement (which elsewhere seemed prodigiously abstract and “complicated”) will appear as simple, even obvious, and its degree of abstraction will not even be perceived, to such an extent the notions that it implies and its very content are part of very familiar things, and therefore, felt as “concrete” things. At the level of the skin-deep reactions of the scientist (let's say), who works in his lecture halls, “the concrete” is neither more nor less than what has become familiar to him (after having forgotten the effort that he had to ingest it willingly or unwillingly); and “the abstract” is everything that presents itself in the form of a forbidding unknown that one would be reluctant to get to know, given the price...

21. The abstract and the concept (2): the miracle of simplicity.

It is a fact that the more we climb the ladder of abstraction, the more the notions that we are led to handle become “complex”, in a sense everything that is tangible, and that it would be easy to specify in the various specific cases. This could give a semblance of justification to the “visceral assimilation” of earlier, that “the more abstract it is, the more complicated it is”, which leads to opposing abstraction and simplicity (*)! On this account,

(*) I heard such a sound very recently, from a college and friend, a distinguished algebraist and Germanist familiar with Goethe, Wilhelm and the Yi Ching. In comment to the “Walk through a

Archimedes' principle in hydrostatics would be "complicated", Kepler's laws governing the motion of the planets would be much more "complicated" still, and Newton's law and the differential equation that it embodies would be a thousand times more complicated than these Kepler laws that they claim to "explain". The absurdity here is obvious. However, it might be worth looking into it a little more closely.

We can see abstraction as the tool among all, shaped by thought to express, and thereby, to apprehend, the inherent order of things (*). In other words, it is the means above all to apprehend and to identify "the simple" in "the complex", the means specific to thought to access simplicity. The deeper we penetrate beneath the surface of things, the more difficult the order that manifests itself becomes to grasp and express. We could say that it becomes more "complex", without this meaning that it loses its essential quality of "simplicity", that it has become "complicated". It would perhaps be better to say that there are different "levels" of order, or simplicity, revealing in turn to the eye, as it penetrates further into the intimate structure of things. It would seem that at the level of the expression of order, by means of language tailor-made by thought, these "levels of depth" translate (in the opposite direction, so to speak) into levels of abstraction of increasingly "high".

No more than "thought", or "language", "abstraction" by itself is "simple", nor "complex" (or "complicated"). (Even though it is true that in abstraction there are these successive levels, corresponding to the levels of depth of thought probing things.) Its "reason for being", however, is to be tool to access the simple. Just as the purpose of a sharp knife is to cut - but we can also

work" that he had just read, my friend contested that the notion of diagram (which I evoke in the Promenade) was "simple" (of a "childish simplicity", I even went so far as to write). The proof is that he had never managed to understand the definition, it was so abstract!

This friend's personal threshold of tolerance for abstraction turns out to be relatively low. (This was also a serious handicap in his work as a mathematician, cut off as he remained from the rich source of inspiration and apprehension ("insight", "Einsicht") that is geometry (and in particular the so-called algebraic geometry, renewed by the fruitful point of view of the diagrams). Everything that is placed above this threshold is therefore classified as "complicated", without any other form of process...

(*) (April 3) It would undoubtedly be more accurate to say that it is language (and not abstraction) which is "the tool above all" of thought. "Abstraction" would rather appear as the very "soul" of the language, or as the guiding principle at work in the tool, both in its development and in its work. I return to this point in the next day's reflection: "The strata of language - or the skin and the embrace" (n° 22).

use it to crush a fly with the flat of the blade or handle...

It is certain that, through a certain conceptual "sophistication", using a relatively substantial mathematical background, Kepler's laws will have, for the majority of people (even educated) to whom one would like to explain them, a forbidding aspect "of abstraction", they will seem "complicated". This skin-deep feeling of a "complication", vis-à-vis something fundamentally entirely foreign, that we have no desire or reason to want to grasp or understand, is the expression of a incomprehension and ignorance, combined with disinterest (*). It tells us a little something about the person who expresses himself in this way, but tells us nothing about these laws and their degree of "simplicity" or "complication". We can only comment on this when we ourselves are somewhat curious about the things to which these laws are intended to apply (namely, the movements of the planets), and when we have some idea of the inextricable complexity of the observed phenomena, and efforts continued for two millennia to find cinematic "models", using circular movements, to account as best they could for this complexity. (Models that become more and more complicated as observations are refined, and all of which nevertheless "take off".) Finally, a minimum of familiarity with the very language which expresses these laws is necessary, so here with geometry of the ellipse.

It is only then that we are in a position to see what we could call the "miracle of simplicity" revealed. For those already familiar with the usual foundations of geometry, the necessary 'complement' of abstraction, or of language, is limited to a chapter of modest dimensions, on the geometry of the ellipse: enough to occupy a moderately gifted student for a week or two. In return for this, we can throw into a giant wastebasket, a whole library of absurd calculations, representing two thousand years of fruitless efforts to identify even slightly simple laws in the disconcerting confusion of the movements of the planets...

That's "abstraction as a tool". We go up a notch in the degree of abstraction,

(*) It is obvious that we cannot be interested in everything - which would be equivalent to being interested in nothing! Apart from a portion that is necessarily very limited, and in fact infinitesimal compared to the immensity of knowable things, we are each in such a state of incomprehension and ignorance, of disinterest. But rare, especially among "intellectuals", are those who know how to include this limitation coming from their person, in their view and their judgment on things of the spirit, and who will not be tempted to decree "complicated", "incomprehensible" or "lack of interest", things which escape their understanding or which are not likely to interest them.

we move (let's say) from the geometry of the beloved circle, a long-time friend, to that of the ellipse, a stranger to the uninviting, that's for sure. We will say, perhaps rightly, that it is "more complicated", or even, that "it's all very complicated!". And it's true that it will take ten whole pages, if not a hundred, to refine a new language a little, to put oneself at ease in short, to have the impression of knowing at least well what are we talking about. One hundred pages to develop a language, plus a handful of pithy statements in the new language - and here are ten thousand other absurd pages, good for the Recycle Bin (*)!

22. The abstract and the concept (3): the strata of language.

(March 28) Yesterday I looked at the "miracle of simplicity," in a particularly famous and exceptionally far-reaching case. When we do not let ourselves be dazzled by this historical dimension, we realize that it is the kind of miracle which - like the unexpected blossoming of a flower - occurs at every step in any work of discovery; more or less large, of course, or more or less small, that is not the question. The exhilaration of discovery is not the privilege of the giant, as a tyrannical tradition would have us believe, but rather that of the child...

The "means" of the miracle is often just one more step on the rising feeling of abstraction, with the different perspective, the new depth that this step brings us. And we thus have on the spot, yesterday, the enormous difference of order of magnitude, between "the means" for this step, and the "miracle of simplicity" - this miracle of an unsuspected order which, suddenly, emerges from confusion.

This well seen, we should not confuse "means" and "cause", and imagine that the miracle of creation would spring from the recipe: one more little turn of the crank in

(*) There is, in the evocation of this Basket with capital letters, no connotation of disdain. In writing this line, the most present association, surely recognizable to more than one intellectual worker, was that of my own wastebasket, and the intimate satisfaction that I feel in seeing one after another rush into it. Other these sheets and these bundles of sheets filled with scribbles of all kinds, and sometimes also austere processions of definitions-propositions more or less in shape, each of which has now become incarnations of the original chaos (of a thought which was still looking for himself) returning to the chaos (of the Basket); while at the same time piling up on my table, like order settling from chaos, the well-ordered pile of clean sheets of a beautiful, formal and (provisionally...) definitive writing!

(*)

abstraction! The "cause", or "the spark", or "the force", is not in any crank. She comes from somewhere else. It is in the curious and sacrilegious gaze of the child. They are in the Worker who works with our hands, and who at each moment tells us which crank to turn to tighten this rope and hoist this sail and another capable of fully capturing the forces of a wind that comes from elsewhere.

Kepler did not have to take the trouble (and the pleasure...) to bring out the notion of ellipse, and to develop a theory as far as he needed. This tool had been ready for a long time. It had been rusting in a corner for centuries, if not a millennium. On the other hand, it was well understood, for an even longer time, that the movements of celestial bodies could only be circular movements, or otherwise, movements which would be obtained by superposition or "composition" of such movements, like a tangle of invisible giant wheels, in a vast, terribly intertwined cosmic merry-go-round. Someone had said it one day, supported by peremptory metaphysical arguments, and since then everyone had learned it already as a child at school, or at least at university: look for the circles! And if we have to superimpose ten of them, with ten radii and ten angular velocities all different, go for ten! Kepler had learned it like everyone else, and inevitably he believed in it too, like everyone else. Even though the planets shouted the opposite at him, with numbers that would shatter his skull, he did his best to do as he was told: he covered his ears! Until the day he got tired of this crazy escalation. It was the day he knew how to forget what he had learned too well, and simply listen. Listen not to books, or masters, learned and peremptory, but

the humble voice of things.

It was, then, the crossing of one of these "invisible circles" of which I speak here and there in the "Promenade" (*), and one of the most tenacious of all surely, in the history of cosmology. The "cause" which means that for generations, even millennia, such a "circle" has the effect of an insurmountable wall; and which means that such and such, however, at such and such a moment, the franchise - this cause is not of a technical order. It is not expressible (let's say) in terms of objective "difficulty", in terms (for example) of a prohibitive "degree of abstraction", which would exceed the possibilities of the human brain up to a specific moment of the genetic evolution of our species. The "power of abstraction" of the human mind is no greater

(*) These "invisible circles" are discussed for the first time in the step "The importance of being alone" (ReS 0, Promenade, no. 2).

today than five thousand years ago (*), and that of Kepler was not greater than that of Hipparchus or Archimedes, nor even that of the first mathematician to come along.

And yet, these successive "boundary circles" which, from stage to stage, mark "the limits of a Universe" which is expanding as if in spite of us, and at the same time, the recalcitrant progressive advances of a kind of "collective thought" weighed down by immense inertia - these circles also seem to me to mark, roughly speaking, the successive "stages" or "echelons" in "abstraction". And this reluctance of the mind to leave a familiar floor, to "go up a notch" to the next one with still unusual appearances - it would seem that this is, ultimately, only one of the multiple aspects of this inertia almost insurmountable of the mind, by which it opposes any "change of the Universe". The human mind would be more inclined to deploy prodigies of technical virtuosity, to the point sometimes of seeming to defy the limits of what is humanly possible in brain power and endurance, rather than to take this "very small step", the step childish, through which we would pass as if playing at another level - the level which makes all this impressive display of force superfluous! In technical terms, this "very small case" often translates into nothing more, nothing less than a move to a "level of abstraction" just a bit higher.

(*) I am talking here about the "power of abstraction" as an individual capacity, which will manifest itself on more or less high "registers" or "levels" of abstraction, depending on the "needs" the mind finds itself in. confronted with. These depend above all, of course, on the cultural context. These needs were relatively modest for a Chaldean priest-astrologer-astronomer or for a Pythagoras, in comparison with those which the first student of mathematics finds himself confronted with today, ingesting as best he can his "program". However, it takes a good layer of rind to imagine that the said student, or even a particular star mathematician of the day, has a greater "power of abstraction" than those distant pioneers - those who have traced the first paths, where now there were the great boulevards and highways for all comers...

There must also exist a "power of abstraction" as a collective capacity, for a given environment and time. It is he from whom we can see a very noticeable evolution. Nowadays it is no longer measured in millennia or centuries, but we can see its clear progression in the space of a generation or two, particularly in the scientific community. These two notions of power of abstraction, one concerning the person and the other a group, appear to me to be linked in various ways, but to be of a very different nature. In my reflection, I especially highlighted the nature of the "brake" represented by the "power" or "threshold" of collective abstraction, for the free deployment of this same power in the person; and this by virtue of the psychological "principle of inertia", which means that the vast majority of people will tend to set a "personal threshold", by "aligning themselves" purely and simply with the "collective threshold".

Yesterday I described abstraction as a “tool” of thought. This is an expression which now seems somewhat improper to me. It would be more accurate to say that language is a tool of the mind. It is the same with thought, which appears indissolubly linked to language, as the soul is to the body. There is one and the same “tool”, of which the body would be the language, and the soul, the thought (*). As for abstraction, it is one of the qualities specific to

(*) (April 4) In writing this passage, I was thinking only of “thought” and “language” in the usual sense of the term - the “language of words”, which is also the language of what we could call “awake thinking”, or “logical thinking” (in the very broad sense of the term “logical”, it must be said...). I had completely forgotten that there exists a completely different “thought” and a completely different “language”! We can call it the language or the thought of “images” – without there even being a question of being able to distinguish here “thought” and “language” – even if it were like the “soul” and “the body” of the same process in the psyche. This is what we could call the original language, or the archetypal language. It is also the language par excellence of dreams. I only remembered this language, and this “archaic” type of thought, two days later, in the section “The language of images - or the way back” (n° 24).

It would be more appropriate to qualify “thought” in the usual sense (the only one which, in our culture, is recognized as such!) as “abstract thought”, than “logical thought” (even though it very rarely deserves this name). The main characteristic of the other language or language, the language without words or sentences, is that it seems entirely foreign to any process of abstraction. It is a long not “pre-logic” (because it is no less logical than the language of words, even if its logic is different - more fluid, and more reluctant to be surrounded by words...), but rather, “pre-abstract”. It is an entirely “concrete” language.

After the short reflection on this language of images, the thought came to me that this language, or this thought, is not the prerogative of our species alone; that we share it at least with animal species close to ours, or even, who knows, with all living beings without exception, animals or plants. This then reminded me of a philosophical fragment by Bernard Riemann, included in his complete work, which had quite taken aback and even impressed me, while reading it a few months ago. Riemann takes the term “thought” in a visibly even broader sense without associating it with a connotation of sensory “images” which would be the support of thought. It is therefore a thought which (it seemed to me) would be without any material or sensory “support”, and which would nevertheless be capable of unlimited evolution, in the sense of “knowledge”. more and more intimate of certain things probed by thought. He spoke in particular of the “thought of the (planet) Earth”, which would evolve in delicate symbiosis with that of the countless plants that it nourishes over the centuries and millennia, even millions and billions of years, and of which it would somehow totalize, in a global creative “knowledge”, the individual “knowledge”, decanted by the experience of myriads without number of existences.

Such thoughts, from the pen of one of the great mathematicians of modern times, and in the middle of the Enlightenment, seem strangely out of place. For me, they attest to the depth of a mind of a very rare and perhaps unique quality - one in which innovative and fertile scientific thought, giving free rein

this tool, and undoubtedly its master quality, the one which most profoundly expresses the very nature of the tool. To think is to abstract, or at least, it is to make use of the process of abstraction accomplished by our predecessors, and passed into the cultural heritage by means of language. This "language" is both "sound" language (or "spoken language"), as well as written language, and more generally, any set of sound, visual or other "symbols", having a language function (such as symbols in use in a scientific discipline such as mathematics).

By saying (without further clarification) that thought and language are by nature "abstract", we surely imply that they are so in relation to "concrete objects" in the strictest sense of the term: such objects that we see before us, or that we touch with our finger (in the literal sense of the term). This quality of abstraction (which we could call "absolute") is inherent to every word of language, without exception. This is also an essential condition, so that the word is indeed the cultural heritage of a group having continuity over time exceeding the duration of a human life, and not the property of a person or a group very small number of people, sharing among themselves a well-defined field of experience in space and time. This character of "absolute" abstraction is manifest even for basic words, the most elementary words of all, such as "mother", "father", "eat", "drink", "sun", "earth", "water", "fire", "rain", "wind", "house" etc. Between such words, forming the very basis of a language and our experience of things, and words like "family" or even "group", "people", "nation", "government", "politics", "philosophy", "abstraction", we feel a "distance", a difference in "degree of abstraction", comparable to that which exists between the "basic words" themselves, and the "concrete objects" to which they refer. apply.

To put it another way: the process of abstraction, which seems to be (from the point of view of the formation of concepts, carrying meaning) like the soul in the progressive formation of an increasingly complex, increasingly more "branched", able to grasp folds and

in the privileged fields of abstraction (mathematics and physics), is allied to a direct and penetrating intuition of more delicate and more essential things: things undoubtedly forever hidden from "thought - abstraction", or at least, to the big clogs of so-called "scientific" thought.

It is not the coexistence of two exceptional "gifts", generally considered "opposite", which seems to me to make the greatness of Riemann, this modest and unpretentious man. But it is to have kept the innocence of remaining himself, without denying one of his faculties, for the dubious "benefit" of another more prized by his contemporaries. And I have no doubt that it is this same innocence which also meant that without having sought it, he was also "great" in the profession which was his – that of a mathematician.

increasingly delicate nuances of things in the Universe - this process is cumulative. Once one of its steps has been accomplished, the new concept, embodied in a new word, ends up becoming part of familiar and “concrete” things, in the same way, or even more so, as those other things that we had previously qualified as really concrete.

Thus, the concept of number (integer, say), historically or structurally speaking, is visible from a high degree of abstraction (much higher than a word-concept like “two” or “three” for example, which represents a down-to-earth quality). This does not prevent the fact that there is not a single mathematician, surely, to whom this notion does not appear as extremely “concrete” – much more concrete let’s say than “fire” or “earth”, designating things with which he has more or less lost contact (assuming he ever had it).

At the level of abstraction where many mathematicians work, the number appears as concrete (and at the same time, as distant!), from the heights where it traces its twirls, as the food grader in his family home would be, to that who would talk about the French economy or the world cereal market.

All this illustrates that for all practical purposes and once realized that all thought and all language are “abstract” (in relation to “objects” in the current sense of the term), the notion of “abstraction” is above all a relative notion. A speech, a language, a thought, a theory are “more abstract” or “more concrete” than one (or another). When one and the other (or both) belong to domains not too distant from thought, such a relationship (of abstract “more” or “less”) is perceived, most often, by an intuition that is clear and unequivocal, and consistent from one “user” of language to another. This intuition most often remains vague, and perhaps difficult to pin down precisely. It nevertheless seems to me to be the reflection of a certain objective and tangible reality: that of a sort of stratification of language, by what we could call “levels of successive abstraction”.

(Where the word “language”, here, still designates indifferently everyday language, or the more or less specialized language of scientific or technical knowledge.)

Seeing the intuition of this stratification emerging from reflection yesterday, I was thinking above all of the more or less scientific language (for example, that of the mathematician), therefore in the service of what I called the “spirit of precision”. But it now appears to me that this process of refinement, by superposition of successive “strata”, is in no way limited to the somewhat “technical” language, specific to “precision”. I am convinced that this is a remarkable peculiarity, which must be observed in all language without exception.

- both in that which has been formed and transformed over the millennia, and in the language of the latest computer, released in the blink of an eye from the ingenious brains of a team of computer scientists. There is no doubt that linguists must have observed and described it for a long time, in one form or another. (*)

Moving from one degree of abstraction to the next is "going up" from one stratum to another "higher" one, it is an ascending approach, an approach with a very strong yang tone. And on the other hand, this approach is also our means for a deepening in our knowledge of things, therefore for a downward progression, for a "descent" into the yin. There is a double aspect of the same movement here. This is the movement, certainly, that appeared in the reflection already a week ago, in the section "Desire and necessity - or the way, and the end" (nǚ 11).

It is "the desire", the thirst to discover, which constantly pushes us to delve further into the juicy depths of things. As for "necessity", or "the way" for the satisfaction of desire (reborn from its ashes as soon as satisfied...), we now see that it consists above all, in concrete terms, of reinventing a language : a language more and more flexible, more and more delicate and loose, capable of probing ever more deeply, more intimately the inexhaustible charade of things. The movement of desire which plunges even deeper, and that of necessity which takes us up a notch, is one and the same creative movement. At the level of the visible and the tangible, the creative act is that of conceiving, of naming, of abstracting - of making appear and "mounting" a new stratum, on top of these old strata which are like the seat and the flesh of our exploring thought. Or to put it better, it is the act of forming a new skin, more delicate and even more sensitive, superimposed on

(*) There is an obvious mathematical paradigm, to express, or at least to "mimic" somewhat, the operation of passing from one "stratum" of language to the next stratum. It is the transition from a (finite) whole to all of its parts, or to a suitable subset of it. The initial set would represent all the "words" or "concepts" of a specific language, now appearing "concrete", "given", at a certain stage in the evolution of the language. The set of parts envisaged would represent the "new stratum" superimposed on the old ones, through the process of formation and addition of new notions, by "abstraction" from the old ones. Here, we therefore assimilate a "new notion" (or a new "concept") to a "part" i.e. to a "subset" of the set of all notions (expressed by the corresponding "words"). already admitted in the language. Thus, the notion "parent" is obtained by "totalization" of the two notions "mother", "father". The notion "person" is obtained (roughly!) by totalizing all previously known notions, designating more or less specific people, etc.

the one that had preceded her.

It might seem that this “new skin” came out of nowhere - or out of the magician's hat, abracadabra hopla - and here is the beautiful rabbit you didn't expect!

And that's how we always present things, after the fact. It certainly happened to me to proudly claim it about my own subject, that I would have “pulled out of nothing” this or that. But the reality is quite different.

Innovative abstraction, that which, as soon as it appears, becomes one with the mind like a new skin - it does not emerge from nothing, nor from a “hat”, however brilliant and well-stocked it may be. She is born at night or in the dark. And she is the humble fruit of our loving embrace with Her in whom we constantly desire - She who never tires of receiving us into Her.

23. Abstraction and meaning – or the miracle of communication.

(March 29) It might seem that for two days, I have been composing a vibrant “panegyric of abstraction”, as the “means above all” of thought for this and for that! It will perhaps not be useless to remind ourselves, with a quick glance, of the other side of the marvelous “abstraction” coin.

There is, in the first place, what we could call abstraction “for pleasure”, instead of abstraction “for necessity”. I have the impression that this kind of “abstraction game” is almost always, if not always, sterile. That it's a way of seeming to do or say things, and terribly learned things at that, while going in circles or skillfully drowning a fish. (A more or less abstract or more or less concrete fish, depending on the case.) This is a genre that we encounter as much in the discourse or in the publications of the scientist, as in those of the philosopher, and in the countless speeches that punctuate attitudes, actions, behaviors in everyday life. I have already had occasion to allude to it (*), making it clear that our reflection would focus on the thought which explores and which discovers, and not on that which struts, or which “covers”. Let us therefore emphasize here that today, as in the past, this type of thinking is by no means rare, even in the most upscale areas of what is considered “the world of thought and spirit”.

But even for one who does not seem to be in the mood to strut or drown

(*) See the section “Desire and necessity - or the way, and the end” (n° 11), in particular pages PU 31, 32.

fish, there is a "pitfall of abstraction". This is the danger of losing contact with "the concrete". "The concrete", here, designates the totality of objects, qualities, facts, experiences etc. which form the content and substance of the previous strata(s) in the levels of abstraction, and which alone give meaning to the words we use. It is therefore, in fact, the loss of contact with the meaning of what we state, which then becomes simple speech. This is also what we call "playing with words", or letting ourselves be caught "in the trap of words". This temptation is all the more natural because at each level of abstraction of language, rules of internal coherence appear on that "level", rules which most often remain tacit, but which the mind broken with abstraction, he quickly internalizes and masters. This makes it possible to deliver an impeccable speech, while having more or less completely lost contact with the "concrete" meaning of the terms used, and with a global meaning that the speech is supposed to convey. When we have the indiscretion to look for a meaning in it, we are often surprised to find that it has none, strictly speaking, or that it is so indigent, or so contradictory, that it leaves us speechless. If there is any meaning, it is an indirect meaning, teaching us something about the unconscious intentions at work in such speech (**).

When I speak here of "meaning", I realize that this is something of a delicate nature, too complex for it to be a question here of wanting to fully understand it. I would only like to emphasize that this is not an 'objective' quality of a 'text', or of a thing said. "Meaning" is inseparable from the person who writes or says, or (from another angle) from the person who reads or listens; and the meaning that one strives to express (if indeed it really has

(**) When we pay a little attention to what is said in a particular conversation or discussions (including "interesting" conversations, "enriching" etc.), we almost always see that it is hardly more than a series of commonplaces, nonsense and counter-meanings - that the speeches made on both sides are ("strictly speaking") meaningless. As for myself, I have lived most of my life, like everyone else, on a certain "baggage" of commonplaces, superimposed on a more or less well assimilated personal experience, and on a direct intuition of things, more or less fine or more or less superficial. If I have happened to "step out" of commonplaces with conviction, I think I can nevertheless say that I have rarely fallen into the discourse of someone who "pays for words", convinced of saying relevant and even profound things. However, I would make an exception for certain speeches (appearing around 1972 or 1973) linked to the "Guru syndrome" - I came across a few letters from my pen, which left me amazed! (See the section "The Guru-not-Guru - or the three-legged horse", Res I n° 45, and also the note "Yang plays the yin - or the role of Master", ReS III, n° 118.) It is hardly necessary to specify that in maths, on the other hand, I do not believe that it has ever happened to me to "talk to say nothing".

the intention to express a meaning, perceived by her at the moment of writing or speaking), and that apprehended by the other (if indeed he cares to apprehend, and is not simply content with projecting into what is read or heard a “meaning” already ready in advance...), are rarely fully concordant. Often they are completely askew in relation to each other. Not to mention that it is by no means exceptional, particularly in everyday life situations, that one or the other or both “work” (without even most often worrying about it). take note themselves, of course!) on more than one meaning at the same time, which can very well contradict each other. We therefore come close here, in passing, to complex so-called “communication” problems.

But limiting ourselves now to the one who formulates a thought, whether to himself or to others, we can say without doubt that this thought is not well established, that it is not a “thought that explores” or a “thought that constructs”, only when a meaning is indeed present at the moment of formulation; a meaning which is its soul and reason for being, and which we strive to evoke and embody, to “grasp”, even if only symbolically and always imperfectly, through words. It will only be so, surely, when this meaning, even if it may be ambiguous (and thereby reflect, perhaps, the ambiguity or ambivalence well and truly present in a reality that we strives to apprehend or understand), is however not “nonsense”, contradictory to itself or to things that we know perfectly elsewhere (*). This meaning, on the other hand, can be something of extreme richness and complexity, tacitly involving a more or less vast and more or less profound part of the whole experience lived in the life of the one who Express.

It is clear that in the case of a mathematician, let us say, expressing himself as such on a mathematical theme, this “cecu” will most often be relatively limited, restricted to an ex-

(*) (April 5) This “prerequisite”, which might at first glance seem self-evident, must nevertheless be taken with a small “grain of salt”. In research, trying to explain a vague intuition, we may very well be led to write things which, as soon as put in black and white, appear “idiotic” for one reason or another. “You still had to write it down first, to be able to convince yourself of it!” I speak on this subject at the beginning of *Récoltes et Semailles*, in the “Error and discovery” section (ReS I, n° 2). This timely illustrates the observation that I am led to make below, namely that the question of the existence of a “meaning”, in a text, escapes any “objective criterion”. (Which in no way means, however, that this question itself is “meaningless”, nor that it cannot often be answered without hesitation and with full knowledge of the facts).

The question whether there is “meaning” or not does not concern, strictly speaking, a text itself (which in this question only plays the role of a “witness text”), but the interior attitude of the one who expresses himself through him.

experience in the field of his mathematical work, therefore restricted (for the most part) to his only thought, where the part of emotion (let's say) will be minimal or even zero. The situation is totally different, however, for someone who would say something as simple as "I love my children", or "I like doing math", or "I love my country". Most often, of course, these are simple reflex formulas, which such or such circumstances sometimes seem to oblige us to pronounce, with unadulterated conviction certainly and without thinking twice! They then have little "meaning" strictly speaking, apart from the indirect (and indiscreet!) meaning to which I alluded earlier. But when a meaning is indeed there, one could almost say that there are as many different meanings, as there are different people and different moments of totally different nature, relating to levels of apprehension completely different from an always complex reality.

Such "hiatuses" from one "meaning" to another are even more striking, perhaps, in the case of what was a living saying, which subsequently became cultural baggage: "Love your neighbor as yourself" ; "Except you become like little children, you will not enter the Kingdom"; "Know thyself"...

The question whether such a text (let's say), which may seem abstract and "complicated" to some, is indeed the expression of a "simple" and living meaning, present at the time when this text was written and which makes up its soul ; or if, on the contrary, the author "does abstraction for pleasure", if he "listens to himself speaking", if he "pays himself with words" - this question does not find its ready-made answer in "objective criteria" that could be applied, like an all-purpose grid, or in whatever cultural consensus they may be. An exception could be made, at most, in the case of a text of a scientific or technical nature and in a long-term perspective, when the "personal" part, in the "experience" that the text is supposed to want to communicate, and in that of the reader to whom it is addressed, is relatively minimal - when "the reader" disappears into a more or less anonymous "public", and hence, more or less "objective". This is the case, therefore, where the apprehension of the meaning of the text only involves the reader's interest in a theme in which he is in no way involved in any personal way, and a certain competence, but not its maturity.

In other cases, when "sense" there is, it is only apprehended, or at least glimpsed or sensed ("erahnt"), by the one in whom the sense "enters into resonance" with some thing in itself. More precisely, it is then a whole rich cloud of associations (remaining unspoken) present at the time of writing the text and which alone gives it all its "meaning", which mys-

seriously brings out and animates, in the reader, another cloud of associations, this time linked to the reader's experience; a completely "different" cloud, certainly, and yet "close" to the one that gave rise to it, through an elusive "kinship" perhaps, but undeniable. A kinship attested by this "resonance" precisely, by this movement which is transmitted from one to the other, by this communication between one World and another.

This is yet another "miracle", and one which involves two beings – a miracle rarer than that of simplicity, which involves only one. As with any miracle, there is no point in pursuing it: the more you want to provoke it, the more it slips away! And that doesn't have to be my concern, whether this miracle happens or not, or any other miracle that comes to illuminate my path, like the smile of an unforeseen flower at the hazards of a long ascent.

My responsibility is not in the emergence of miracles, something which escapes me entirely. It is in what is up to me: to be truly present and true, in what I do - both when I express myself through a text or orally, as well as when I read or listen. . It is up to me then, when I express myself, to ensure that I am also listening to a "meaning" in me, seeking form through language. It is this "meaning", from then on, which assembles one by one the words which must express it.

"Abstract" or not, these are the good ones!

24. The language of images – or the way back. (March 30 and

April 5/6) Yesterday I examined the "word trap" - a trap, as is often the case, into which only those who are willing to fall into it fall. Like any tool, language has a function, a reason for being: it is to express a meaning. This is also the reason for "abstraction", this edge of a very precise instrument. That being said, we can use a reason to gesticulate with it - at the risk of remaining shaggy, and of getting scratched in the bargain. Nothing more natural!

This is undoubtedly the most common aspect of the "other side of the abstraction coin". It is also the most artificial, the crudest. It is not this danger which awaits the worker at work, one with the tool which makes him penetrate into the material which he lovingly works. There is a more hidden "reverse side", which I still have to talk about.

The more we rise in the "stages" of language, the more we move away from what we could call "raw experience": that which our senses bring to us, and which is manifested by our emotions. The intensity of experience of the worker on the task can easily

to forget this experience. He still remembers so well the world of the senses, distant indeed, but to which he believes he can return when he sees fit (and finds the leisure!). This memory, moreover, continues to fuel his language and his very perception of things of the mind, as if to give them a weight and a roughness, and perhaps also a deeper resonance, which they would otherwise lack. And there are also certain "emotions" in his work – high-level emotions, certainly. There is the tension of waiting, or of a long suspense, suddenly resolved by a liberating outcome. There is the almost sensual pleasure of long modeling "on pieces", the contact with a material that is perhaps initially rough, and which little by little softens and reveals itself to the hand that works it. There is the exultation of discovery, and the serene joy of scrutinizing and contemplating what little by little emerges from its veils of mist, revealing line after line the contours of a perfect form.

There is all this, and yet...

If I probe myself, and try to identify in a few words "what is missing", I would say: there is intensity, there is breadth, but a depth is missing. In the intensity and in the vast expanses, there is joy, there is contemplation. But the serious note of pain is absent.

It is in it, surely, that we find the missing dimension, the absent depth. Because everything that touches us deeply touches us like a beneficial pain and makes our tears flow, both tears of joy and tears of sorrow. These waters which water and wash the being are absent from this "world of language", the "world of the spirit". Even though this delicate language speaks to us of God, of the soul and of ourselves, it nevertheless keeps us far from these waters, far from ourselves. Confining ourselves in this world of heights, as in a chosen homeland more beautiful than the land of tears and dust from which we come, we avoid these secret and painful cords - these dreaded cords which speak to us about ourselves, as long as we let them speak. And by the time we weigh our words and speak, they become silent...

In speaking in recent days about "language", as a vehicle and material for abstraction, I was only thinking about what one could call the "language of words", as if no other existed. It is a language formed using "signs" or "signals", promoted "words" (as vehicles of a "meaning", a "meaning"). These "signs" or "signals" can be sound (as in spoken language without the support of writing), or graphic (so as to leave a lasting material trace). By themselves, they have no

function of "image", however stylized, of the reality they are supposed to designate.

In the words

mother, sea, mountain,

neither the sound of the spoken word is supposed to evoke sounds linked to a mother, the sea, or the mountain, nor the graphics of the written word is supposed to evoke the features or outline of the thing designated.

We can say that the correspondence between these signs, and their "meaning", is fixed by a "convention", specific to the language used. A significant set of such conventional attributions "meaning ↔ sign" is what we can call a "language" (*). The same "language" can therefore be realized in principle (with variations) by many different "languages", and even by an infinity. (It is true that in practice, the "dictionaries" to move from one to the other are always approximate (**).) Thus, just as in a specific language, the same thought can be expressed in words in many different forms, of the same concept of a language (*) can be translated into an infinity of different "words", depending on the language used to embody the language.

There is yet another "language" than such a language of "concepts" or "words" – a language of an entirely different nature. It is incarnated in a single language; a more or less "universal" language, it would seem, which would be "essentially" "the same", from one person to another (whether French, Chinese or Hottentot), and one era to another, since the dawn of time. It plays the role of a sort of "archetypal language", which we could call "the language of images" (**). It is above all the language of dreams, or of "imagination",

(*) Of course, I'm oversimplifying here. There are the syntax rules for putting words together, and all the subtleties of "grammar", which I have never really "caught" on...

(**) We therefore touch here, in another way, on the famous "communication problem"! But to tell the truth, it's never the "dictionary" side that's really the problem!

(*) I therefore take here "language" in a rather particular sense, as something which would pre-exist the different languages which embody it, as a sort of "structural matrix" formed of concepts and relations between concepts, independently of the signals -words which would materialize these concepts. Thus, such a "language" would be like a "soul" common to the "languages" which embody it, just as a thought is the soul common to the innumerable ways of expressing it in a specific language, or even in a multiplicity. of different languages.

(**) I took this term "language of images", quite common it seems in psychotherapeutic jargon, from the German expression "Sprache der Bilder", found in a very interesting book (on the techniques of therapy by "the imagination", or by the "image") which I recently learned about. (Henry G. Tietze, *Imagination und Symboldeutung*, Ariston Verlag, Geneva.)

when it unfolds without any control coming from the conscious.

In a word language, there is a single word associated with the idea of "mother" say, or "sea", or "mountain"; or, at most, a small number of words, corresponding to different nuances: mom for "mother", ocean for "sea", mont for "mountain"...In

the language-images, there is an infinite range of different images, with sensory "content", emotional, or "in understanding", which can also vary infinitely. The image of a "fan", suggesting a "totality" (even if it is infinite) which would be delimited in advance, is also improper. It is in no way a question of "choosing" from a "collection" of images already given, such

the words of a word-language which would turn out to be prodigiously rich in synonyms, to express a multitude of different "nuances". There is no question here of choosing, but to create from scratch, at every moment, the image and its movement. If the thought to express implies (let's say) "the mother", the idea "the mother" can be expressed as well by the mother in flesh and blood of the one who "speaks", and in any posture or outfit, from the most everyday to the most fantastic; as it could be a woman of whom he has no memory of having ever seen her and who yet, he himself cannot say why, evokes for him "the mother" or "his mother"; like that perhaps also the image of a sea under any of its innumerable faces, or that of a "sea" still of clouds with uncertain contours, or the dark depths of an underground...

So if I spoke earlier of a "universal" language, of an "archetypal language" coming to us from the dawn of ages, it must be added that it is at the same time also the language most intimately personal. Each "sign"-image, rising from the deep layers of our being, is a messenger of who we are: how we apprehend (often without our knowing) the world that surrounds us, and how the immemorial conflicts around which the human condition is tied are played out in our being.

It is a language of symbols, just like the language of words. But the symbols do not do not represent, strictly speaking, "concepts", but rather "experiences", or "situations" which may very well escape any personal memory of a consciously lived experience (*). And above all: the meaning attached to an image-symbol has nothing "con-

(*) The most important among the experiences or situations faced by a person, can be seen as a manifestation, in one of its innumerable particular faces, of an experience or typical situation, the appearance of which in one's life at this or that moment has always seemed inherent to the human condition, regardless of the particular context (historical, cultural, etc.) in which it takes place

conventional", and its apprehension (or the "interpretation" of the image) is not automatic. No "dictionary" here can replace the quality of attention and presence of the person "listening"! (No more than a dictionary could give us the key to understanding just one among the infinity of lived situations which form the fabric of our lives.) And these "image-symbols" of the language of images are many "images", in the most complete sense that one can imagine: living images, and better still, lived images. Experienced, moreover, with an acuity of perception and presence which is almost always lacking in our daily "experience".

By its "sensory texture", the image can consist of sounds, or smells, or tastes, or of tactile sensations of any nature and perceived in any part of the body, as well as of visual perceptions. In most dreams, several of our senses are involved at the same time. But this "background texture" that sensation provides does not exhaust and "say" the "image" any more than a rhythm says a melody, or the outline of a flower says the delicate play of the color and its movement in the breeze, nor this perfume which is only hers, nor the intoxication of the bee which comes to collect its nectar. The emotion with which an image is charged, and also the more or less clear or more or less diffuse cloud of associations which surround it, are part of the meaning of the image and its message, as intimately as perfume is part of 'a flower.

The image language thus remains, at all times, in immediate contact with the perception of

the existence of a person. According to C. G Jung's conception, these are such "arche-type" experiences and situations, stored in what he calls the "collective unconscious" of our species, which would each find themselves translated by a specific type of "images". It is these "image types" which would form this "archetype language" or "universal language", to which I alluded.

I have no doubt about the reality of what we could call a universal "symbology", which we could also call "language", provided we are careful not to fall into the traps of such a designation. The Dreamer that I saw at work in my dreams visibly "knows" a "symbolic" or "language", where each "word" (or "type of images" or "archetype", corresponding to some "experience" or archetypal "situation") presents itself with a character of extreme "fuzziness", leaving room for unlimited freedom of realization. But it is also very clear that he uses it or is inspired by it when he wants and how he wants, without ever feeling obliged to revere the Archetype. Almost all of his creations seem to me to draw entirely on materials that I would call "personal".

meaning (*), with the body (**); and also with emotion, daughter of the body and the senses, faithful messenger of what is perceived. Perception, emotion, and expression of a meaning (or a "thought") are here one and the same thing.

I feel that I have let myself be trapped by the word "language of images" (taken as is without looking twice...), by speaking of the "image" as if it were a separate entity, which would be an "element" (more or less interchangeable) for the expression of a "meaning" or a "thought" - just as the "word" is the building block of a "discourse". However, there are no more "words" here articulated in "sentences", nor even separate "images" coming together to form a "meaning", than there are in the flight of the seagull, in the incessant flow of the river or stream, in the dance of the dragonfly. At each moment, the "story" is this flight, this flow, this dance - it is life, lived over the course of moments by the one who, while experiencing flight, flow or dance and without even knowing it or "wanting" it, "tells the story" (*). Rarely has it happened to me that the "story" or the "thought" told by a dream takes place in a more or less static image, or in a simple succession of such images. Rather, story and meaning are staged, in a sort of "psychodrama", in a living parable, more or less transparent depending on the quality of "listening".

Whether in the small things or in the big things, this parable-story speaks to us above all about ourselves: of the unknown forces which rest or work within us and of their underground work; conflicts, tensions, masquerades, events of all kinds which play out in our being and which, without our knowing it, make up the fabric and the true substance of our life; of what

(*) It is a very remarkable thing that the word "sense" designates both our faculties of sensorial perception in general, and the philosophical notion of "sense" (of a text, of an experience, of a situation, a mode of existence or existence in general, etc.). The same thing applies in German, with the word "Sinn". I have no doubt that this is the indication of a deep link (which I am the first to tend to forget...) between the two "meanings" (again!) of the word "meaning".

(**) However, it has happened to me to have dreams consisting of a thought, or an emotion, or a thought-emotion, without sensory support of any kind, nor the support of any words. This reminds me (contrary to what I seem to suggest here and there) that thought has an existence, even independently of a language which expresses it. It is only a certain type of thought (and in particular scientific thought) that seems to vanish when we deprive it of the material support of language.

(*) This term "tells the story" can be confusing. The one who "lives" the dream, "the dreamer", is not the one who "does", who creates the dream, who I call the Dreamer. He is the living word in the hand of the Dreamer, and he no more knows the meaning of the "story" that he traces nor thinks of a meaning, than the man of broad daylight thrown into the fray, thinks of the story what is his life, and in the sense of this story...

is (which we avoid seeing...), of what was (which we have long forgotten...), and of an unsuspected "possible" which awaits us (and which is up to us to realise...).

I used the expression "psychodrama" earlier, a fairly fashionable term I think, and which does not lack force. And it is true that the script and staging of many dreams do not spare the dark colors, with the tones of ancient "drama" taken up in the fabric of our lives, when they do not veer into the pure anguish of the nightmare. We, the actors of the drama, "go" fully into it, certainly; even if it means waking up, feeling like an idiot and rushing to think of something else! It is not us, that is certain, who "speak" this strange language, the "image-language" or "parable-language", the "life-language". There is a Director, one greater than us, who handles it like a mother tongue of which we ourselves and the very substance of our life would form the flesh of the words. He puts together dramas, farces, idylls and elegies - but even where the drama is in full swing, I see that the invisible Narrator keeps a smile on his face. He knows that suffering and death are very simple things, which have nothing "dramatic". The "drama" is the waves we like to make around these things, just to make them complicated...

It's feeling this "crooked smile" from the Narrator, which ultimately means that I can't feel comfortable with the name "psychodrama". It may sound good - I prefer the serene name "parable". A "staged" parable is something understood, with a "scenario" that is more or less simple or more or less intertwined. Often comical staging, always unexpected and always incisive (without any worry, one must believe, if it will be understood...).

It is not limited by any convention, style or decorum (*), nor by any technical limitation for spectacular montages - montages that would make the most fantastic achievements of the most inspired magician-filmmaker pale in comparison! If such a "magician" of image and sound sometimes enchants or touches us, it is because he knew how to listen within himself, surely to this master-Magician with prodigious means, at work in each of us, and that if We often disdain to listen. It is true that his shows are free, and that he does not advertise.

What is undoubtedly most disconcerting in the language-parables, the language-images, is the freedom

(*) There are, however, "tactical" wishes, which can act as constraints, when it comes to thwarting the vigilance of the Censor. But I have the impression that for the Dreamer, this difficulty is rather part of the charm and salt of his game...

erted. We feel that this is its soul and its essence. It has something to frighten more than one person: infinite creative freedom. No rules for what an Other in us who speaks it...), nor for hearing it and grasping it - on the fly! No step seems to be prescribed for the next one, nor to be prescribed by the one which preceded it - no dream suggests the next one - and each time however we perceive, obscurely, an invisible order, a purpose, a meaning of a parable where we are a docile and clumsy actor without even thinking of a "meaning" that we are playing...

It is a language, certainly, which exceeds the means of the "boss", an unwilling spectator and always uncomfortable with these "on the fly" games which go over his head - totally idiotic games, for all that. say ; so crazy, fortunately, that there is no point even stopping at what shocks, worries and moves - simple ramblings of a drunken and crazy dreamer, who wakes up (alas!) every time that the boss dozes off or falls asleep.

No, it is not the language of the "boss", this language incapable of formulating rules, maxims or advice, nor the slightest commonplace and other comforting nonsense - except precisely to bring out a meaning that we prefer to ignore!

It is not the language of clumsy hands and clumsy minds, it is not for the "watchman" forever asleep, nor for the "scientist" clinging to knowledge and afraid of knowing.

It is the language of the Awakened sleeper, the Intrepid, the Benevolent - the one who holds in his light hands our most secret thoughts, our most fleeting desires as well as the most tenacious and the most insane. He knows our fears and our distresses, those which pursue us day after day, as well as those long forgotten, sunk in these bottomless chests to which he alone has the key. And from all these threads that form our hopes and our distresses, our impulses and our fears, our desires, our thoughts, and our rejected weaknesses and our ignored strength - from all this he weaves over the moments the shimmering fabric of a language that he alone knows and uses, a language which from moment to moment is formed and transformed under his magician hand. Invisible, elusive, mischievous child and enigmatic old wise man - he is the Master of the living word, of the life-language, the mother tongue. The one where the countless words of countless long words have come since the dawn of ages to draw their life, their vigor and their meaning.

It is a strange thing that the mother language, the language common to all human beings (or even to all beings...), that it is so unsuitable, it might seem, as a mode of communication of a meaning, from one being to another. It is not, it is true, the language of the boss, and if it is a means of communication, it is certainly not from one boss to another.

We can, of course, "translate" it into the language of words. That's what I don't

I do not fail to do so with infinite care, every time (or almost...) that a dream calls out to me with exceptional force. Such a "translation" is a means of listening, like a stethoscope for slightly deaf ears! This is very useful and even essential, given the case.

But it is also certain that image language is not made to be translated into words, any more than word language is made for the stethoscope. And every translation is as different from the original parable as a description of fire, water or a scene experienced are different from the thing described.

If I try to evoke some means of direct communication by the language-images, or by some other 'language' which comes even slightly closer to it, I hardly see (undoubtedly due to lack of imagination) that painting or sculpture, and especially dance - the movement language par excellence, the language of the body.

It is true that the body has a thousand other ways of expressing itself, of "speaking" - through a language sometimes more eloquent than the language of words or even dance. There is the game of love, certainly, this Game of games, the game plays the Earth with its innumerable lovers, with the sun, with the sky, with the rain, and with each of its creatures...And there is has the language of the eyes too, as there is that of the hands (not counting that of the feet, a joking little devil whispers to me...).

The list is definitely already growing! And I was also thinking, and above all, of the language (which Baptist Science calls "psychosomatic") by which the body expresses and thereby, perhaps, "compensates" in its own way, the violence suffered by it, or by the layers depths of the psyche which take root within him, in the hands of restless and merciless forces, often flying the flag "Spirit". And perhaps it is true that there is no "meaning" well and truly expressed, by anyone and in whatever language, which is not also well and truly "heard"...

Perhaps I am digressing here - because who tells me that all these "languages" that I have just mentioned are indeed part of this "parable language", the mother language, which would encompass them all. I suspect, however, that this is indeed the case...But I return to the familiar form, the "parable" - where the presence of a meaning, expressed by a brilliant Director-in-scene-Conjurer, is obvious (even though we would try at all costs to ignore it).

If for a long time I was reluctant to recognize it as a real language (and I feel that this reluctance, even now, is not entirely resolved...), it is undoubtedly, precisely, because it seems so little suited to what seems to be the very reason for the existence of all language and all language: communication with others.

And yet, I know that it is even more important to know how to "communicate" with

yourself.

When the initiative to "talk with myself" comes from "me", in the waking state, the idea would not occur to me (until very recently, at least) to appeal to anything other than to the language-words, the one that "I" know and use at ease (whether in German or French). But I also know that when the initiative comes not from me, but from "the Other", it is never in that language that He speaks to me. It's always in the language of parables, the "language of images" - and when I take the trouble to listen, I often sweat blood and water to "translate" it into "mine" as best I can. I don't know if one day it will no longer be full...

It would seem that the "raison d'être" of the parable language is to be the means above all for us to speak to ourselves and about ourselves. It is the language that our "unconscious" chooses, to "speak to the conscious". The language through which the deep creative layers are expressed and made known - those who "know" and who "can"; home and abode of the Other - of the Player, the Dreamer, the Director-in-scene or Conjurer or whatever other name we give him; the Eye that sees and the Ear that hears and the Hand that holds the keys to all the coffers and all the underground passages, and the torch also to see the depths of each and every one...

It is even strange that the Other never tires of speaking to "us", while we never listen to him, in other words. Often, however, I feel to what extent He enjoys his own games - not certainly in contemplating them, but in inventing them and putting them together from scratch with this verve which is only his, and without any worry, it is necessary -he believe, if there will be a spectator-listener. He is the Voice of what is within us and which seems voiceless; its reason for existence (it would seem) is not to be heard, but to be. He is the Creator, the one who creates without witnesses, before any creature yet enters into dialogue with him or rejoices with him in his works.

It is said that the language of images is the language of the child. The "language" through which he understands the world around him. I have forgotten my childhood, but something tells me that it is true, that this is also the language of my own childhood. I don't know if I'll ever find her again. Yet someone in me speaks it, this language; how I spoke it, spontaneously and effortlessly - before I buried it, one day, and forgot it. Someone inside me speaks it, but it's rare that I take the leisure to listen.

I'm not the only one who rarely, if ever, listens to it. We have learned so well not to listen to it, and we have so well embarked on the boat "Thought" with capital letters, alias "Abstraction", with the tight hull of finely assembled and riveted words! Even though

we would like to find the way back to the forgotten language of our childhood, to the source of laughter and tears, and to the forgotten distresses, perhaps, that words will never, ever be able to say - this path seems lost for ever...

25. The Doors to the Universe.

A) Doors and keyholes (directory).

(April 9 and 10) Here we are finally, to the repertoire of yin-yang “cosmic couples” (or “keyholes on the Universe”) promised from the beginning, arranged by “groups” of affinities (aka “Doors”). on the universe”). A twenty-ninth “Gate” has just been added at the last minute this very night, trying to expand the unfortunate “right - left” group, reduced to this one and only couple. But “right” is associated with “law”, therefore with “justice”, which is immediately associated with the yin-yang couple

justice - charity

(“charity” in the original Christian sense, “Barmherzigkeit” in German). Thereupon other associations branched off, giving rise to eight couples, assembling into a flower with four petals, whose name in yin would be “charity” or “grace”, and the name in yang “ justice” or “retribution” (“Vergeltung” – with the connotation of “Karma”). I finally found yet another ninth cosmic couple, which seems to me to best evoke the dual yin-yang nature of this newcomer group (or Flower Holder). It's the couple

responsibility (or karma) - grace.

From the body the “right-left” Door (aka Width) remains with its one and only keyhole, as before! On the other hand, the new “somet” that appeared fills the left side of the famous Christmas tree diagram (formed with our groups or Doors), so as to reinforce its appearance of symmetry. Indeed, the new group, which is only linked in a fairly superficial way to the “right-left” group (which is part of the “four directions” package, hanging on the right side of the tree), is linked on the other hand, in an obvious and profound way to the two groups “effect - cause” (alias Causality, alias Finality) and “order - chaos” (alias “law - freedom”). The corresponding vertices form the ends of one of the edges of the “Thought” icosahedron suspended on the left side of the tree. Thus, the new Responsibility group finds itself “suspended” from this edge of the icosahedron, at the same time as it forms the end of a new branch of the tree

Christmas, starting from the “firmness - softness” group (aka Firmness) on the trunk. But what especially delighted me was that, when we form a “reduced diagram” as explained below (*), with “super-groups” of couples, obtained by grouping the groups represented by the vertices of the Christmas tree diagram, we now find a much prettier diagram, with nine vertices instead of eight. Its very shape tells us what its name should be: it is “the Window” (on the Universe, there is no need to specify it!).

I assigned the newcomer group the number V'. THE reason why I did not simply number the vertices of the diagram from 1 to 29, but chose Roman numerals, with exponents ' (for the vertices to the left of the tree) and " (if necessary) for those on the right), plus possibly clues (as for the six vertices forming the “Thought icosahedron”), will be quite clear, I think, by examining their IV , to IV₆ arrangement.

location on the Christmas tree diagram.

As it is said at the very beginning (“The rock and the sands”, section no. 1), I first named each of the groups by one of its couples, which seemed particularly representative to me; sometimes also by a second couple, making a “nickname”. These couples (used to name the group of which they are part) appear in my directory in italics. When in a group there is a couple of archetypes, as in “the father - the mother” or “the child - the mother” etc., I have included it in the name or nickname, with the exception of the couple “man - woman” in group I, where the couple of archetypes “the father - the mother” already appears. Finally, during the reflection, I also ended up giving each of the groups a more concise name, which I included in front of each group.

Here is first of all the list of these twenty-nine groups or “Doors”, independently of their diagrammatic arrangement.

- I Conception
- II Action
- III Movement
- IV Light
- V Knowledge
- VI Was
- VII Authority

(*) See subsection C), “The Window” above.

VIII Elan (ou Don)

IX Density (or Weight)

X Firmness

XI Force

III' Expression (ou Communication)

IV₁ Totality

IV₂ Simplicity

IV₃ Unit

IV₄ Structure

IV₅ Causality (or Causality - Finality)

IV₆ Order

V' Responsibility (or Karma)

III" Warmth

IV₁ Emotion

IV₂ Ethics

IV₃ Size

IV₄ Evolution

IN₁ Height (or top - bottom) (or

IN₂ front - back) (or right

IN₃ - left) (or future -

IN₄ past) (or space -

IN₅ time)

Note that apart from the last nine groups (figures in IV" and V" with indices), the names of the other twenty groups are taken from those of the qualities present, i.e. yin yang, in the couples forming the group envisaged. Sixteen of these names are in yang tone, and only four are in yin tone, namely Conception, Totality, Unity, Causality, (the last three forming the triangle called "desire" of the icosahedron "Thought").

And here is the promised directory.

I Conception

The father - the

mother paternity - maternity

the paternal - the maternal

the masculine - the feminine

the male - the female

The man, the woman

engender - conceive the

phallic - the vaginal execution

- conception that which slides

- that which retains the smooth -

the rough

the salient - the retractable

the convex - the concave

II Action

Action - inaction

active - passive

subject - object

affirmation - reserve

wakefulness - sleep

watch - sleep

life - death

the living - the dead

(spirit - matter) (**)

dynamic - swing balance -

sitting (or rooting) (V

4) (*)

ardor - perseverance ardor

- patience passion -

serenity tenacity -

detachment

pursuit - renunciation

Production - consumption

excretion - absorption

The actual - the latent (III, IV energy)

- power (III)

III Movement

Movement - rest the

mobile - the still

the fast - the slow

velocity - inertia

energy - matter

the actual - the latent (II, IV energy)

- power (II) transformation -

stability

the unstable - the stable

change (or mutation, renewal) - continuity progression (or innovation) -

tradition (V)

the changing - the immutable

(*) I remind you that a Roman numeral in parentheses, placed after a couple, designates the number of another group where this couple also appears.

(**) I remind you that the couples placed in parentheses are those which were added to my repertoire at course of reflection continued since March 16.

the ephemeral - the permanent
what passes - what remains the
moment - eternity

IV Light

Light - shadow (or darkness) light -
dark
the bright - the dull

day Night

summer - winter (III")
south - north (III")

V Knowledge

Knowledge - ignorance the
known - the unknown the
knowable - the unknowable
the obvious - the mysterious
knowledge - mystery
(knowledge - obscurity)

the visible - the invisible

the apparent - the hidden
the conscious - the unconscious

surface - depth (IV certainty -
doubt

answer - question
answer (or affirm) - question learn - forget (or
unlearn) (IV

4)

VI Was

It was - learned (*)

confidence - reserve (*)

courage - prudence (*)

boldness - restraint

franchise - tact

assurance - humility (*)

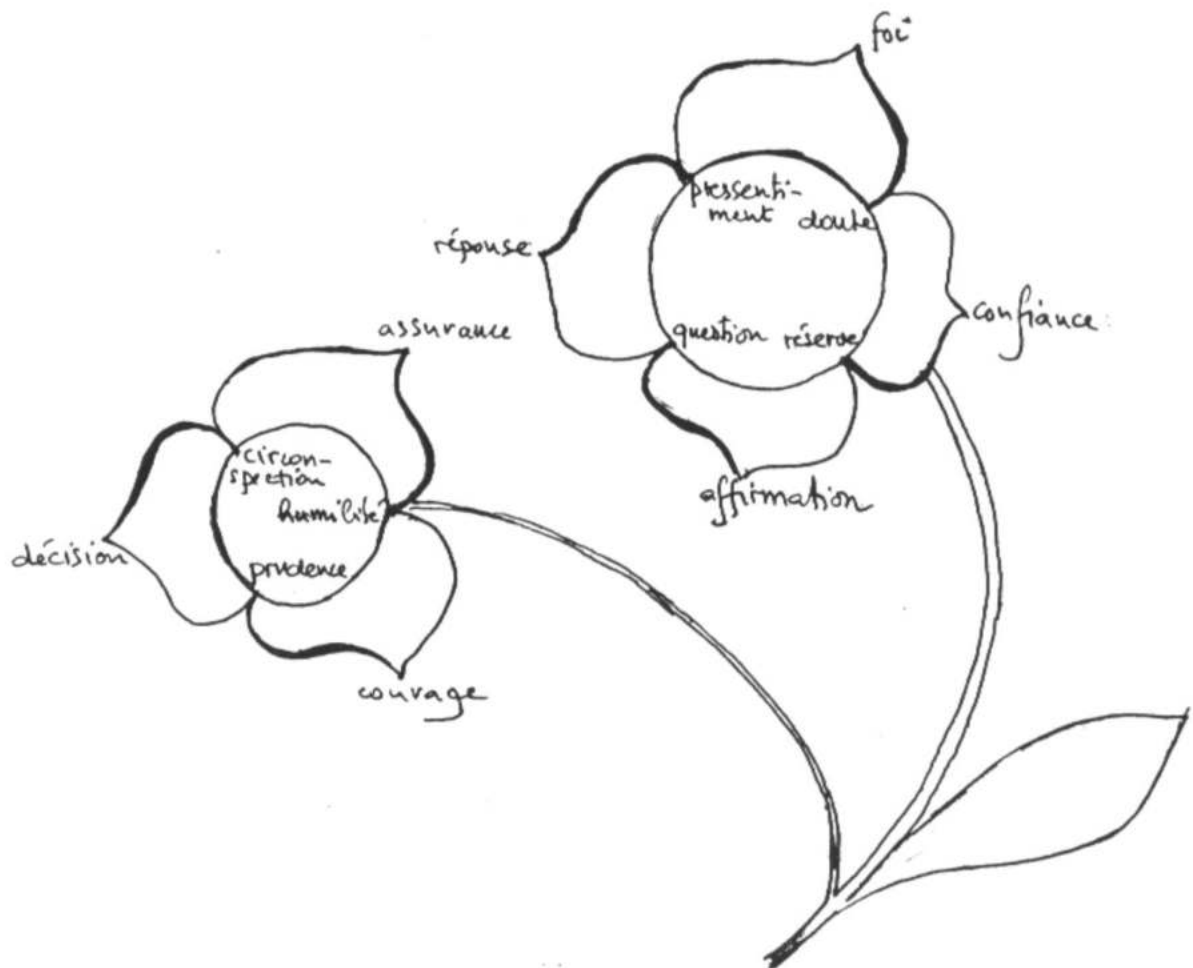
pride - modesty

courage - humility (*)

decided - circumspect (*)

(*) The couples followed by the sign (*) are here those which are found in one of the two flowers, with three and four petals, bringing together one six and the other eight cosmic couples which can be placed in the same group "Faith" (and eight of which are not reproduced in the queue-leue-leue list).

In the three-petaled flower, I included the pair "decision – circumspection" instead of "decided – circum-spect". It is understood that "decision" is taken here in the sense of "spirit of dision" ("Entschlossenheit" in German, "decisiveness" in English). "Circumspection" corresponds to "Bedachtsamkeit" in German. Finally, in the four-petaled flower, the term yin "presentiment" is a very approximate French equivalent of the German word "Ahnung" or "Erahnen", designating a very diffuse, very vague, often still uncertain knowledge, which we can have of one thing.



VII Authority

Authority - obedience (or submission) that

which commands - that which obeys

master - servant

mastery - service

what is imposed - what submits what is

obstinate - what gives in

what is affirmed - what confirms

mind - body

autonomy - dependence what

protects - what is protected

criticism - praise (or approval) (X) refusal - acceptance

(X) intransigence - understood (X)

VIII Elan (ou Don)

Give - receive

gift (or momentum) - welcome

what penetrates - what is penetrated the

penetrant - the receptive what

permeates - what is impregnated what infiltrates -

what absorbs

(the sun - the earth) (III")

the harsh - the sweet

the salty - the sweet

concentration - openness (or availability) closed - open firm

- open

fullness - emptiness (IV filling ,)

- emptying (IV plenitude - ,)

emptiness (IV inspiration - ,)

expiration (IV ,)

IX Density (or Weight)

The heavy - the light

the dense - the diluted (or the light, the thin)

density (or weight) - lightness the

concentrated - the diffuse (or the diluted)

concentration - dispersion (or diffusion, dilution) contraction -

expansion implosion -

explosion sobriety -

exuberance (or prodigality) economy - wealth

rigor - generosity (or largesse) (concision

- simplicity)

straightness - roundness

the right - serious

rounding - humor

severity - tenderness (X)

X Firmness

Firmness - softness

the hard - the soft

stiffness - flexibility

tense - relaxed tension -

relaxation

criticism - praise (VII) refusal -

acceptance (VII) intransigence -

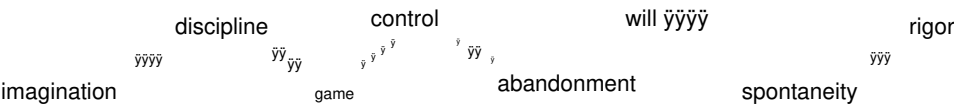
compromise (VII) severity - tenderness (IX)

solidity - fluidity

the solid - the fluid

control - abandonment (*)

will (or rigor) - spontaneity (*) discipline - play (or
fantasy, imagination) (*)



XI Force

The strong - the
weak effort - ease

strength - grace

intensity - finesse

vigor - delicacy the

resistant - the vulnerable

robustness - fragility

III' Expression (ou Communication)

Word - listen

son - silence

expression - perception

expression - impression (ou inspiration)

explain - understand (II, IV (discourse - 4)

meaning)

(communication - communion)

IV₁ Totality

The part - the whole

The particular - the general

(*) Couples marked with (*) are found in the zig-zag diagram shown at the end of the group

"Firmness". This diagram contains three other couples, not included in the above list.

the detail - the whole

the accident - the gasoline

the individual - the species (or society) the

person - the environment

the precise - the vague (or vague) (*) (the

clear - the vague) (*) precision

- generality (*) (rigor - generality) (*)

The definite - the indefinite

the expressed - the unexpressed

the completed - the unfinished

form - informs it

expression - impression (III')

the end - the infinite

the limited - the unlimited

The actual - the latent

reality - dream (**) realize

- dream

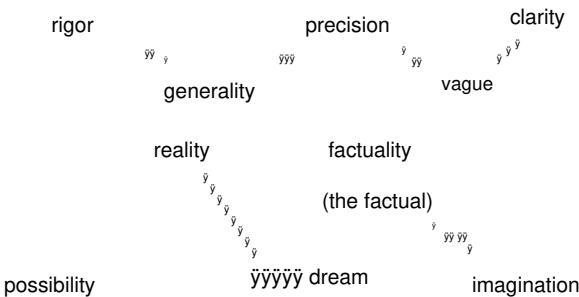
(necessity - possibility) (**) (the real -

the possible) (**) (factuality - dream)

(**) (factuality - imagination) (**)

(*) The couples marked with a (*) are those which appear in the first of the two zig-zag diagrams, placed at the end of the Totality group.

(**) The couples marked with a (**) are those which appear in the second of the two zig-zag diagrams placed at the end of the Totality group. (NB These two diagrams are taken from the Cosmic Flower of section 14.)



IV 2 Simplicity

The simple - the complex (IV the
abstract - the concrete

purity - fertility (IV objectivity -

subjectivity (IV

the smooth - the rough (I)

reason - sensitivity

reflection - logical instinct

- intuition the methodical

- the inspired coherence - vision

meditation - contemplation

(need – desire)

IV 3 Unit

Multiplicity - Unity diversity

- uniformity (IV the heterogeneous -

the homogeneous (IV difference - kinship (or

similarity) the dissimilar - the similar what

separates - what unites separate - unify

divide - bring

together analysis - synthesis

the divided - the whole

conflict - agreed

division - unit

dissonance - harmonie

IV₄ Structure

Shape - letter

background -

surface spirit - depth (V)

container - content

the enveloping (or the envelope) - the enveloped

structure - substance

rhythm - melody

sensation- perception

explain - understand (II, III') know -

know (II) knowledge -

knowledge

courtesy - warmth

respect - familiarity

the distant - the close

IV₅ Causality (or Causality-Finality)

Effect - cause

(finality - causality)

what is born - what gives birth

what nourishes - what is nourished

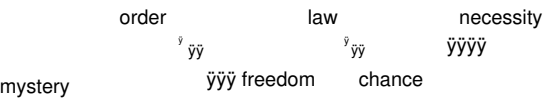
the child - the mother

act - motive
destiny - karma

IV₆ Order

Order - chaos
(order - freedom) (*) (order -
mystery) (*) law - freedom (*)
(law - chance) (*)
necessity - chance (*)

the heterogeneous - the homogeneous (IV₃)
diversity - uniformity (IV₃)
the simple - the complex (IV purity - fertility₂)
(IV₂)



V' Responsibility (or Karma)
Responsibility (or karma) - grace justice - charity
(*) retribution - forgiveness (*)

knowledge (**) - understanding (*)

(*) The couples marked with a (*) are those which appear in the zig-zag diagram (extracted from the Cosmic Flower) placed at the end of the Order group.

(*) The four couples marked with a (*) are among the eight couples of the four-petaled flower placed at the end of the Responsibility group. The four other couples appearing in this flower are part of the same group, but have not been included in the list.

(**) The term "knowledge" is taken in the sense of the German word "Erkenntnis", a more exact translation of which would undoubtedly be "intellection". (Unfortunately it sounds very philosophical "jargon", unlike the

judgment - grace (*)

German word, which is part of everyday language.) It is a clear and distinct "knowledge" (not necessarily "intellectual", however), strongly present, while the word "knowledge" has a more diffuse, and a connotation of duration rather than something clearly localized in time.

A fully informed "judgment" presupposes "knowledge"-intellection (Erkenntnis, Erkennen, Einsicht...), and not necessarily "understanding" (Verstehen). This appears as the harmonic complement yin of "judgment", o of "intellection", giving them the "depth" which they would otherwise lack.

The couple

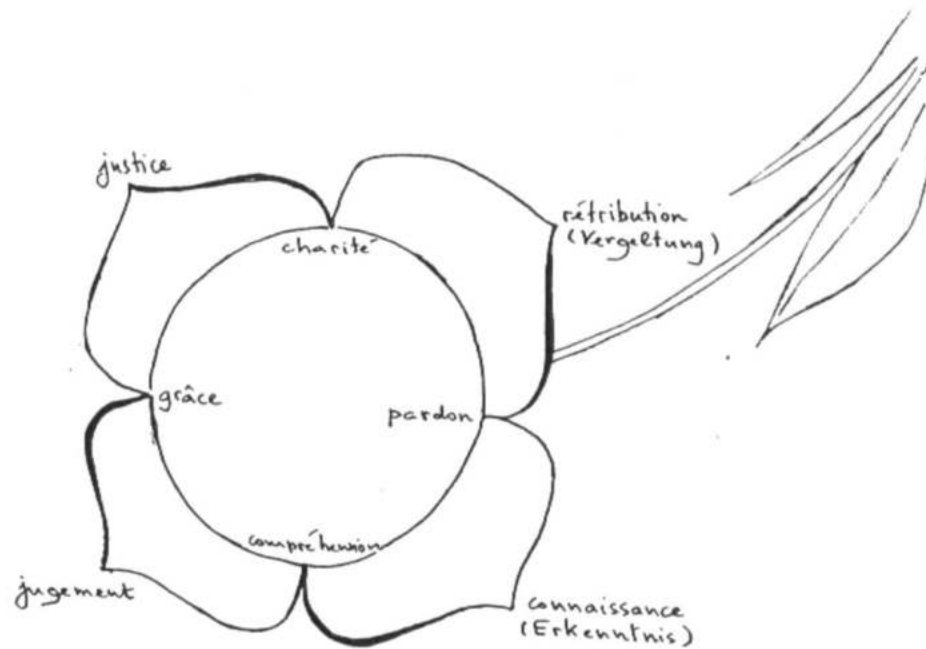
knowledge (intellection) - forgiveness

reminds us that "forgiveness" which would be limited to "forgetting" an offense (and more often, to a deliberate intention to ignore the offense and the intention to offend, to not take note of it), is a false forgiveness, consisting of avoiding an unpleasant reality, just to be at peace. There can only be true forgiveness with clear knowledge of the offense committed or the harm suffered.

This does not necessarily imply a full understanding of a situation, in which one is oneself involved in the same way as the offender. I am convinced that such an understanding, if it goes deep enough, has the effect of immediately erasing any feeling of offense (so that the question of "forgiveness" no longer arises).

So I don't think that whatever we do, we can "offend God". This does not prevent us from reaping the fruit of our actions, including those inspired by malevolence - but the harvest is not the effect of "punishment", but of causality and nothing more.

If we are forgiven for a malicious or destructive act, this is beneficial for us and for everyone, including the one who forgives. But the karma created by the act is not erased, neither in ourselves who committed it, nor in others who are involved in it (except perhaps the one who was offended and who forgiven with full knowledge of the facts). This karma is only erased in us by full knowledge (Erkenntnis) of the nature of the act committed and its deep meaning, through which karma is transformed into knowledge. But even though we would thus have fully "assumed" the creative act of karma, the karma that it created in others (perhaps in the form of latent aggressiveness or malevolence, waiting for the right opportunity to manifest itself) is not erased however.



III" Heat

The hot - the cold the
burning - the lukewarm

fire - water

dry - wet

(the sun - the earth) (VIII)

summer - winter

(IV) south - north (IV)

IV , Emotion

Joy - sadness

laugh - tears

laugh - cry

pleasure - pain

enjoyment - torment (or suffering) enjoy -

suffer exultation -

lamentation (or complaint) hope (or

expectation) - apprehension (*)

attraction - repulsion what

attracts - what repels (pleasure -

displeasure) (the

pleasant - the unpleasant) (the

desirable - the undesirable)

(what we hope for - what we apprehend (or fear))

presence - absence

memory - forgetting (*)

fullness - emptiness (VIII)

(*) I had thought of including the neighboring "couple"

optimism - pessimism,

but by taking care to identify a certain uneasiness, I convinced myself that this is not a "cosmic" yin-yang couple. Indeed, in the common sense of the expressions "optimistic" and "pessimism", these designate more or less fixed "deliberate remarks", rather than real modes of perception and action. The two psychic attitudes present, one with a yang tone, the other with a yin tone, appear to me here as being indeed opposites, and not as "complementaries" whose marriages could bring about a balance, a harmony. The same observations apply to the assembly of the two terms

idealism - realism,

which has nothing in common with the cosmic couple "dream - reality". Idealism is an inner attitude also consisting of a "deliberate" (generally "optimistic") statement, and thereby implies closure.

Dreams, on the other hand, open us to the infinity of all possibilities.

(*) We will compare this "memory – forgetting" couple with the neighboring "learn – unlearn" couple (which I have included in groups V (Knowledge) and IV psychic, 4 (Evolution)). Note that the first pair describes a state while the second describes the yang and yin modalities of an action.

full - empty (VIII) fill - empty
(VIII)

the positive - the
negative affirmation - negation

IV₂ Ethics

The good - the bad

the sublime - the
abject the divine - the
demonic god - demon
God - Satan

IV₃ Grandeur

Greatness - smallness
the immense - the tiny
the impressive - the paltry I
gigantic - the tiny the giant -
the dwarf

IV₄ Evolution

Rise - decline
growth - aging
regeneration - wear

childhood (or youth) - old age
innocence - maturity
the child - the old man

born die

birth - death (*)

creation - destruction

learn - unlearn (V)

beginning - end

origin - destination

departure -

return exit - return

early - late

early - late morning -
evening

spring fall

is West

IN₁ Height

The top - the bottom

go up go down

ascent - descent

elevation - depth (**)

the sky - the earth

height (or length) - width (**) vertical -
horizontal

thinness - corpulence

extensive - depth the

vast - the deep

(*) Compare this couple with the neighboring couple “life – death”, which I included in group II (“action – inaction”).

(**) Like all yin-yang couples which have a double meaning, one in the literal sense and the other in the figurative sense, the couples “elevation - depth” and “height - width” can be understood in the 'one and the other direction.

treble - bass

$\ln_2$ Thickness

Before behind

Go forward go backward

attack - defense

action - reaction

aggression - flight

aggression - fear

$\ln_3$ Width

Right left (*)

$\ln_4$ Duration

Future - destined

past - history

sustainability - seniority

innovation - tradition (III) momentum

- roots (II)

$\ln_5$ Continuum

Space - extended

time (or distance) - duration

ubiquity - eternity

Doors to the Universe (continued)

B) The Tree.

(*) For comments on the “right - left” pair, see the following subsection, “The Tree”.

(April 11) In my first drawings of the Christmas tree diagram, I indicated the vertices by their number, followed by the typical couple serving as the name of the group considered; plus (when applicable) a typical second couple, serving as a nickname. This makes a slightly cluttered diagram, which I ultimately preferred to replace with the clearer outline that the reader will find below, where the groups (or "Doors") appear by their "terse name". The reader will have no trouble finding the name(s) - couple in the preceding directory (where the groups follow each other in the order indicated on page PU 94, 95).

To the critical comments at the beginning of these notes ("The rock and the sands", nŷ 1), I will add this one. The left of the Tree consists above all of the hexagram (or better, the icosahedron) "Thought", in addition to the two "Doors" Expression, Responsibility. The right of the Tree seems to me to be centered on the Emotion group, and on all a set of couples bringing into play in a particularly strong way the attraction-repulsion polarity. Thus, the left of the Tree appears to me to have a dominant yang tone, the right to have a dominant yin tone. However, in the couple

right left,

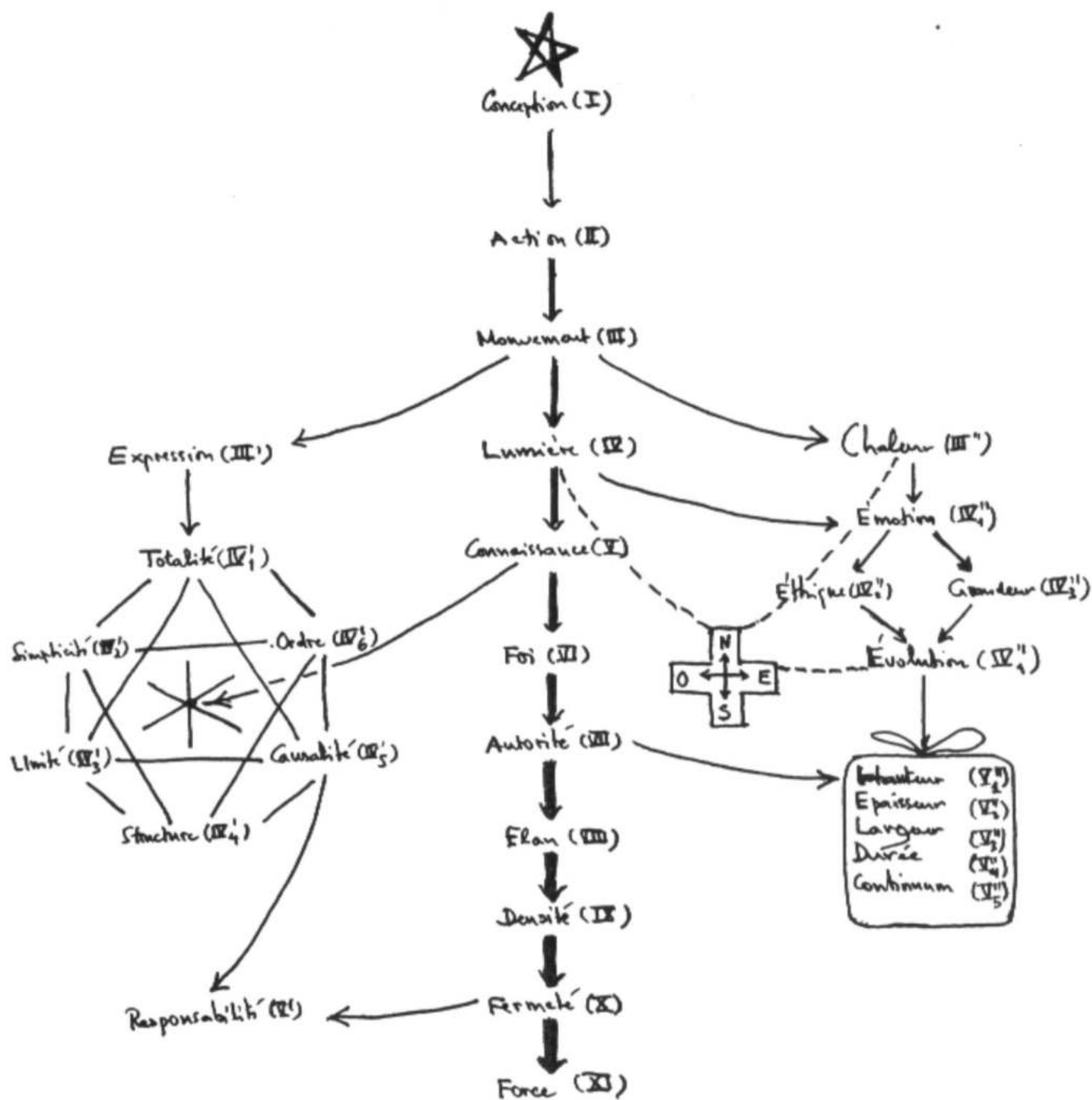
it is the right which plays the yang role, the left the yin role. This suggests that it would be more consistent with the dialectic of yin and yang, to make a drawing of the Tree symmetrical to the one I made, by exchanging left and right sides. I did not want to redo my layout a (N + 1)th time, and therefore book it as is; all the more so since we can also argue, saying that if we consider that the Tree has, just like you and me, a top and a bottom, a front (which faces us, politeness obliges...) and a back, a right and a left, then it is the right of the tree which, for us the observer, is to our left, and vice versa. So the good Lord (or the devil) still guided my hand well, when from the first scribbles, he made me put the groups which would form the Thought hexagram, on the left side of the sheet (aka the right side of the tree) !

I point out in passing that the "right - left" couple was the only one, among all those I could think of, for which I was not able by my own means to decide whether it indeed formed a cosmic couple. , we don't. Seeing no convincing intrinsic reason designating it as a couple, I finally concluded with regret that it should not be one, thus unfortunately breaking up the beautiful whole formed by the three other couples

up - down, front - back, future - past.

It was subsequently that I learned from various sources (both through Chinese tradition and through more recent observations by psycho-physiologists) that the left side of the person can be considered as the “emotion” side (therefore yin), and the right side as the “reason” side (therefore yang). So, the contents of the pretty “Christmas package” hanging to the right of the Tree are not mismatched!

However, there remains an ambiguity (quite similar in short to that which arose earlier with the Tree): it is well known that it is the left side of the brain which controls the right side of the brain. body, and vice versa. So, at the level of the brain, the left side is yang, the right side yin, and not the other way around. Unless we admit (to save the furniture) that Mr. Brain is placed upside down, and is looking backwards...



Doors to the Universe (continued)

C) The Window.

We will now proceed to group some of our groups of couples (or Gates) into "super-groups" (or "Portals"). The grouping that I propose here imposed itself on me, both from a "formal" or "mathematical" point of view, according to the very structure of the Tree (independently of the meaning attached to the various vertices of the diagram), only from the "ontological" point of view, that is to say taking into account the meaning of each of the vertices of the Christmas tree diagram, as a "Gate to the Universe".

On the left side of the Tree, the hexagram "Thought" immediately stands out as such a Portal. The two "Doors" Expression and Responsibility, one above the hexagram and the other below, will each be considered as a "Portal" in itself, with the same name as the unique Door it conceals. . We thus have (in descending order) the three Portals

Expression, Thought, Responsibility.

On the right side of the Tree, there are two large Portals, which immediately catch your eye.

First of all, there is the pretty "Christmas package", with ribbons, suspended at the bottom, made up of the five Doors

up - down, forward - backward, left - right, future - past

And

space-time.

The latter can be seen as a sort of recapitulation of the first four, "space" (three-dimensional) corresponding to the first three Doors (playing the role of its three dimensions), and "time" corresponding to the famous "fourth dimension" of the space-time continuum, dear to Einstein. This Christmas package, promoted Portal sur l'Univers, will have name

The four directions,

like it should be. (And not "The four dimensions", because each of the "dimensions" is here considered from the point of view of the two opposite "directions" to which it corresponds, considered as a single unoriented "direction", from the point of view of the dialectic of yin and yang.)

The diamond above the package, formed by the Doors

Emotion, Ethics, Greatness, Evolution,

corresponds to couples, such

joy - sadness, good - evil, greatness - smallness, growth - decline,

attached to inveterate thoughts of attraction (for the term yang) - repulsion (for the term yin). We can say that the four Doors in question each embody a "polarity" deeply implanted in the psyche (*). This is why I propose to bring them together in a Port-tail, having the name

The four polarities.

It appears to me that one of the essential "tasks" in the long process of maturation of the psyche (**), and perhaps the most arduous and crucial of all, is to transcend these "polar-ities", recognizing in these superficial realities (or even "illusions"), behind which or perceives a deeper and more essential reality. In this more penetrating light, these polarities become "cyclical relationships": each of the two terms, felt first as opposites, such (let's say)

life - death, or to be born - to die,

appears as a natural and necessary continuation of the other, "born" in a way from him, to end and "die" in him again...

On the right side of the Tree, there still remains the highest Door of all, having the name Heat or "hot - cold". The couples that form it do not seem to me to be generally felt as polarities, and in any case not with comparable intensity as for

(*) These "polarities", or at least that of emotion (polarities of joy - sadness, pleasant - unpleasant, attraction - repulsion) and that of evolution (polarities of growth - decline, birth - death, ..) are surely present also in the animal psyche, and play a useful role there. In the case of our species, however, they are considerably reinforced by conditioning, and today more than ever, often to the point to reach psychotic dimensions.

(**) Given the size of the "task", and the lack of enthusiasm that almost all people put into it, we can see that it would not be a luxury for us to have to go through, to see the end of it, a "cycle" of innumerable existences human - with, perhaps even, occasional returns to the animal or plant state, to put us back to the contact with certain realities and certain knowledge that we often tend to forget...

the couples discussed just now. Also it is necessary to make a separate Portal, for which I propose the name

The cycle.

It seemed to me in fact that for this couple, the cyclical nature of the dynamics of yin and yang is particularly apparent (*) - and it is of course on the example of this couple, moreover, that we had arrived at this intuition of cyclical dynamics (in the section "Creative ambiguity (4): the extremes touch", n° 6). In addition, the conjunction of the names of the consecutive Portals

The cycle, The four polarities,

is likely to remind us, beyond the reality of polarities, the deeper reality of the cycle.

It remains for us to explain the "central" Portals, formed by groupings of Doors located on the trunk of the Tree. I found three more such Portals, each formed of several consecutive Doors on the trunk. Starting this time with the highest Doors on the Tree, the groupings that I have made are as follows (listing the Doors in the order in which they follow each other, from I to IX):

Design, Action, Movement

Light, Knowledge, Faith

Authority, Momentum, Density, Firmness, Strength.

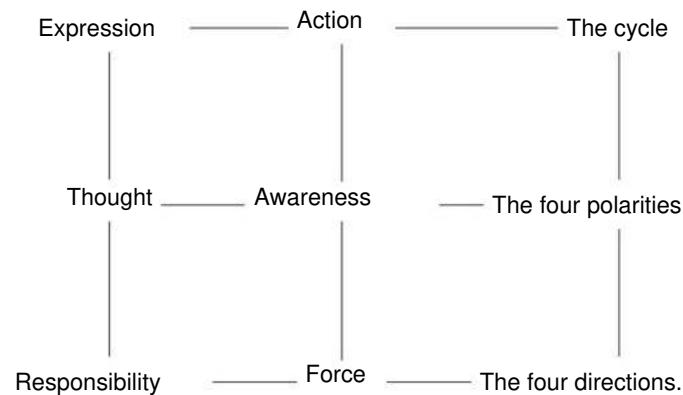
The "ontological" reason for these groupings seems to me to be summed up quite well in the very names that I propose here for these three Portals, namely

Action, Knowledge, Strength.

We thus have nine Portals, spontaneously grouping into three packages of three each, corresponding respectively to the two sides and the trunk of the tree. These Portals can be considered as themselves corresponding to the vertices of a new diagram, whose

(*) To tell the truth, it was the presence in this group of the "summer - winter" couple which suggested to me the association with the cycle of the seasons.

edges represent “contiguity” or “neighborhood” relationships between Portals, just as in the initial diagram, ie in our Tree, the edges represent contiguity relationships between Gates. We will find the edges of the new diagram, by taking, among the edges of the old one, those which are not “contained” in one of the “Portals”, and looking at which Portals they connect together (via the doors represented by the ends of the edge). We thus find the following diagram, of marvelous simplicity:



The name of this new diagram (or “graph”) is self-evident: it is

The Window (on the Universe)!

As for our (Christmas) Tree, very fine who will find it there - it has disappeared into the conjurer's trap...

Doors to the Universe (continued)

D) The bi-icosahedron

(April 12) To end this presentation of the “Doors”, I would like to return again to this question of a “canonical” icosahedral structure on the “Thought” hexagram, raised in the section “Stories of icosahedrons and trees of Christmas” (n° 10). I thought about it again the day before yesterday (*), and I have an idea which could perhaps give a satisfactory solution to the question. I have

(*) It was in the same vein with the nocturnal reflection bringing out the four-petaled flower “Responsibility” alias Karma, alias “Grace” (so as not to forget its maternal name...)

to propose in any case a pair of two icosahedral structures on the hexagram, “complementary” in a sense that I will specify, one playing a yin role, the other yang role (**).

I must first give some purely geometric preliminary explanations, on the combinatorics of the left icosahedron and on the notion of the left biicosahedron. As it seems that I am the only one who has ever taken the trouble (and pleasure) to look at the icosahedron (ordinary or “left”, as desired) from the combinatorial point of view, and that there is therefore no reference in the literature on these things (which should have been “well known” for more than two thousand years), I am happy to develop here “in form” the little that we will need, to recognize ourselves in them (*).

In the following, we give ourselves a set S with six elements (S , as “vertices”). The elements of S will be called “vertices”, and the two-element parts of S (or “pairs”) in S will be called “edges”. Finally, for brevity, we will call “triangles” (of S) the parts of S with three elements. If we designate by $A(S)$ or A , and by $T(S)$ or T the set of edges and

(**) Supposing that a more in-depth study confirms that this pair of icosahedral structures is indeed “satisfactory” from an “ontological” or “philosophical” point of view, it would therefore not respond, strictly speaking, to the initial question, which was to find one canonical icosahedral structure, and not two. But this would be one example among thousands of what we could call the “virtue of transformability” of a fruitful question (without prejudging for the moment whether the one I raised last month will indeed prove to be such) . By following the path opened by such a question, it may very well turn out that it is appropriate to reformulate it, whereas taken literally, the answer consists of a “non-place” (here: it does not there is no icosahedral structure on the Thought hexagram, “better” than all the others). This does not prevent the fact that the new, more precise and more relevant question is a daughter of the old one, however “vague” the latter may appear; and the fertility of the daughter question is most often neither more nor less than that inherited from the mother question. (Compare with b. de p. note (*) page 7

(*) My thoughts on the icosahedron, with a strong emphasis on the combinatorial aspect, date from 1977, when I did a one-year DEA course on this magnificent theme. At the same time, it was my first big frustration in my teaching experience. Despite the deliberately very elementary and very “visual” level at which I placed the course, with the hope of seeing the listeners involved (postgraduate students or teachers at my University), I did not succeed in truly ignite a spark of true interest and participation in any. The only exception was the development, by one or two of the listeners, of tracings of the stereographic projection on the plane of the icosahedron (seen as inscribed on the unit sphere, with the edges represented by arcs of a great circle), making the dual dodecahedron appear at the same time. It is true that these stereographic plots (taking as the center of projection either a vertex, the middle of an edge, or the center of a face) are very beautiful, especially when we take into account the canonical coloring of the edges (or even faces as well) in five colors...

the set of triangles of S , we immediately check that we have

$$\text{card}(S) = 6, \text{card}A = 15, \text{card}T = 20$$

(where the first relation is put for memory). (NB if E is a finite set, because (E) designates the number of its elements.)

Definition 1. — A part F of the set T of triangles of S is called an icosahedral structure (implied: left) on S , if every edge of S is contained in exactly two triangles belonging to F

In other words, if we call “faces” the element triangles of F , the condition stubbornly says that each edge is contained in exactly two faces. A set S with six elements provided with an icosahedral structure F is called a combinatorial icosahedron (meaning: “left”, so as not to confuse with the “ordinary” icosahedron, which has twelve vertices instead of six), or simply an icosahedron (left). If $I = (S, F)$ and $I' = (S, F')$ are two such icosahedrons, we call isomorphism of one with the other any bijection

$$u : S \xrightarrow{\sim} S$$

such that $u(F) = F'$ of I' . — i.e. such that the faces of I' are exactly the images by u of the faces

We can “look” at an icosahedron by “centering” our attention either on a vertex, on an edge, or on a face, so as to obtain three different types of “perspectives” to study it. This will be the perspective centered on one face, which will be the most convenient for our current purposes. Here is the summary statement, containing everything we will need (and beyond):

Theorem 1. —

- a) Two icosahedrons (left combinatorics) are always isomorphic, and more precisely, there has exactly 60 isomorphisms of one with the other.
- b) An icosahedron has exactly ten faces. If f is a face of an icosahedron $I = (S, F)$, f' a face of an icosahedron $I' = (S, F')$, then for any bijection u_0 of f with f' , there exists such that u transforms f in f' and induced between isomorphism and a single u of I with I' the f and f' and bijection u_0 .

- c) Let $I = (S, F)$ be an icosahedron, and F be the complement of F in T , ie the set of triangles of S which are not faces. Then for any face $f \in F$ of I f in S (ie the set of complementary sound vertices which do not belong to face f) is in F (ie is a triangle which is not a face of I). The app

$$f \mapsto f : F \rightarrow F$$

is a bijection of F with F . Finally, F is also an icosahedral structure on S (called the complementary icosahedral structure of the structure F).

- d) Let S be a set of vertices with six elements,

$$Ic(S) \cong P(T(S)) \quad (= \text{ens. des parties de } T(S))$$

the set of icosahedral structures on S . Then $Ic(S)$ has twelve elements, and the map

$$F \mapsto F, Ic(S) \rightarrow Ic(S)$$

and an involution without fixed points of this set (ie we have, for all F in $Ic(S)$, $(F) = F$ and $F = F$.)

- e) Let F be an icosahedral structure on S , F the complementary structure, $f \in F$ a face of F , $f \in F$ the face of F complementary to f . For any vertex $s \in f$, let s be the "third vertex" of the unique face $f(s)$ of F then $s \in f$, and the map distinct from f , containing the edge as $f \cap \{s\}$. We have

$$s \mapsto s : f \rightarrow f$$

is a bijection of f with f , denoted

$$u_f : f \rightarrow f.$$

We similarly define (by interchanging the roles of F and F) a bijection

$$u_f : f \rightarrow f.$$

Its bijections are inverses of each other:

$$u_f u_f = \text{id}_f, u_f u_f = \text{id}_f.$$

f) Let S be a set with six elements, f a triangle of S , f the complementary triangle, P_f the set of bijections of f with f (it is a set with six elements), and $u = \{f, f\}$ the part with two elements of $T(S)$ (set of triangles), formed by f and f . For any icosahedral structure F on S , let

$$c(F) = (\tilde{y}(F), u(F)) \in \tilde{y} \times P_f$$

defined as follows: $\tilde{y}(F)$ is equal to f or f , depending on whether $f \in F$ or $f \notin F$ (ie $\tilde{y}(F)$ is the unique element such that $\tilde{y}(F) \in F$), and $u(F)$ is equal to u_f (notations of d)). We therefore defined an application

$$c : \text{Ic}(S) \rightarrow \tilde{y} \times P_f.$$

This application is bijective. In other words, "it amounts to the same thing" to give ourselves an icosahedral structure F on S , or to give ourselves a pair of elements $(\tilde{y}, u)$, where $\tilde{y}$ is one of the two elements f, f (the one which must be face of F), and where u is a bijection $f \rightarrow f$.

Proof of the theorem. Part a) is a consequence of b), given that there is and that $60 = 10 \cdot 6$. On the other hand, in d) the fact that $F \rightarrow F$ is an involution without fixed points, is obvious from the given definition in C). As for the fact that $\text{Ic}(S)$ has twelve elements, this immediately follows from a) by a standard "counting" argument (since the group of all bijections of S with itself has $6! = 654321 = 720$ elements, and that the stabilizing subgroup of F has sixty, hence the number

$$12 = 720/60.)$$

Another way to find 12 (via the "perspective around a face" explained in f)) is by

$$12 = 2 \times 6 (\tilde{y}).$$

(*) This is the description, using the "perspective" centered on one face. There are two other equally instructive descriptions of the set $\text{Ic}(S)$, obtained by perspective centered either on an edge or on a vertex. Finally, I also point out the following canonical bijection

$$\text{Ic}(S) \rightarrow \text{Bic}(S) \times \tilde{y}(S),$$

It is therefore necessary to prove only parts b), c), e), f). In b), c), f) we start from a given icosahedral structure (S, F) . As each edge is contained in two faces, there exists at least one face, i.e. f . Set f its complement in S , and consider the application

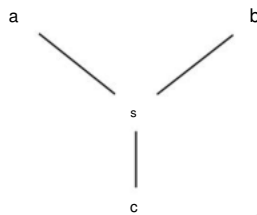
$$u_f : f \rightarrow f, \quad a \mapsto a$$

defined in e). Let us show that it is injective, therefore bijective (since f and f have the same number of elements, namely three). If we had two distinct vertices $a = b$ in f , such that $a = b$

then posing

$$c = a = b$$

and designating by s the third vertex of f , we would have a configuration



with three faces $\{s, b, c\}$, $\{s, c, a\}$, $\{s, a, b\}$ adjoining cyclically around s , along common edges $\{s, a\}$, $\{s, b\}$, $\{s, c\}$. I say it's not possible.

Let u and v be the two points of S distinct from the preceding points s, a, b, c , let us consider the edge $\{s, u\}$, and let h be a face which contains it. Then the third vertex of h (distinct from s and u by definition) cannot be equal to one of the three points a, b, c , let's say a , because the edge $\{s, a\}$ would be contained in three faces of the icosahedron. So the third vertex is v , and the edge $\{s, u\}$ would only be contained in the single triangle $\{s, u, v\}$, absurd.

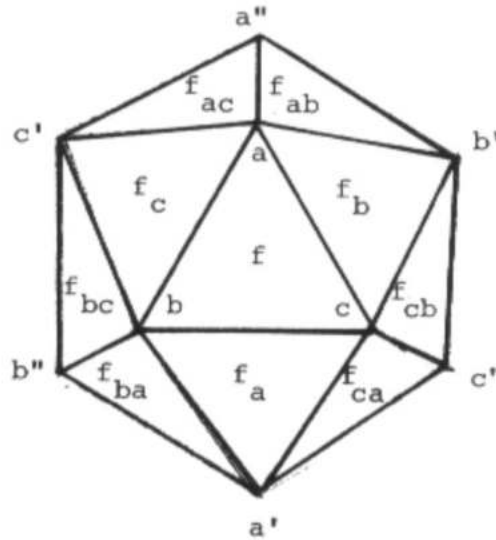
where $\text{Bic}(S)$ designates the set of biicosahedral structures on S , and $\tilde{y}(S)$ the two-element set formed of the "orientations" of S (ie the quotient set of the set of "references" of S ie of the numerations of its elements from 1 to 6, by the action of the alternating subgroup of the symmetric group G_6). The map is obtained by associating with any icosahedral structure F on the one hand the associated biicosahedral structure $\{F, F\}$, and on the other hand a certain orientation $\text{or}(F)$ of S canonically associated with F , which I refrain from describing here. It turns out that we have

$$\text{or}(F) = \text{or}(F),$$

so that the two icosahedral structures corresponding to the same biicosahedral structure $\{F, F\}$ are "marked" by the two possible orientations of S .

We now have that if a, b, c are the three vertices of the face f , then the vertices b, c in f are distinct, therefore a, b, c are distinct. We can now write the list of all the faces of the icosahedron, via the "perspective with respect to f ". To clearly visualize this list, it is practical to make a drawing, where the vertices are represented by points on the plane, the edges by segments joining these points, and the faces by triangular areas delimited by the three edges contained in the face. In addition, for good visibility of the graphics, we will include each of the points b, c (but not a, b, c) in two copies, the second of which will be designated (as b', c' respectively). Thus, a and a' are different points of the plane, but which designate the same element of the "abstract" set S .

We find the following figure, which can also be interpreted as a "perspective" view of the ordinary regular icosahedron in space, view "centered" on a face (named $\{a, b, c\}$)



On this figure appear ten figures (triangular), including the four starting faces

$$(1) \quad f = \{a, b, c\}, \quad f_a = \{b, c, a\}, \quad f_b = \{c, a, b\}, \quad f_c = \{a, b, c\}$$

plus the six "external" faces, connecting in pairs along the three edges $\{a, a'\} = \{a, a'\}$, $\{b, b'\} = \{b, b'\}$, $\{c, c'\} = \{c, c'\}$. So, in full

$$(2) \quad f_{a,b} = \{a, a' \mid b\} = \{a, a' \mid b\},$$

and the five similar triangles $f_{a,c}, f_{b,c}, f_{b,a}, f_{c,a}, f_{c,b}$. To show that $f_{a,b}$ (for example) is indeed a face, we note that the edge $\{a, a\} = \{a, a\}$ must belong to two faces, the third vertex of which can be neither b nor c (because each of the edges a, b and a, c are already contained in two of the four faces (1)), so only b and c faces f remain as possibilities. I say that the set of these ten faces exhausts the set F of all faces. Hence the To do $f_{a,b}$ and $f_{a,c}$.

this, let's count the number of edges in our representative graphic. Three for f , two additional for each of the three triangles $f_{a,b}, f_{b,c}, f_{c,a}$ the shape $\{a, a\} = \{a, a\}$ (makes twelve), and six which form the outline of the figure (edges of the shape $\{a, b\}$ etc), that makes eighteen, even though there are only fifteen edges (that's nine), three edges of in all! But we note that the edges such as $\{a, b\}$ and $\{a, b\} = \{b, a\}$, symmetrical with respect to the center of the figure, representing one and the same edge of S (namely $\{a, b\}$ in this case), which means that the count is good: all the edges of S appear on our plot, and only once except those of triangle $\{a, b, c\}$, which appear twice.

That said, a quick glance at the figure convinces us that each of the edges which appear there belongs to exactly two among the ten previous faces and only one. If therefore there existed a face h which was not part of this pack of ten, then an edge contained in h would belong to at least three faces, absurd.

Thus, we were able to explain the "tracing" of any icosahedron, from one of its faces, like a "standard figure". Part b) of Theorem 1 is an immediate consequence of this determination.

So, b) therefore also a) are proven, let us prove c). The fact that for a face f (which we can take as our central face), the complementary triangle is not a face, is immediate on our plot, since $f = (a, b, c)$ does not appear among our ten faces.

As the set T of triangles with 20 elements and F has ten, F has ten, and as the map $f \mapsto f$ from F to F is obviously injective, it is bijective. In other words, for a triangle f of S to be a face, it is necessary and sufficient for the complementary triangle not to be.

To finish proving c), it remains to prove that F is an icosahedral structure, therefore that for any edge L of S , there are exactly two element triangles of F which contain it. Moving on to the complements in S , this amounts to saying that any "square" part of S (ie a part having four elements), contains exactly two faces (for the icosahedral structure

F). Now the faces not contained in this part $S \setminus L$ are exactly those which meet its complement $L = \{a, b\}$, ie those which contain either a or b . Now the set F_a of faces containing the vertex a has exactly five elements (see the plot, where we can of course assume that a is indeed a vertex of the starting face f used to make the plot), and the same for F_b , on the other hand the intersection $F_a \cap F_b$ is formed of the faces which contain the edge $\{a, b\}$, therefore has exactly two elements. It follows that $F_a \cup F_b$ has $5 + 5 - 2 = 8$ elements.

As F has ten, there remain two elements of F to be contained in $S \setminus L$.

It remains to prove e) and f). In e), all that remains is to prove the relation

$$u f u f = i d f, \text{ and}$$

the symmetrical relation (which will be deduced by exchanging the roles of F and F). Using f again to make the plot above, this relation can be read in the figure: applying it to a for example (it will be the same for b and c) this relation $(a) = a$ is simply equivalent to saying that the triangle $\{b, c, a\}$ is a face for F start, which is indeed the case.

. i.e., is not a face for the structure of

It remains to prove f), ie the bijectivity of the application

$$c : F \setminus (\tilde{f}(F), u(F)) : \text{Ic}(S) \rightarrow \tilde{f} \times P f.$$

This means that for any pair $(\tilde{f}, u)$, where $\tilde{f}$ is one of the triangles f, f and where u is a bijection $u : f \rightarrow \tilde{f}$, there exists a unique icosahedral structure F from which it comes. If $\tilde{f} = f$, this amounts to saying that there exists a unique icosahedral structure admitting f as a face, and giving rise to the bijection u - and this is what we saw in the explicit construction earlier. If $\tilde{f} = f$, this means that there exists a unique structure F such that $f \in F$ that $u f = u$. Designating by F the complementary icosahedral structure, this also means that there exists a unique . And icosahedral structure F such that $f \in F$ and $u f = u$, which (with the change of notation) is what we have just seen.

This completes the proof of Theorem 1.

Definition 2. — Let S be a set with six elements. We call a biicosahedral structure (left combinatorial) on S , a pair formed of two icosahedral structures complementary to each other.

By virtue of part d) of the theorem, there are therefore exactly $12/2 = 6$ biicosahedral structures on S . According to part f), if f is a triangle of S and f the complementary triangle,

the set $S \tilde{y}$ of these six icosahedral structures is in canonical one-to-one correspondence with $Pf =$ set of bijections of f with f . More precisely, if we identify the set $lc(S)$ of icosahedral structures on S with the product set $f \times Pf$ as in f), then the operation $F \tilde{y} F$ of passage to the complementary icosahedral structure is interpreted like the operation

$$(\tilde{y}, u) \tilde{y} (\tilde{y}, u),$$

where for all $\tilde{y}$ in the two-element set $f = \{f, \tilde{f}\}$, $\tilde{y}$ denotes the other element of f .

We call a left combinatorial biicosahedron (or simply biicosahedron) a couple $(S, \{F, F\})$ formed of a set S with six elements, and a biicosahedral structure $\{F, F\}$ on S , formed of two icosahedral structures F complementary to each other.

We define the isomorphisms of such objects in the usual way. Note that two bi-icosahedrons are isomorphic, and the set of isomorphisms from one to the other has exactly 120 elements. For example, if we look at the automorphisms of a biicosahedron $(S, \{F, F\})$, these form a "group" (in the technical mathematical sense of the term: stability by composition and by passage to the opposite), which is decomposed into two disjoint subsets, each having 60 elements (therefore making a total of 120): the first is formed from bi-jections of S with itself (or "permutations" of S) which transform F in itself, or what amounts to the same thing, F in itself - in other words, these are the automorphisms of the icosahedron (S, F) (or (S, F)). The second is formed by permutations which transform F into i.e. again the isomorphisms of the icosahedron

F or what amounts to the same thing, F in F .
(S, F) with (S, F) . By part a of Theorem 1, there are also 60.

There I let myself be led into saying much more than is necessary for my "philosophical" purpose (*). The essential thing is to clearly see the structure of the icosahedron (left), highlighted on the drawing on page PU 119, the notion of complementary icosahedron (giving rise to the notion of biicosahedron), and finally the description of icosahedral or biicosahedral structures on S , in terms of the set Pf of the six bijections of a previously given triangle f of S , with its complement $\tilde{f}$. Finally, from the point of view of

(*) (April 14) On the other hand, it's not much for my passion as a mathematician, which has been awakened again in recent days - and here goes my reflection on the icosahedron, this mathematical love of my middle age! I will therefore perhaps add to these notes (in the appendix?) some additions on the combinatorics of the icosahedron and on the geometry of sets with six elements...

the spatial geometric intuition of the combinatorial structure, it is very useful, to re-acquaint yourself with it, to have at home a cardboard model of the ordinary regular icosahedron (**), which has twelve vertices, thirty edges and twenty faces, and to “visualize” a left combinatorial icosahedron, as described (in an essentially canonical way, in a sense that it would be easy to explain (*)), in terms of an “ordinary” or “ordinary” icosahedron. Pythagorean” (seen as a solid in space), taking as vertices, edges and faces of the left icosahedron, the pairs of diametrically opposite vertices, edges or faces of the Pythagorean solid. It is in this spirit that the drawing of page PU 119 was made, where the pairs $\{a, a\}$, $\{b, b\}$ and $\{c, c\}$ precisely designate pairs of opposite vertices of the icosahedron-solid, and the same for the pairs of edges ($\{a, b\}$, $\{a, b\}$) etc, which we had precisely to identify with a single

With

I now come to the hexagram Thought, formed from the set H of the six “Doors” appearing as the vertices of the hexagon-star of David, hanging on the left side of the Tree (page PU 110) . The outline highlights the two complementary “triangles” of S, represented by the two graphic triangles jointly forming the Star of David inscribed in the hexagon. Although the numbering in circular order of the six vertices of the Thought hexagram, i.e. the elements of that these two triangles each have, in terms of the philosophical reflection which had preceded, a “meaning”

(**) I have one at home, and very beautiful, which represents the “copy” of an element from the first year of college, for an end-of-year exam of an “option course” (in collaboration with Christine Voisin) on the icosahedron (in 1976, I believe). Unlike my DEA course the following year on the same theme, this course addressed to students fresh from high school was met with warm participation. The results of the exam were so brilliant that my fellow teachers believed it was a hoax that I had set up to discredit the teaching profession, and they automatically reduced all the marks by a third (the 18 out of 20 becoming 12 on 20). It was on this occasion that I learned with astonishment that most of my colleagues considered the idea that a student could enjoy studying and preparing for an exam to be shocking. They themselves had bothered enough to study and get to their great position as a teacher. from college, there was really no reason for the others not to get bored now...

(*) If we have two such “realizations” by solid-icosahedrons (or “Pythagoreans”), then there exists a unique direct similarity of one with the other, compatible with these realizations i.e. with the “markings” of the pairs of vertices opposed by the points of S. If the two icosahedrons have the same “size” ie same edge lengths, then the similarity in question will even be a “displacement”.

quite clear. These are the two triangles

(f) {Totality, Unity, Causality}

And

(f) {Simplicity, Structure, Order}.

As had already been noted immediately in a footnote (*) page PU 29), these two triangles seem to correspond quite obviously and strikingly to the two terms

desire, necessity

in the dynamic that we began to identify in the section "Desire and necessity - or the way, and the end" (nđ 11). This was the reflection where we introduced the five "yin attractors"

(P) the Whole, the general, unity, cause, fecundity,

and the five yang attractors

(P) the simple, the abstract, precision, order, structure.

It turns out that the three "terse" names that I had spontaneously given to the Doors of the first triangle (f) (Totality, Unity, Causality) are all found in the "yin package" (or "desire package") (P') above, and likewise the three "spider" names of the second triangle (f') (Simplicity, Structure, Order) are found in the "yang package" (or "necessity package")

(P'), something which immediately aroused the association with "desire" for the first triangle, and with "necessity" for the second.

It is not entirely true that the five yin attractor terms (P) appear in one of the "Gates" of the "triangle" (f) - this is only the case for the first four, so that the last one appears in the couple

purity - fertility,

(*) If we have two such "realizations" by solid-icosahedrons (or "Pythagoreans"), then there exists a unique direct similarity of one with the other, compatible with these realizations i.e. with the "markings" of the pairs of vertices opposed by the points of S. If the two icosahedrons have the same "size" ie same edge lengths, then the similarity in question will even be a "displacement".

which is part of the Simplicity Gate, therefore of the yang triangle (f'). Likewise, among the 5 yang attractors in (P'), there is one which enters the couple

precision - vague or the precise - the vague,

which appears in the Totality Door, therefore in the yin triangle (f). The fact remains that “four to one”, the yin attractors are placed in the yin triangle, the yang attractors in the yang triangle. This seems to me to confirm quite clearly the ontological interpretation that was imposed on me from the outset, for these two triangles. They are visibly “significant”, in the sense suggested in the section “Stories of icosahedrons and Christmas trees”, from March 21 (the same day as the reflection on the theme “desire and necessity”).

This initially caused perplexity - because “the” canonical icosahedral structure that I hoped for on the hexagram Thought S, must in my mind include as “faces” at least all the triangles having a clearly apparent ontological meaning. But the “desire” and “need” triangles, being complementary, cannot belong to the same icosahedral structure! On the other hand, for any bi-icosahedral structure on H, these two tri-angles respectively determine the two icosahedral structures F and F components, the yin triangle being a face for the structure described as “yin”, and the yang triangle being a face for the other icosahedral structure, described as “yang”. Thus the twelve icosahedral structures on S are divided into two packets of 6 each, one yin and the other yang. On the other hand, the data of one of the six biicosahedral structures on S amounts to the data of one of the six bijections

f $\ddot{y}\ddot{y}$ f

between the “desire” triangle and the “need” triangle. The question is therefore whether there is indeed reason to distinguish, among these six bijections, one which is more remarkable than others, from an ontological point of view.

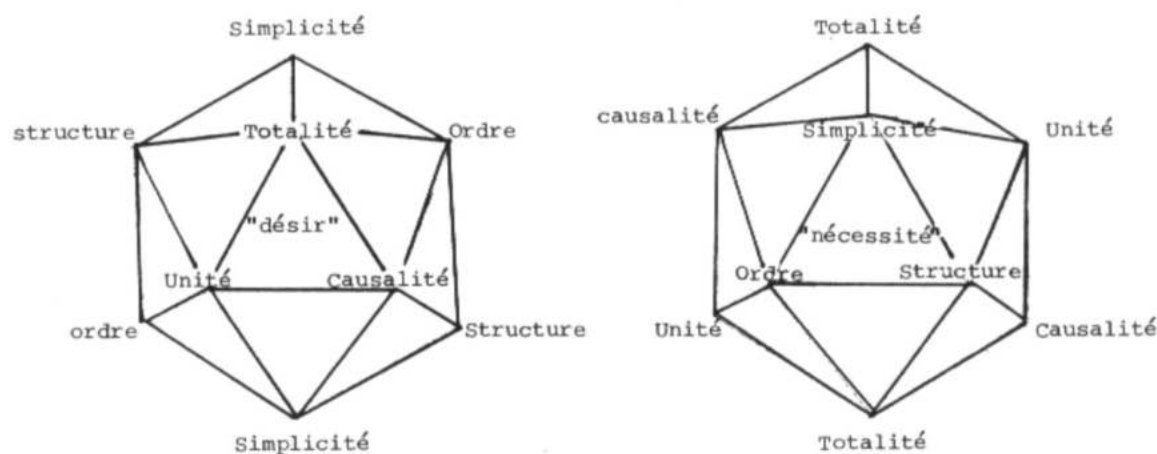
The very layout of the Tree, and of the Thought hexagram which is part of it, would suggest “diagonally” associating the three yin vertices with the three yang vertices of the hexagram, in pairs of opposite vertices: Totality with Structure, Unity with Order, Causality with Simplicity. But even taking into account the good will of God, that's a bit short! I tried to see, for each of the three yin (or “desire”) Gates, which was the yang (or “necessarily”) Gate which was associated with it in the strongest way. Without wanting to enter

in a detailed discussion on this subject, it seemed to me that in each of the three cases, there was indeed such a privileged association, and that we thus obtained the groupings

Totality - Simplicity, Unity - Order, Causality - Simplicity.

(It is therefore that deduced from the layout of the hexagram, by diagonal association, by simply exchanging the "Simplicity" and "Structure" (*) vertices between them.)

Following this suggestion, we therefore obtain a biicosahedral structure on the hexagram H, formed of two Thought icosahedrons, called one Thought-yin or Thought-desire, the other Thought-yang or Thought-necessity. Here are the perspective plots, copied without more on the standard plot on page PU 119:



I marked on the central triangle the name of the triangle, "desire" in the case of the yin icosahedron, "necessity" for the yang icosahedron. It remains to be seen to what extent we can attach a philosophical meaning to the other faces, and possibly even edges.

If we have a solid icosahedron (made of cardboard, say), we can create both combinatorial "Thought" icosahedrons, by writing the names of the six Doors around the 12 summaries.

(*) I had thought about changing my initial numbering of the six vertices of the hexagram accordingly, to). I finally exchanged the two vertices 2 and 4 (more precisely, IV plus 2nd and 4th gave it up, not finding (in the repertoire of couples thus reworked) the thread of affinities which had guided me to move from a group of yin-yang couples to the one which follows it. It is understood that in any case the layout of the Star of David hexagram suspended in the Tree (page PU 110) is provisional. We will find later a more up-to-date layout, with the "canonical suspension" of the Thought icosahedron to the Tree (of knowledge...).

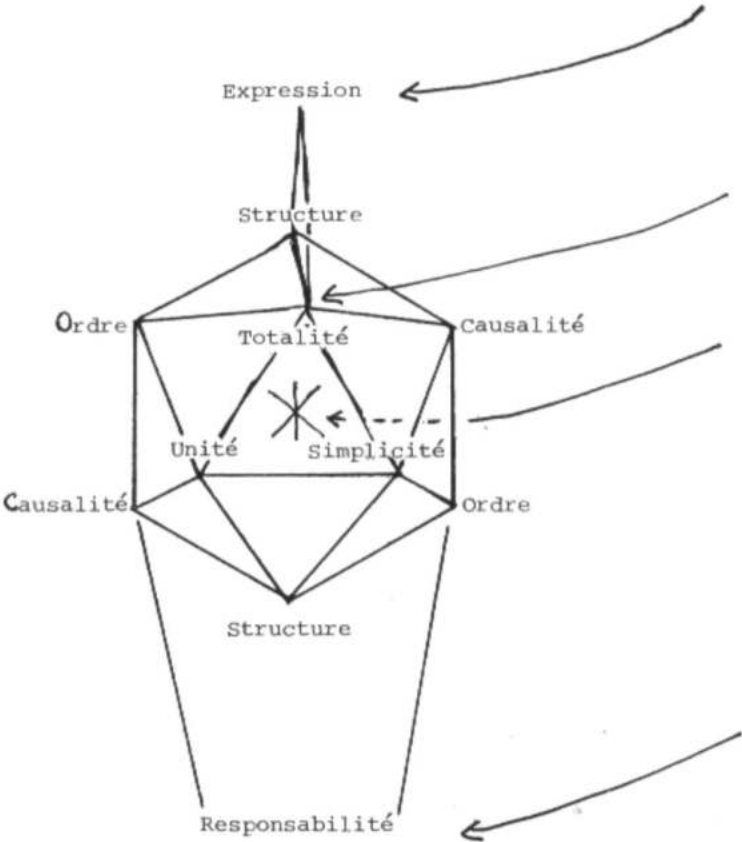
put, so as to give the same name to two antipodal vertices, and to respect the configuration indicated in the model layout given above (either yin or yang). "Up to a single rotation" bringing the icosahedron-solid on itself, it is possible in one way and one way only. To suspend the icosahedron in the tree, by attaching it to the vertex corresponding to the "Expression" Door, it is necessary to suspend it by one of its two edges (mutually antipodal)

Totality - Structure,

seeing that these are exactly the two Gates which are linked by strong and direct affinities to the Communication Gate. (NB In the Tree diagram, I had only indicated the edge joining Expression (III') to Totality (IV the Hexagram, so as not to), and not Structure (IV) at the lowest point of overload the drawing.) When this edge is horizontal and we leave hang the solid by gravity, it turns out that the two edges

Causality - Order

(which must be linked, as we have said, to the lower summit Responsibility or Karma, strongly linked to both Causality and Order) are presented either in a horizontal position (yin case), or in a vertical position (case yang). In the latter case, it is also immediate that the two lowest extremity vertices, appearing in one and the other of the two antipodal edges, are "Causality" for one, "Order" for the other. We will therefore have a nice symmetrical suspension (without preference between Causality and Order), by more or less vertical wires (instead of four in the yin case, to make it symmetrical), attached to these two ends, to connect the Responsibility Gate to the icosahedron. Thus the left side of the Tree can be retraced like this (perspective of an observer located slightly above the Thought-yang icosahedron).



HARVESTING AND SOWING

Reflections and testimony
on a past as a mathematician

about

Alexandre GROTHENDIECK

Fourth part :

THE BURIAL (III) or the Four
Operations

University of Science and Technology of Languedoc, Montpellier
and National Center for Scientific Research

To Zoghman Mebkhout
the solitary worker
as a testimony of respect and affection

HARVESTING AND SOWING (IV)

THE BURIAL (3)

or

The Four Operations

XII The Funeral Ceremony (continued)

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(163) (February 16) Exactly a month ago today I began the impromptu reflection, triggered by reading CG Jung's autobiography. I was thinking of spending a few days there, time to put down on paper the first strong impressions of reading — and today I haven't finished going through these impressions yet! They were enriched and transformed during reading, by the virtue of the work triggered by it and by the writing of my reading notes. I have just had time to review the impressions aroused by the first four chapters on Jung's early years — the chapters written in the handwriting of Jung himself. I was preparing to compare these impressions with others, not always consistent at first glance, aroused by later chapters. But as I was about to get started today, I realized that this digression (which is already approaching a hundred pages...) is really out of place in this other "digression", already quite long in itself, which I called "The key to yin and yang". (A digression which, a month ago, I believed was nearing its end (*).) It is true that my reading notes on Jung fit well into the dialectic of yin and yang, and that they also led me, without having sought it, to clarify many things which had barely been touched upon previously, both about my life and about life in general. This does not seem sufficient to me, however, to open a parenthesis of such prohibitive dimensions within another parenthesis, itself located in the final chapter, "The Funeral Ceremony", of a long reflection on my burial. It would finally be time to return to this reflection and bring it to a successful conclusion!

Ultimately, I am not going to include these reading notes in "The Key to Yin and Yang", nor even in The Burial, with which they have only a fairly tenuous link. These notes can be considered as an illustration of what I tried to express, in general terms, in the notes (among others) "The surface and the depth" and "Eloge de l'écriture" (n° 101, 102). I hesitate whether I am going to include them in *Récoltes et Semailles*, as a fourth part, or if I am going to make a separate text of them in volume 2 of the *Reflections* (**). It is true

(*) (March 26) While writing this line, I was still under the impression that the note I was starting was going to be part of "The key to yin and yang". It was only during the following days that I realized that another stage of reflection had already begun. "The key" therefore ends with the previous note "The endless chain — or the handover

(3)" (n° 162). (**) (March 26) Finally, these reading notes will form (not the fourth, but) a fifth and final part of *Récoltes et Semailles*, which will make . undoubtedly part of volume 3 (not volume 2) of *Réflexions*, with other texts of a more mathematical nature. The set of notes on the Burial which form the "third wind" in the writing of *Récoltes et Semailles*, beginning on September 22 last year, together

that this reflection on Jung's life, as it actually unfolded, is indeed an inseparable part of the long reflection that I have been pursuing for a year, and which for me is aptly called Harvests and Sowing - and I I am directly involved in it, just as much as I am everywhere else in these notes. It would therefore be artificial to separate this part of the reflection from Harvests and Sowing, for the sole reason that it hatched without warning in the middle of a Funeral, and that it "overflows" a little too much on the central theme. of it.

For the moment, I will take the opportunity of this break in my reflection on Jung's autobiography, to return to my sheep, and to finally bring to a successful end, if I can, this Funeral ceremony!

It would now be time for me to give a little report on my friend Pierre's visit to my home last October. I note his arrival in the note of October 21 ("The Act", n° 113), although he had just arrived the evening before, with his daughter Nathalie (two years old). After the departure of my visitors (in the note "Le paradis perdu" of October 25, n° 116) I wrote: "There will still be time in a few days to take stock of what this visit brought me — a visit on which I no longer counted..." These "few days" have become almost four months — but here I am finally!

I would have liked to write a "live" account of this meeting, which represents for me an important episode in the adventure that was the discovery of the Burial, its reality and its meaning. But this time, I feel restrained by a concern for discretion, to reveal as they are all of the multiple and vivid impressions that my friend's passage left on me. It is true that I had no such hesitation to bring one of these impressions into my reflection (in the note of December 26 "The disavowal (2) — or the metamorphosis", n° 153). But mention a certain impression one had of a particular friend at a particular moment, and make a live description of the precise "moment". where such a diffuse impression suddenly became manifest, undeniable - these are two completely different things. The second is a bit like taking a photo of a friend at a moment when he does not feel he is being observed, and what's more, passing it around without having ensured his agreement. This is why I will limit myself to giving some impressions that this visit left me, and will abstain (as elsewhere

of which I was thinking of making a third part of *Récoltes et Semailles*, will be divided into two distinct parts, under the respective names "The key to yin and yang" and "The four operations", forming respectively the third and fourth parts of *Récoltes et Semailles* .

in *Récoltes et Semailles* (*)) to take indiscreet photos!

I would first have to situate this visit. I had intended to go and see Pierre at his home (**) to have him read *Récoltes et Semailles*, including the Burial. At the beginning of May, I wrote to him to tell him that I would like to see him soon and have him read a text, especially for “my friends from yesteryear. and students of yesteryear in the mathematical world”, in which I “had put myself entirely” — “I don’t think I have ever treated a text like that”. I thought then that the typing would be finished during the month, and suggested coming to see him in the first half of June. Finally, because of the delays in typing, not to mention the work to put the finishing touches to the Burial (as it was then planned, that is, essentially what is now Part I of the Funeral), my visit was postponed several times, and in July and August Pierre was not in France. He had also shown no curiosity at the announcement of the work that I was so keen to hand over to him and have him read before any other. Finally, in June I sent him the first part of *Harvests and Seedlings*, “Fatuity and Renewal”, thinking that it would be a good thing for him to read it, before giving him the Burial - sometimes my reflection on myself “twitched” at him and triggered something — you never knew! I had fallen ill about ten days ago, and there was no longer any question of me going to Paris any time soon.

However, I was impatient to have him read the Funeral, in which Pierre was crucially involved, and I would have liked him to come and read it at my house, before he left on vacation. It was with these intentions that I sent him the complete Introduction towards the end of June, as well as the table of contents of the Funeral - I thought it would be a shock to him, and that he would be keen to come see me before his departure to learn in detail what I had to say about this famous funeral and the role assigned to him there. Instead, I had no further sign of life from him until around

(*) There is one exception, however — namely the “photo” that I took of JL Verdier during a telephone conversation, in the note “The joke — or “the complex weights”” (n° 83). I also remember that in order to describe the little scene “on the spot”, I had to silence a certain reluctance within me — I had the impression of having held up a sign to my ex -student, something which is absolutely not in “my style”. Of course, I was also delighted and very pleased with myself, that he rushed into this panel, although one of the largest and most visible, with full sail. Serves him right !

(**) I express this intention at the beginning of the note “My friends” (n° 79), and in the first footnote to it.

at the end of August — to the point that I wondered if he had received my shipment. It was great suspense! In his second letter after his return (dated August 25) he finally says a few words about the introduction and the table of contents, in terms which seemed to me to be most evasive. “I had the impression that you were unaware of a lot of the love with which your “orphans” were surrounded...”, he wrote to me, and he attached a commented bibliography in support, a sign of a manifest good will to dispel what he seemed to feel was a distressing misunderstanding. In his next letter (September 12), he announced his departure-moving to Princeton for October 7, and told me that he would try to stop by my place before then. Not receiving any sign of life from him again, I thought he had gone to Princeton - and then no, when I called IHES I learned that his trip had been delayed. And a week later, when I hardly expected to see him for a long time, here he was in the flesh, in the company of little Nathalie!

(February 17) The meeting took place in an atmosphere which, to all appearances, could not have been more peaceful and friendly. A superficial observer who happened to be around would have sworn that Pierre was poring over a mathematical manuscript, and that from time to time he submitted to me his observations and constructive criticisms as a mathematician who was well “in the know”. For Pierre himself, it must have been understood that he had rushed (out of consideration for me who had been, after all, his “master”), making the sacrifice of two precious days of a very busy man, certainly, to do my best to dispel an unfortunate misunderstanding, alas, which had crept into me, through some unfortunate combination of circumstances. Both his good faith and mine were certainly above all suspicion and there was no need even to mention it, as the thing was so self-evident. His role, on the other hand, was to enlighten me on all the points of material detail which did not seem entirely clear in my notes, or on which I might have made a mistake. He made a list of his observations as his reading progressed, and he submitted it to me on the day of his departure - I had the good sense to take good note of it on the spot, through keywords. He actually managed to read, in two days, the bulk of Burial I, and in any case, all the notes (identified on the table of contents, and by the internal references to the text) which directly concerned him. A great achievement, considering that it took me two months full time to write these notes...

Little Nathalie during these two days was the wisest of the good little girls. It is

I can hardly say that I heard the sound of his voice - whether speaking, shouting or crying. She didn't seem to mind me, but hardly showed herself.

As for her dad, he was the real model dad - always available at the right time, to feed, take a walk or take a little girl to sleep, neither demanding nor annoying for a penny. He had brought her, he told me, because after the major preparations for the move to Princeton, the mother was too busy cleaning to take care of Nathalie again. But beyond this practical reason and force majeure of course, I thought I sensed another reason, which remained unsaid, surely, the presence of the little girl put a note of sweetness in the atmosphere of a meeting that my friend, without perhaps wanting to recognize it even in his heart, dreaded. And this presence was at the same time like the living, dazzling sign of these tacit dispositions in which he had rushed, in the rush of moving to the United States - dispositions of patent good faith and equally obvious good will.

For my part, I had not the slightest intention of jostling my friend, to make him address anything - I was at his disposal to go into more detail with him on any question which he would feel encouraged to enter into. . It turned out that he was keen above all not to go into the substance of any of the numerous situations examined in my notes, where his probity as a mathematician (or his probity in short) was clearly called into question. An observer who would have heard our conversation, which sometimes even turned into mathematical discussion (something which had not taken place between us for more than three years (*)!), could only have suspected in the text that my friend commented, there could have been something that implicated him in a slightly personal way. As for me, I felt that my friend clung firmly to this fiction, painfully maintained, of the best patent faith in the best of all worlds. He carefully avoided anything that could have caused it to explode, by making it appear that this tacit "consensus" that he would have wanted to establish between us, against all odds, was in no way a reality, but precisely a fiction, playing the role "straw" to hold on to...

During these two days, I clearly felt how false the situation was, full of anxiety beneath this peaceful and good-natured exterior. It was like with the rope in the hangman's house, which no one talks about even though everyone thinks about it! I finished anyway

(*) Regarding the cessation of all mathematical communication between Deligne and me, see the note "Two turning points" (n° 66).

by making a remark to this effect — I believe it was the day of departure, after lunch. I have said, basically, that I was quite amazed at the turn of tea room conversation that had our meeting ; after all, in those notes he was reading, and in the introduction which he must have received almost four months ago, I had expressed myself in fairly clear and strong terms on a certain number of acts of his own. Did he really not nothing to answer me about this? He answered me, with blurred eyes and a pale smile, a little miserable, that he tried his best to “preserve himself” — without specifying (however that he remembers) what he was trying to “preserve” himself from, surely, my investigation had to be felt by him as a violent intrusion into a life which until then had had to seem most peaceful and without problems - where everything must even have seemed surprisingly docile to him; even so docile, perhaps, that he had ended up forgetting that he could be otherwise. To assume the situation in which he has placed himself, that is to say, to simply confront it, to examine it as it is - this would represent an upheaval of a whole such amplitude in his vision of himself and the world, such a collapse of the structure rigid self, that most would prefer a thousand deaths and set the world ablaze if they can), rather than taking the risk of such a leap into the unknown. It's all of this, surely, that my friend wanted (and undoubtedly still wants today) to “preserve himself”.

I shouldn't be surprised, having seen this kind of scenario happen hundreds of times. sometimes, an expression of great fear in the face of the reality of things and above all, beyond this, in the face of the risk of interior renewal. I shouldn't be surprised by that, of course, and yet, each time anew I am astonished, when I see the most glaring evidence challenged, and suffering and inflicting a thousand torments, for the sole purpose of avoiding what I know well, and of sure knowledge, to be the greatest blessing...

Still, after this unsuccessful attempt on my part to “get off the rails”, the conversation took a turn for the worse. These minutes were, I believe, the only ones (*), during these two days/ where our conversation took a personal turn — or something was said that would beyond the fiction of “consensus”, maintained despite evidence to the contrary 1 I fear that, as so often, I did not have on this occasion the affectionate “roundness”, and yet without detours, which could have helped my friend, by de-dramatizing an atmosphere which, in despite appearances, was extremely tense, and had been for months already. While I

(*) However, apart from the conversation we had on the station platform, just before departure from my friend. I will come back to this later.

limited myself to going about my domestic, gardening and writing activities, leaving my friend to his reading, and also during meals, taken together, there was in me a silent expectation towards my young friend - the expecting a response to what I was telling him, through this text in his hands. He could not help but feel this expectation - and he knew well, deep down, that it was not his few poor material details that "answered" it! surely, it would have been a relief for him if I took the lead in one way or another, even if it meant starting with a careful shouting match that he hadn't stolen, that no, and which finally established a contact, where there was none.

It is true that over the past fifteen years, every time I had tried to raise something personal with him that was close to my heart, I had been met with complete silence, or (when it was in person) with the required surprised inflections, in the purest "velvet paw" style. I no longer wanted, of course, to play that game, which I had left without any intention of returning since the "turning point" of 1981 (*). But it is also true that this time there was a visibly unique "moment" in the relationship between us, and which perhaps deserved a break in a rule (or a habit, which had become second nature...), not to go against the reluctance in others to approach this or that thing. Sometimes it can be good (and within certain limits) to "force your hand" a little, a bit like with a kid who would be taken to the dentist despite the (irrational) fear he may have...

I am not saying all this, just to pity this poor friend Pierre who did not receive from me all the kind encouragement that he could have wished to find there, and what else! After all, it is normal that I have my limits, like everyone else, and what's more, it is not necessarily my role and even less my obligation to cushion the shocks for those who have put themselves in situations (even if -this without their knowledge) which risked falling back on them, one day or another and in one way or another.

Moreover, after having accompanied Pierre and Nathalie to Orange station on the evening of October 22, I did not at all have the feeling of a "meeting for nothing", of a "missed opportunity". I hadn't been naive enough to expect wonders - it's so rare for two people to tackle a question that deeply concerns them both! There was no dialogue, it was something heard — and yet I felt that I had learned many things. There had already been these "material details" of course, more than one of which was very interesting, and which put the last dots on the last i's, with regard to the

(*) See the note already cited "Two turning points", n° 66.

question of the only “scenario” of certain operations which had taken place, and their contexts.

I will come back to this, continuing this note (*). What was more important was that during these two days I observed my friend with new eyes, in light of what I had learned from him during my reflection on the Funeral, I can to say that I “reacquainted” him – in his relationship with me, with things, with his daughter... This chapter remains a reserved domain – it is here that the natural reserve imposes itself, for me which I mention at the beginning of today's notes.

But from the perspective of understanding the Burial, there was another reason above all, more subtle than the two previous ones, why it was important for this meeting to take place. I think I had felt this importance from the moment I decided to go to Paris to meet my friend, but I couldn't really say why, apart from the fact that it is always important to speak in person with the person concerned, if possible, when there are matters of consequence that involve both of you. There, however, we did not talk about these things, precisely - and yet I had the impression of having learned, about the reality of the Burial, what I still had to learn.

I could also say it that way. Before this meeting, all the circumstances and the facts and gestures which constitute the Burial seemed so improbable, crazy, delusional, that despite all the tangible, indisputable material “proofs” which had taken place accumulated over the weeks and months, and despite the approximately three hundred pages of notes that I had already devoted to it — somewhere deep inside me, I still couldn't believe it (**)! This is not the first time that such a thing has happened to me, far from

(*) See the note “Dot the i's” (n° 164) which follows this one.

(**) This disbelief in the face of the testimony of our healthy faculties, when they disrupt too violently the current consensus or the ways of seeing that are dear to us, has already been mentioned in the note “The Emperor's Dress of China” n° 77) Obviously, writing this note had been a means, for me, to overcome (at least partially) this disbelief in the face of the evidence, by putting my finger on this inveterate reaction. In doing so, however, I distance myself from this disbelief, presented as that of ordinary mortals (adults), by identifying myself with the “little child who believes the testimony of his eyes” (“even though what he sees is quite unheard of, never seen before and ignored and denied by everyone). This was surely my unconscious intention in writing this note - to distance myself from an attitude of disbelief towards my own faculties, and from a herd instinct to “do like everyone else”. Such attitudes and such instincts do exist in me as in everyone, but (as in everyone) they remain most often unconscious. It was therefore like an attempt to exorcise that in me which alienated me from myself - and this attempt will have had the result above all, I believe, of making p1o. ng deeper into the unconscious what

there - that a tenacious doubt persists for some time, a tenacious vestige of resistance against the discarding of an old vision of things, a vision often more comfortable, or more in conformity with current consensus, than the one which followed it. Sometimes also this doubt is not the expression of only inertia against a creative change in the vision of things, but it is also the reflection of a healthy element, valid in the old vision, of a real aspect of the things, which had perhaps been thrown overboard a little too hastily, with the rest! Still, as every time a doubt arises, the right thing to do is to become aware of it (which is not always easy, given the inveterate reflexes of "silence" unwelcome doubts) , and, having done so, to examine it carefully, I do not remember a single time when I would have examined a doubt carefully, without having learned something interesting (or even important for me) , and moreover of a nature to make all doubt disappear (*) - Any doubt is the unmistakable sign of work that needs to be done.

In the present case, namely that of my unexpressed, perfectly irrational doubt, on the very reality of a so-called "Funeral", I must admit that before this meeting with my friend, I had not even arrived to this first prerequisite to any work: I had not really realized it. He remained in the state of a simple diffuse malaise, which did not speak its name - for lack of me to question it! I only realized afterwards the discomfort and its meaning, at the moment when it had just dissipated, precisely by virtue of the meeting with my friend. I believe, moreover, that this effect would have occurred, whatever the attitude adopted by him — whether it was that of a sort of eager collaboration to provide me with all the missing "material details" (as was the case). the case), or let us say, on the contrary, that of a vehement, perhaps furious, denial of the most obvious facts. In any case, the

I wanted to distance myself. The insidious doubt, acting as a secret flaw in my knowledge of things, was not eliminated, nor was it "overcome" ("at least partially", sic) the unfortunate disbelief!

I realize again that at that moment of reflection, it remained below what I call "meditation" — which is a reflection in which the obscure and delicate interior movements (such as this disbelief secret, and the real motivation in me in writing the note, which was to "exorcise" this embarrassing disbelief) remain constantly the object of vigilant attention.

(*) It would be more accurate to say that doubt was transformed into knowledge, which took its place. This has nothing in common with what happens when we chase away (or "go beyond"!) a doubt, which has the effect of making it disappear from sight, even though it has taken refuge (or been exiled). ...) in invisible, deeper layers. It is further than ever from being resolved (and transformed into knowledge), and it continues to act as much as ever, like a secret flaw, a discomfort, a sign of work that remains evaded. Compare this with the comments in the previous footnote.

psychic reality of the Burial could not fail to appear to me, this time by direct perception (and not by “induction” from documents, and by cross-checking from other facts to my knowledge etc.), in seeing my counterpart purely and simply ignoring the grotesque absurdities of the version “the best of all possible worlds”, absurdities whose very enormity had made me rightly doubt at first, in my heart of hearts, the reality of said Burial!

To give just one example: I had to learn from Deligne himself that he had indeed learned the “God theorem” from Zoghman Mebkhout himself — but that he had not wanted to refer to him in his article with Beilinson and Bernstein (*), out of scruple (1) with regard to Kashiwara, not being sure (as a non-specialist) what was the part of one and the other other in the said theorem (**) - express myself in these terms, to thus see with my eyes this strange combination of good faith in detail, and phenomenal and . . . I had to hear Deligne striking bad faith in the substance and in the essential .

I did not think it useful to draw my friend's attention to the curious way (highlighted in the note “The Conjurer” (n° 75), which he had nevertheless read well!) in which he was taken, for this result “which must have found its place” in his article, to give the appearance that it was none other than him (or at least, one of the three authors of the prestigious article) who was the brilliant author! He also had no explanation to offer for this strange fact, that this Colloquium which I called the “Pervers Colloquium” had been done, essentially, in the wake of the work and the philosophy developed by Mebkhout in the years previous ones (something that Deligne did not pretend to contest (*)), but that its name is nevertheless

(*) See the notes “The Unknown Service and the Theorem of the Good Lord” (n° 48) and “Iniquity — or the meaning of a return” (n° 75), as well as the notes which follow the latter, forming with her the Procession “The Colloquy — or Bundles of Mebkhout and Perversity”.

(**) Of course, there is no more reference to Kashiwara than to Zoghman Mebkhout in the article by Beilinson, Bernstein and Deligne, developing the formalism of so-called “perverse” bundles (not to call them “make these of Mebkhout”), from the philosophy of Mebkhout-never-named. Deligne also knows better than me the role of Kashiwara in the theorem of the good Lord (aka Mebkhout): Kashiwara's constructibility theorem allows Mebkhout to define the functor going from a triangulated category of “continuous” coefficients (complexes of differential operators) towards another formed of “discrete” (constructible) coefficients — something that no one in the world had thought of doing before him, and even less of suspecting that we would have an equivalence of categories. This was precisely the “missing link” in the duality formalism that I had developed over ten years (1956–66), and that my cohomologist students, led by Deligne, had hastened to bury after my departure in 1970.

strictly absent from the Proceedings of the Conference published in Asterisk (**). He seemed to regard this as some sort of unfortunate coincidence, one in which he and no one had anything to do with it. In short, what I called the Burial is reduced for my friend Pierre to around twenty or thirty such “coincidences”.

I found there a game that I knew well from him - and not only from him; a game where you play the fool with the most innocent air in the world, with the certainty of never being caught”. And it's been a while since I've been wasting my time trying to convince anyone (for example) that certain so-called “coincidences” are not just coincidences. It can sometimes be useful to point out obvious things, but once that is done, it is a waste of time to try to convince anyone that these are indeed things, and not imaginations, so what would you look for? there! It's a waste of time to want to convince bad faith, whether it is conscious or unconscious, it's the same, and whether it takes the face of idiocy, or that of finesse - it's the same Again.

But what had changed during our meeting, and which gave my friend a note of anxiety that he did his best to control and hide, was that this

(*) Deligne limited himself to pretending to qualify my vision of things somewhat, saying that in his opinion, the influence of the ideas of MacPherson in the Luminy Colloquium of June 1981 (known as “Perverse Colloquium”) was even more important than that of Mebkhout. I wasn't in the loop enough to discuss the matter in detail, and it was obviously a point of detail, which would hardly lessen the enormity of what happened. Deligne did not dispute that neither the Colloquium in question, nor the large-scale renewal in the theory of cohomology of algebraic varieties of which this was the sign, would have taken place without the pioneering work of Mebkhout in the years that had preceded it, and without the philosophy that he had developed in complete solitude.

I understood that MacPherson's idea of the “intersection cohomology” of varieties, developed by him independently of Mebkhout's ideas, remained a bit of a dead letter until the moment when Mebkhout's “philosophy” shed light on it in a new and unsuspected light (something discovered by Deligne). It was the strong start of the theory of Mebkhout's beams (wrongly called “perverse”, in place of a certain Colloquy..). This start is the main event of the said Colloquium, and (it would seem) a turning point in the history of our understanding of the cohomology of algebraic varieties. The keystone for this new understanding me seems to be the theorem of the good Lord, which had been in the air “since the beginning of the sixties and which neither I nor (subsequently) Deligne had managed to bring out.

(**) The term “rigorously absent” is true, literally, at least for volume 1 of the Proceedings, made up of the Introduction and the article by Beilinson, Bernstein, Deligne), which constitutes the main part of the Conference. There are two thumb-references to Mebkhout in the bibliography to two of the articles in volume 2 (one by Brylinski, the other by Malgrange), neither of which concerns the authorship of the God theorem.

This time this game is no longer limited to a small, inconsequential sport between four eyes, neither seen nor known - and with a deceased person, again! This time the cards are open on the table, and it is a public game. The bets are on on what the famous Congregation will endorse and tolerate. It's true that she has already tolerated and endured a lot over the last ten or fifteen years, and perhaps she will continue, who knows? Like my friend Pierre, it is perhaps not within twenty or thirty "coincidences"...

(February 18) When I finally took Pierre and Nathalie back to Orange station on the evening of October 22, I felt like an idiot. Pierre had the air of someone who scrupulously and meticulously accomplished all his duty, following the schedule he had set for himself - and I felt a dull frustration, that nothing had been said or discussed, during of this meeting which had finally taken place, for months it had been in question.

It was dark, the little one (in the back seat) must have been sleeping — it would take about forty minutes to drive to the station, driving fast. We didn't speak for a while. It was I who broke the silence, under the pressure of this discontent within me which was looking for some outlet; a dissatisfaction with myself surely, rather than with anyone else. That doesn't change the fact that I went there to annoy my friend a little. I told him that I was not yet clear with myself whether I was not going to take legal action against Springer to force them to withdraw the pirate volume SGA 4 from circulation. 1/2, published in Lecture Notes (*). I wouldn't even have known how to say much more when I had been touched by this idea, that I brought it out at any chance, as a way of probing my friend a little ("ihm auf den Zahn fühlen", as they say in German).

He didn't react too much to tell the truth, it was more of a monologue that I was doing, picking up a "thread" that I had dropped a long time ago, probably in April or May. I realized, while following him then, that a simple test of legal strength did not mean much in the end - that the thing would make little sense, withdrawing SGA 4 1/2 from circulation under its title and its current presentation, that if the initiative came from someone other than me - either from the Springer house, or, better still, who knows, from Deligne himself. /I had to say that it didn't seem like a luxury to me for Deligne to make such a public gesture, in short as an honorable amends for certain actions towards me. It would clean up an atmosphere that really needed it!

(*) Regarding this volume, see in particular the four notes "Le compère", "La slate rase", "Le feu vert", "The Reversal", n°s 63, 67, 68, 68

My friend followed my monologue with monosyllables, placed here and there. He implied that Springer might not be so happy to throw away his entire stock of copies of SGA 4 1/2 - to which I replied that he just had to change the cover, as he did. had already done it on another occasion and without problems (**), it should not have cost him much. And even assuming that he messes up the stock - one Lecture Notes title out of more than a thousand, you're talking if it was going to go to profit and loss! Not to mention that Deligne, assuming he really wanted to, had the several million old francs that would be needed to cover the shortfall...

I didn't have to say, but it was implied (and surely heard), that what was at stake was perhaps more valuable than one or two months' salary of one of us. I still had to end up saying that in this kind of thing, what matters first and foremost is not seeing how to do something (or, on the contrary, listing the obstacles to doing it)., but to first be clear about what we want to do. Once this is done, the rest becomes a matter of stewardship, and "following" (when she really wants to "follow").

As my less talkative interlocutor failed to explain his true feelings, I took it as understood that he was well aware that it would be a good thing to "clean up", in short, a situation that really needed it. — but that he simply remained undecided on what he was going to be able to do about it, a matter of "keeping face" no doubt, things like that. I was really "off the mark" in fact! I finally noticed it, while we were already on the station platform waiting for the train. That was when Deligne came back to the matter, a little sheepishly, to tell me that ultimately he would prefer it to be me who contacted Springer about SGA 4 h. Obviously, he did not want to get involved or even, at this moment, to even put forward an opinion on the fate to be reserved for this work of which he was the author with, it is true, my "collaboration" (*).

It was only then that I understood that my reflection during our journey had definitely been a monologue — and that for my friend Pierre, it was still not clear that there was something perhaps not very "in order", in a certain "operation

(**) It was on the occasion of my first misadventure with the Springer publishing house, which had published Hartshorne's notes (on a course where I had developed the formalism of local cohomology) indicating as author Hartshorne. It was volume n° 41 "Local Cohomology" of the Lecture Notes, where the covers had to be changed. The Springer house was then courteous enough to apologize for the mistake, and to work diligently to repair the error. The customs of the house have changed a lot since then...

(*) See on this subject the note "The reversal" already cited, n° 68

SGA 4 1/2 — SGA 5". It is surely no coincidence, too, that it was on this theme of all that I had branched out, seeking an outlet for my discontent. It was this operation, linked to the complete massacre of a fine piece of work into which I had put the best of myself (**), which had affected me the most — by a breath of violence (in the massacre) and quiet impudence (with regard to what had been massacred). And I was touched again, by this affection (which I knew only too well in my friend) that in short it did not concern him at all, the "ideas" that I could form about this and from that.

The train would soon arrive, and it was the first time I was going to get, in a few words, into the depths of something that was close to my heart, thanks to an emotion that finally made me surface. It didn't take long to say out loud what I felt about it. These were real feelings, of someone hurt in a sense of decency, by someone he is fond of and who played on him - it was no longer somewhat scientific literature on edges, which we carefully annotate with a pencil in hand.

He was suddenly taken aback, still trying as best he could to keep his composure imperturbable. I had to say to him something like: "And so, you think it was a beautiful thing, this title "SGA 4 1/2", to suggest that these are things that come before SGA 5 — where you had learned, eleven years before, the math which is still useful every day until today 1". He answered me in the tone of someone reciting a lesson, that if he had called it SGA 4 1/2, it was only to indicate a relationship of logical dependence, and not of anteriority.

So here it was that I was given to hear with my ears, and from the mouth of the person concerned himself, this "farce" so enormous that I had difficulty believing the testimony of my eyes, when I had read it black and white, under his pen first (in "SGA 4 1/2"), then under that of Illusie (in the volume called SGA 5, which followed, as it was "logical", that of my predecessor...)!

I had to tell him that he knew as well as I did that SGA 5 "stands together" entirely, without prerequisite or conjecture of any kind, and that it did not depend logically or in any other way on subsequent contributions. . I looked him straight in the eyes while talking to him, and while he answered me. He repeated his lesson in the same toneless voice, that SGA 5 was logically dependent on SGA 4 1/2 — but I saw in his flickering eyes that he knew as well as I did what it really was. His eyes were more honest, despite themselves, than his

(**) see the note "The massacre" (n^o 87) and the two notes that follow it.

mouth.

So it ended up happening between us, the “moment of truth” — but no device, camera or tape recorder, could have detected it. Then only him and I knew what was happening.

The train arrived within minutes, I believe. Anyway, for that day, there was nothing more to say.

(164) (February 20–21) To finish the retrospective of Deligne's last visit (last October) to my home, I would like to review here the details that he was kind enough to provide me with on a certain number of points, which remained vague in my reflection notes on Burial I, even erroneous. This will be an opportunity for me to also provide certain additional details, prompted by those provided by Deligne.

I Motifs (volume “Lecture Notes 900).

1. Deligne told me that the main purpose of volume LN 900 (*) had been to develop a “theory of the motivic abelian class field” on a field of numbers $K \not\subset C$, finite extension of Q . In other words, it is a question of determining the “motivic Galois group of K on K , made abelian”. In this regard, I remember that I was the first (and for good reason!) to raise this question, towards the end of the sixties. The question has a precise meaning, for a chosen notion of pattern, using the “free Betti functor” on the category of patterns on K , thanks to the given inclusion of K in the field of complexes C .

In fact, I had asked myself the somewhat more general question of determining the “metabelian” motivic Galois group of K/K , deduced from the complete motivic Galois group by making abelian, not this entire proalgebraic group, but only its component. neutral. We had to obtain a completely canonical extension of the profinite group $\overline{\text{Gal}}(K/K)$ by the projective limit pro-torus of the (tori on Q associated with) the multiplicative groups $L^\times$ of the finite subextensions L of C/K . I remember that Serre was very intrigued by this question, but neither he nor I (nor Deligne, who of course I had brought into the mix) were able to improvise a plausible “candidate”. This question then fell into complete oblivion, just like the yoga of

(*) For details about this “memorable volume”, see the two notes “Memories of a dream — or the birth of motifs” and “The Burial — or the new father”, n^os 51, 52 .

(**) This is the article by RP Langlands “Automorphic representations, Shimura varieties and motives. Ein Märchen Corvallis”, in Proc. Symp. pure Math. 33 (1979), AMS, vol II P. 205–246.

reasons from which it arose. This silence was only broken in 1979 by the article by Langlands (which Deligne pointed out to me in a commented bibliography of motifs, in his letter of 28.5.1984) (**), article in which my idea of the motivic Galois group would be for the first time explained in the literature. As I did not have the honor of receiving a separate print of this article, I do not know if any allusions are made to it to my modest person. The next appearance of the motifs in literature appears to be LN 900, where any allusion to me as having anything to do with the theme and main problem of the volume is absent (***).

2. Deligne clarified to me that, contrary to what I thought I recognized (according to a certain "house style"...), the article by Deligne-Milne in LN 900, repeating "ab ovo" the Galois theory of tannakien categories is (***) developed by NR Saavedra, was written almost entirely by Milne (*). Deligne also explained to me the error found in Saavedra's work, which made it necessary (if we wanted to have the formalism of a Galois-Poincaré theory of fiber functors) to reinforce Saavedra's definition of a category. so-called "Tannakian" category. The work in Deligne-Milne's article was limited to making this adjustment, which was obvious once the error was spotted. This also raised the very interesting question of a manageable internal characterization of the $\tilde{y}$ -categories which are "real" Tannakian categories (which we could call, more suggestively, $\tilde{y}$ -categories of Galois - Poincaré, since it is for them that we can develop a theory of a Galois-Poincaré groupoid (**)). This question was not addressed in the article in question, and has not yet received a satisfactory solution. Obviously, it was not a question of asking or solving interesting mathematical questions, but of providing a reference

(***) (April 8) I recently learned that the patterns are used in an article by Deligne from 1979 (published in the same volume as that of Langlands cited in the note by b. from p. former).

(May 12: this "end" became the subnote "The pre-exhumation", n° 168(iv)).

(*) Regarding this article by Deligne-Milne, see the note "The Burial — or the new Father" (n° 52), and also the comments in the later note "The clean slate" (n° 67).

(**) The name "groupoid" (from Galois-Poincaré) has the advantage of suggesting the close relationship with the notion of fundamental groupoid of a topological space or a topos. Technically speaking, however, the name "sheaf" (from Galois-Poincaré) would be more appropriate. This is the sheaf of "fiber functors" defined, not only on the base body k of the $\tilde{y}$ -category considered, but on any objects of the site fpqc of the diagrams on k (with particular attention paid to the objects of this site which are of the form $\text{Spec}(k)$, where k is an extension of k , or even a finite extension of k).

substitution for Saavedra's article. (See on this subject the end of the note "The clean slate" (n^o 67).) (***)

3. On several occasions in Burial I, I underlined the fact that the Hodge-Deligne theory, developed by Deligne at the end of the sixties, was only a first step towards a theory of "coefficients of Hodge-Deligne" on a finite type scheme on C , and towards a "formalism of six operations" for such coefficients. I was (and I remain) convinced that, if it was not for a deliberate statement by Deligne against certain of the key ideas introduced by me (such as that of the formalism of six operations), Hodge's theory- Deligne would have arrived today "at full maturity". Deligne underlined that already the only definition of a category of HodgeDeligne coefficients on a finite type scheme on C , encountered serious difficulties, which he would not have been able to overcome. (It would have been all the more imperative to clearly formulate this question from the beginning of the theory, as well as the closely related question of the formalism of the six operations for such coefficients, something that Deligne always avoided doing.) According to him, the view of Mebkhout and the bundles of Mebkhout (*) should provide a means of approach towards the correct definition.

(And if it had not been for this deliberate statement, Deligne would certainly not have waited for Mebkhout to develop the philosophy that he developed (against the grain of his elders), and to use it for a visibly fundamental work which for fifteen years has remained on the ground and is still not only mentioned in the literature, except by me in *Récoltes et Semailles*!)

4. I thought, wrongly, that I remembered that I had introduced the "filtration by weights" of a pattern, reflected (for everything) in the corresponding filtration on the p -adic realization of this pattern (filtration defined in terms of absolute values of Frobenius eigenvalues).

In fact, Deligne reminded me that I had only worked with "virtual" notions of weight (which amounted to working with virtual patterns, elements of a "Grothendieck group")

(**) (May 12) Having recently read the book cited by Saavedra, it now appears that this, and the very name ("Tannakian category") of this notion that I had introduced around 1964 and which gives its name to the book, is a mystification. I dismantle it in detail in the following notes "The sixth nail (to the coffin)" (n^o s 1761 to 1767

(*) These are the beams that Deligne had introduced under the name of "perverse beams". (See on this subject the two notes "Iniquity — or the meaning of a return" and "Perversity", nos . 75, 76.) He was not annoying and was kind enough, in our conversations , call them "Mebkhout bundles"...

suitable...). It was Deligne who discovered this important fact, that the virtual notion with which I was working should correspond to a canonical filtration, by “increasing weights” (**). This discovery (just as “conjectural” as the “conjectural theory of patterns”) immediately provided the key to a definition in form of Hodge-Deligne structures (also called “mixed Hodge structure”) on the body of complexes, as a “Hodge-style” transcription of “already known” structures on the motif and on its realization by Hodge.

Technically speaking, the influence of my ideas in the definition of Hodge-Deligne structures is twofold. On the one hand, via the notion of weight of a pattern, suitably specified by Deligne in a structure of “filtration by weights”. On the other hand, since the fifties, I had emphasized the importance of the algebraic De Rham cohomology of a smooth algebraic variety de Hodge naive direct sum of $H_q(X, \mathbb{Z}(p))$, which is connected to the first well-known spectral sequence, associated with a canonical filtration (the De Rham filtration) of the De Rham cohomology. I was the first to define algebraic De Rham cohomology (at a time when no one would have had the idea of looking at the global hypercohomology of a complex of differential operators, such as the De Rham complex), and to insist on its filtered graded structure, in opposition to the bigraded structure of Hodge cohomology, which since Hodge was at the forefront. In the proper case Rham, from its filtered structure, by taking the “intersection” of this filtration and the conjugated complex filtration (thanks to the “real structure” of the De Rham cohomology, isomorphic to the Betti cohomology $H_{\mathbb{Z}}(X, \mathbb{Z}(S))$). I subsequently proved (while no one except me still believed in De Rham cohomology in the non-proper case),

(**) The heuristic reason which convinced Deligne of the existence of such a (necessarily unique) filtration of a pattern is that there exist non-trivial extensions of abelian varieties by tori (including H^1 motivic therefore provides a non-trivial extension of a pattern of weight 2 by a pattern of weight 1), but not the reverse. This may not seem like much - yet I myself was convinced more or less on the spot - it was too seductive to be false! a more serious reason, at the level of p -adic representations coming from patterns on a field K of finite type, would be to prove that any extension of a Galois module of weight i by another of weight j is trivial if $i < j$. I no longer remember if Deligne or I were able to demonstrate this statement, which would prove the existence of a canonical filtration “by increasing weights” for the Galois p -adic module associated with a pattern (object already quite close to the pattern itself..).

that for a smooth scheme

That said, once postulated the existence of a notion of motif (not necessarily semi-simple) on and of a motivic cohomology of a C-schema “Hodge realization” (suitable and to be found) of a motif on C, which (according to my ideas) had to associate with the motivic cohomology of smooth X a “generalized Hodge structure” (to be defined), having as set basic cohomology of De Rham $HRD(X)$, the first structures that we read about the latter, namely the filtration of De Rham (introduced by me in the fifties) and the filtration by weights (introduced by Deligne from of my ideas on virtual weights, specifying the ideas of Serre, themselves coming from the conjectures of Weil), we come across exactly the notion of “mixed Hodge structure” introduced by Deligne.

Of course, this lineage of ideas (1641) was perfectly known to Deligne. It would have been consistent with the ethics of the profession (which I was unable to convey to him) for him to clearly indicate this in his work where he introduces mixed Hodge structures (*). He preferred to pass her over in silence in this work, which is also his thesis, just as he saw fit, on this particular occasion, to also pass over in silence the name of the man who had been his master.

5. In the bibliography commented on the motifs (attached to his letter of August 25), Deligne specifies that “one of the reasons why we [!] hesitated to build on them [on the few “classic texts” (**) on the motives] is the use made there of conjectures of the existence of algebraic cycles — conjectures for which we have no real evidence, while the motives are for me indubitable”.

(*) This is the article “Hodge II Theory” (Pub. Math. IHES 40 (1971) pp. 5–58). On the other hand, Serre and I are mentioned in the same line, in the “Hodge I” announcement at the Nice Congress (in 1970), as I point out in the note “The victim” (n° 78 to the latter.

. on page 308). See, for comments on this subject,

subnotes n° 78 (**), 78₂

These are the few sporadic (“classic”) texts on motifs, by Kleiman, Manin, Demazure, published until 1970. They hardly go beyond the idea starting point, and cannot give any idea of the finesse of the “yoga” that I had developed, and that I had tried to communicate to anyone who would listen. Notably, there is no mention of the Galois motivic group, which had nevertheless been an essential initial motivation for developing yoga. (See the note “Remembrance of a dream — or the birth of motives, § 51.)

I would respond to this explanation that these “classic texts” are in no way representative of the “state of the art” at the end of the sixties, far from it, and this is not certain. these texts that he, Deligne, learned this “state of the art”! He knows very well that my “standard conjectures” were one of the possible approaches, among many others, for a provisional “shaped construction” of a notion of (semi-simple) pattern on a body, which in no way limited the scope and internal dynamics of the ideas he got from me. (See on this subject sub-note n° 51 of the note “Remembrance of a dream - or the birth of motives” n° 51.) Killing two birds with one stone, he strove after my departure, both to discredit standard conjectures as “unaffordable” and devoid of interest, and to discredit a certain approach to motives which would have been mine and which would have represented a dead end, indissolubly linked as it would have been (to hear it) has these hopeless conjectures - so much so that it was more charitable for me, in volume LN 900 where we finally do the work that really had to be done, to pass my name modestly in silence. .. (*)

6. In the same “commented bibliography”, I read: “From this “classical” point of view (**) there is a regrettable gap in the literature: your conjectural description of the Tannakian $\tilde{y}$ -category of motifs on F_p , with unique equivalence up to non-unique isomorphism — with these various fiber functors (crystalline and - adic), cf. Tate, isogeny classes of abelian varieties on a finite field, sem. Bourbaki 352 (1968).”

These are crocodile tears, over a “regrettable gap” which is due to no one other (apart from me...) than to my friend Pierre Deligne himself, given that apart from me, he had to well being the only mathematician in the world who had knowledge of the “conjectural description” in question... It was up to him to include it in the same LN 900, for good weight! This

(*) Deligne took the lead on any question I might have asked him on this subject, from the first day of his stay with me, by telling me with his most beautiful smile: “Do you really believe that Not everyone already knows that it was you who introduced the reasons!” The surprising thing is that despite everything my friend did to make it forget, I was able to see that it still remains generally known. But due to the lack of written references for my ideas, Deligne had complete freedom to create the impression that my contribution had to be limited, as usual, to proposing a vague general idea (moreover unusable as it is, given its dependence on conjectures “as unaffordable today as they ever were”...—so vague even, that it really did not deserve a serious mathematician, doing real work, to take the trouble to make even a reference to it even purely formal...

(**) See the penultimate note of b. from p.

description was in no way conjectural, as far as I remember now, apart from the fact that it was necessary to suppose that we had a category called “patterns on F_p ”, satisfying a few reasonable conditions, that we have the right to expect from a category responding to this name. If I remember correctly, the cited reference to Tate-Honda implied that the category in question was generated multiplicatively by the Tate pattern (and its inverse) and by the abelian varieties defined on F_p . There were some beautiful things (and I can't forget many), which I had entrusted into the hands of my brilliant student and which remained carefully buried until today...

II Flat cohomology (“SGA 4 1/2, SGA 5, SGA 7, discrete Riemann-Roch).

1. One of the first comments that Deligne made to me on the subject of Burial I concerns the vicissitudes of the conjectural theorem that I had identified in SGA 5, under the name of “discrete Riemann-Roch theorem”. I speak in some detail about it in subnote no. 871 to the note “The massacre” (no. 87). Deligne tells me that when he communicated my conjectural statement to MacPherson, he considered himself to have the role of “factor”, of intermediary. He did not add a new ingredient to my statement - the idea of translating my statement into homological language, to give it meaning for singular spaces, is due to MacPherson, not to Deligne. He told me that he was surprised, upon receiving the separate print of MacPherson's article proving my conjecture in the complex-analytical case and in the homological context (by transcendent arguments), to find the conjecture under the name of “Deligne-Grothendieck conjecture”. He had thought of writing to MacPherson to correct the misunderstanding, but (he himself could not say why) he ultimately did not do so...

2. Contrary to what I assumed and suggested, Deligne had not made a commitment, at the time of the SGA 5 oral seminar, to write one or more presentations for this seminar, for example the presentation on the cohomology class associated with an algebraic cycle (which he ended up writing eleven years after the seminar to include in the volume of his composition called “SGA 4 1/2”, without further ado (*)).

(*) This act of dismantling (among many others) of the SGA 5 seminar in favor of the volume called “SGA 4 1/2”, fulfilled two functions, both in the direction of a “reversal” of roles: to pass me off as a “collaborator” of Deligne, and to support the claim of anteriority (already suggested by the misleading name SGA 4 1/2, and explained “between the lines” in the introduction both to SGA 4 1/2 by Deligne, and to

In this regard, I asked the question if he did not think that the privilege of having been able to learn “on the fly”, in SGA 5, the basic techniques which served him in all his subsequent work, did not impose an obligation or responsibility on him to do his best to make these techniques available to the mathematical public, through a rapid publication of SGA 5. Deligne told me that he did not think so. I refrained from asking him the same question about the philosophy of patterns, which was his main source of inspiration for the cohomology of algebraic varieties (which constitutes the central theme of his work...).

3. It was Deligne who took the initiative of asking Verdier for his agreement to include in “SGA 4 1/2” the famous “State 0” of Verdier’s work on derived categories. Verdier initially declined, judging that it would make no sense (I don’t remember the exact expression). It was Illusie who finally convinced Verdier to agree.

Verdier’s first reaction seems to me to be most natural and consistent with simple mathematical common sense. Moreover, Verdier had decided years ago to bury the derived categories, in the form of a large-scale “work on pieces”, which was one day supposed to constitute his thesis - it was therefore going to look crazy to publish a preliminary sketch which, for a long time, was widely covered by the literature. I think I understand the reasons why Deligne and Illusie were so keen to publish this State 0, where my name was not mentioned. As for Verdier’s reasons for returning to his first common-sense reaction, I thought I sensed them and expressed myself on this subject in the note “Thesis on credit and all-risk insurance” (n° 81).

4. In the note “The clean slate” (n° 67), I noted the ambiguity of the expression “this seminar” in the passage from the Introduction to SGA 4 1/2 (p. 2) where it is said: “For the application to L functions, this seminar contains another demonstration, it completes, in the particular case of the Frobenius morphism”. This ambiguous expression, given the context and its spirit, had every chance of being read as meaning “SGA 4 1/2”, so as to suggest that the mother seminar SGA 5 did not contain a “complete” demonstration of rationality. of the

SGA 5 by Illusie from “SGA 4 1/2” on SGA 5 (where references to SGA 4 1/2, via said hacked expose of SGA 5, abound). See also on this subject the comments in the note “The reversal” (n° 68), where I finally discover the meaning of the strange name given to the pirate volume, and of the presence in this volume of my presentation on algebraic cycles.

functions L. Deligne told me that in his mind, “this seminar” really meant “SGA 5”.

To tell the truth, this clarification doesn't clarify anything for me. I know well that Deligne knows as well as I that in SGA 5 there is a “complete” demonstration, but yes, of a trace formula, which also extends very far (contrary to what he suggests) “the special case of the Frobenius morphism”. But it is not by chance that under Deligne's pen imprecisions and ambiguities abound, when they are not even patent untruths, which all go in the same direction: to suggest an impression, concerning my work or that of Mebkhout and others linked to my person, likely to discredit it, while enhancing its own credit, or creating one from scratch (*).

5. I take this opportunity to add some comments on the subject of SGA 7 II (seminar presented as directed by P. Deligne and N. Katz), on which I had already expressed myself in quite detailed manner in the note (without name (*)) n° 56. A slightly more detailed examination showed me that on this occasion, N. Katz did not hesitate to discreetly push the wheels of the Funeral Van smoothly led by Deligne, and this in many ways.

Katz agreed to appear with Deligne as co-author of the volume and the seminar, which in no way corresponds to the reality of what happened during the oral seminar, four years before the publication of the volume. The overall concept of the SGA 7 seminar (which continued over the two years 1967–69) came from me, and the seminar was presented as a seminar led jointly by Deligne and me. N. Katz appeared there as a collaborator-speaker, among a number of others. But from the moment that N. Katz agreed to sign as co-author of the volume (five presentations of which are written by him, but none of the main results are due to him), it is normal to consider him as co-responsible, in the same way. that Deligne, of the general appearance of the volume, and of the evasion which is made of my person.

I am thinking first of all of the evasion made in the introduction to the volume (signed by Deligne), where nothing suggests that I have anything to do with any of the themes or results presented in the text, while one of the two “key results” of the seminar put forward

(*) By suggesting in particular its authorship on the key ideas of patterns, that of equated cohomology, and that of the “good God theorem” and the philosophy of Mebkhout which goes with it.

(March 26) For the specific case and “this seminar”, see also the subnote “Double meanings — or the art of the scam” (n° 1697).

featured (namely, the theory of Lefschetz brushes) had been developed by me before the SGA 7 seminar, and had moreover been one of my motivations for considering doing a seminar on the theme of monodromy. In Katz's presentation which presents this theory (Exp. XVIII), called "Cohomological study of Lefschetz brushes, by N. Katz", my name does not appear in the title as is customary ("according to A — Grothendieck"), but appears in a laconic footnote after the name of N. Katz, "According to (brief) notes by GROTHENDIECK". It seems that the qualifier "brief" was added to minimize the fact that these unfortunate "Grothendieck notes" played a role here. However, although they were "succinct", they nonetheless represented the culmination of work lasting several days on the task, by no means obvious a priori, of transcribing in an entirely different technical context, the results stated and de- shown by a transcendent way. As for the flat duality or for the theory of Nielsen-wecken (*), the classical arguments were unusable as they were, and it was necessary to redo everything, taking the classical results as a common thread and completely forgetting their "demonstration" (if we can call it that) traditional. It is normal that, even helped by my detailed notes, Katz had to make an effort to get into the swing of things, just as I had to do before him - but that does not mean in any way (at least, not according to the rules of the generally accepted game) that he is the author of the theory of Lefschetz brushes in equal cohomology!

Continuing his momentum, in the introduction to the same presentation (p. 225), Katz pretends to present Ms. Raynaud as the author of the theorem of structure of the moderate fundamental group "prime to p " of an algebraic curve in char. p . If I remember correctly, it is this theorem (demonstrated by me in 1958, before having yet met my future student) which, with the "Lefschetz cow theorem", constitutes the deep technical ingredient of the theory, and I was very happy, in the demonstration of the irreducibility theorem, to have to use it in all its force.

In the introduction to Katz's lecture XXI (pp. 364–365), after describing the theorem

(*) (March 26) In the meantime, I have filled this gap, by including this note in the table of contents under the name "Prelude to a Massacre".

(*) Having less restraint than his friend N. Katz, Deligne did not consider it useful to mention that I had something to do with what he called "the Nielsen-wecken method" — see on this subject, subnote 67 to note "The clean slate" n° 67.

main part of the presentation, concerning complete intersections in projective space, it is said

"There are heuristic arguments due to A. Grothendieck and based on the yoga of crystal cohomology, which make the general statement plausible for all projective and smooth X , by essentially the same method".

This comment suggests that I would have been inspired by the method of the text (due to an unspecified author, who can hardly be more than one of the two authors of the volume), to embroider on it "heuristic arguments" which make it possible to generalize the proven result.

I seem to remember that it's just the opposite - that these are my "heuristic arguments" (which I had developed in my corner well before the seminar, in the wake of my reflection on Griffiths' theorem and on brushes of Lefschetz (**)), which are found to "walk" (without conjectural ingredients what is more) in the case where X is a complete intersection.

Moreover, in the previous presentation (also by Katz) devoted to said Griffiths theorem, it is said in the introduction that "the demonstration given here (due to GROTHENDIECK) is the translation into purely algebraic terms of the original demonstration, more or less transcendent, by GRIFFITHS". This comment may give the impression that we are spoiled for choice between several demonstrations of Griffiths' theorem in coach. whatever, and that I was given the honor of choosing mine. In fact, there is no other one as far as I know. Moreover, according to the work that I had been obliged to put into it, I doubt that this demonstration is a simple "translation" of that of Griffiths, any more than the demonstration of any of the major key theorems in étale cohomology. was the "translation" of an already known demonstration, or (for that matter) that the mastery of the flat cohomology of the diagrams was a question of "translating into purely algebraic terms" the familiar theory of ordinary cohomology.

I reviewed the three references to myself in the texts of N's presentations.

Katz (there is only one in all of Deligne's eight presentations!). All three seem to me to reflect the same deliberate intention. To conclude, I point out that in the text of the last presentation of the volume, by N. Katz, devoted to the "congruence formula mod.

(**) It is moreover these reflections, just like my reflections on the theory of evanescent cycles in abstract algebraic geometry (another of my "purely algebraic translations of the transcendental theory" 1) which were to the origin of the SGA 7 seminar.

p ” of a function L in char. p , my name does not appear (*) — not even for the ordinary cohomological expression of the function L . In fact, the analogous expression in terms of crystal cohomology (which remained conjectural), had led me to conjecture the congruence formula for several years. I communicated this conjecture to Deligne, who found a surprisingly simple demonstration, thanks to his symmetrical Kunneth formula (exposed in SGA 4 XVII 5.4.21). I presume that Katz, who was well aware of this sort of thing, was also well aware of the origin of the conjecture, without considering it useful to mention it. (He presents in the text a demonstration different from that of Deligne, and much less elegant.)

Funny detail, at the end of the introduction to this final presentation of SGA 7 II, we read that Deligne's demonstration “should appear in the reissue of SGA 5” (which SGA 5 had not yet had the chance to know its first “edition”). This may suggest that five years before the SGA 4 1/2 - SGA 5 operation, Deligne still had the intention (as was normal) to include in the future published version of SGA 5 the additions that he had contributed since 1966 to the theory of equated cohomology, developed in SGA 4, SG4 5 (*).

III Philosophy of Mebkhout (Luminy Conference June 1981, article on 'beams pervers' de Beilinson, Bernstein, Deligne).

I repeat here for the record what I reported on this subject in the previous note.

1. Deligne told me that he had learned the “God theorem” (**) in a conversation with Mebkhout during a Bourbaki seminar — it was in any case before the summer of 1980. This overlaps with this that I have from Mebkhout, namely that the theorem in question had been communicated by Deligne to Bernstein and Beilinson in October 1980, to be immediately used

(*) This is not entirely accurate - he appears there (so it is a fourth reference to me), in a breath with Deligne, on page 410, to thank us for having explained to the author various equivalent reformulations of the form in which he presents the congruence formula. Funny detail, of the three numbered references that he indicates for these brilliant variants, none exist in the presentation, so that these thanks take on the appearance of a friendly hoax! (He's not the first one I've met in the Funeral...)

(*) I presume that it is the absence of any reaction (by any of the people who were involved) to the scams that took place in SGA 7, which must have encouraged Deligne to take the next step in his escalation: I The large-scale scam of operation SGA 4 1/2 - SGA 5.

(**) See the note “The unknown service and the theorem of the good Lord”, n° 48

by them in their demonstration of the Kazhdan-Lusztig conjecture (**). Deligne adds that he had not cited Mebkhout in his article with Bernstein and Beilinson, not being sure what part belonged to Kashiwara in this theorem (***).

2. Deligne does not dispute that the Luminy Colloquium of June 1981 (where he himself appeared as the big star) would not have taken place without the work of Mebkhout in previous years. He only wanted to add that the role of Mac-Pherson's ideas seemed "even more essential" to him. He did not suggest that there would be anything strange or abnormal in the fact that Mebkhout's name did not appear in the Proceedings of the Conference.

IV Formalism of duality in cohomology, derived categories ("The good reference", "State 0" of the derived categories).

1. Deligne tells me that he was not aware of Verdier's article (*), taking up (among others, and without naming me) the formalism of the homology and cohomology classes associated with a cycle (which I had developed in SGA 5 in 1965/66) only after the publication of SGA 4 1/2 in 1977, therefore at least a year after the publication of the article in question. This therefore seems to contradict the impression I had that the brilliant operation carried out by Verdier in 1976 was a sort of "trial balloon" for the considerably larger operation of Deligne and others, which followed it. the year after.

Deligne told me that it was clear to him, while reading Verdier's article, that it only presented some of the ideas that I had developed in SGA 5. He was even quite happy with it, that Verdier was finally responsible for providing a reference. (The idea that the publication of SGA 5 would perhaps have provided a more adequate reference must not have occurred to him...) To a question from me in this regard, Deligne replied that he did not had not noticed that my name did not appear in Verdier's article - adding that he admitted that he had not even thought of

(**) See the footnote of May 28 to the note "Iniquity — or the meaning of a return" (n° 75), and also the note "A feeling of injustice and helplessness" (n° 44).

(***) See the comments on this subject in the previous note "Duty accomplished — or the moment of truth", in particular p. 784, and the footnote about "Kashiwara".

(*) This is the article cited in the note "Good references" (that was definitely the obvious name!), n° 82. (May

12) For comments on this difficult to believe version by Deligne, see the note "Glory to gogo-or ambiguity" (n° 170(ii)), pages 930, 931.

ask yourself a question. I had the impression that he was tacitly implying that this sort of thing was the least of these worries and did not deserve attention...

2. In the article (often cited in Burial I) by Beilinson, Bernstein, Deligne, written by Deligne and presented by him at the Luminy Colloquium (**), duality in cohomology states (which I developed in 1963) is called “Verdier duality” (***).

I asked Deligne about this strange name. He told me (with a hint of embarrassment this time) that it was because “everyone” called him that. I did not ask him to tell me who this “everyone” was, or why it was a reason, even though he, Deligne, knew perfectly well to whom this theory was due.

This reminds me of something that had struck me for a long time. In speaking with me at least, or in writing to me, Deligne never used the expression “derived category” without adding “de Verdier”. This made an unpleasant impression on me each time, without me ever stopping (before the discovery of the Burial) to probe the meaning, and even less, to dot the i's. I would undoubtedly have stopped there, if I had taken the trouble to take a slightly curious look at “SGA 4 1/2”, and at “State 0” of the “thesis” of Greenfinch which is exhumed there. (For details on the latter subject, see II 3 above.)

V The Funeral Eulogy

(**) See, regarding this “memorable Colloquium” and the article in question, the note “Iniquity — or the meaning of a return” n° 75.

(***) This operation was carried out in several movements. At my suggestion, Verdier developed after 1963 a theory of “six operations” duality in the context of ordinary topological spaces, following the mastermind that I had developed in the coherent and equate algebraic context. This duality had been baptized by my cohomologist students, as it should be, “Verdier duality” or “Poincaré-Verdier”, without mention of my modest person. In the “good reference” of 1976, Verdier also takes up, in the analytical context and without naming me, part of the formalism that I had developed in the coherent framework in the 1950s (without having changed anything). As a result, this duality, in the analytical framework, takes the name “Verdier duality”, or sometimes “Serre-Verdier duality”, always without mention of my person — even Mebkhout follows the general movement! But (in a brilliant twist) it is quite obvious that algebraic coherent duality is only a “purely algebraic translation” of the tran-scendent analytic theory, just as equal duality is such a “translation” for transcendent topological theory.

It was therefore necessary, from then on, to also baptize them “Verdier’s duality” (Serre and Poincaré being forgotten for the occasion, because they are far away). According to what Deligne told me, this is what “everyone” rushed to do. Curtain...

1. The IHES jubilee brochure containing my Eulogy (*) was not composed by its founder and first director, Léon Motchane (as it seemed to me). Moreover, the identity of the author of the brochure, which Deligne taught me, does not matter here. He confirms to me that it is indeed him who wrote the passage concerning me, and that this passage, just like the one which concerns him Deligne (from the author of the brochure), received his “green light” before to be sent to the printer. The text he dedicated to me was initially longer, and had been (with his agreement) truncated by the author of the brochure. Deligne had also revised and corrected the text which concerned him. These texts therefore represent Deligne's point of view, concerning his work and mine.

2. I asked Deligne if I was wrong, presuming that in none of his publications did he suggest that he could have learned anything from me. He confirmed it to me, with only one reservation. It concerns the biographical notice that he had written for the National Fund for Scientific Research (Brussels), on the occasion of the award of the “Quinquennial Prize” . This prize was awarded to him (in 1974 I believe) as a reward for his demonstration of Weil's conjectures. It is true (he added) that this biographical notice is not part of a mathematical publication, and its diffusion has remained more than limited. For my part, I did not know of its existence. At my request, he sent me a photocopy in the days that followed, and I think I will return to this notice in the following note.

The systematic disavowal of my person that Deligne confirmed to me did not seem to pose a problem to him. He didn't seem to find anything strange there, worthy of attention. Given these arrangements, I did not feel encouraged to ask him any questions in this direction - I do not believe that I would have gained anything more from it.

To end this retrospective, I will only add that for everything that concerns “material facts” in the strict sense of the term, I have no doubt about Deligne's good faith, which seemed obvious to me (**). The only exception in this regard is his assertion that the seminary

(*) See the two notes “The Eulogy (1) — or compliments” and “The Eulogy (2) — or strength and the halo”, n^os 104, 105.

(**) (May 12) With hindsight, however, certain reservations appeared regarding this impression, like those to which a previous note by b refers. from p. ((*) p. 802). It also appeared that Deligne had neglected to point out two gross material errors for me in my notes, which could hardly have gone unnoticed by him. (I had missed that he revealed part of the “yoga of weights” in Hodge I from 1970, and

SGA 5 (from 1965/66) would logically depend on the results of SGA 4 1/2 (*) (developed from 1973, alongside Deligne's presentations on his demonstration of Weil's conjectures). It is true that by "capturing" some of the presentations from the SGA 5 mother seminar (and especially, that on the cohomology class associated with a cycle), with the connivance of Illusie (who was responsible for editing of SGA 5) and many others, he obtained the brilliant result that SGA 5 is peppered with references to SGA 4 *s, so as to give the impression (to a reader who is not very attentive, or very well in the moment) that SGA 5 does indeed depend on SGA 4 1/2, which presents itself in all respects as an "earlier" text. This is a sleight of hand undoubtedly unique in the annals of our science, and which seems to me to distinguish the seventies of our century among all the other eras that mathematics has known.

(1641) Concerning the "philosophy of weights", resulting from the conjectures of Weil, the "filiation" seems to me to be summed up like this.

a) As it is said in subnote n° 469 of the note "My orphans". Serre had communicated to me, as part of the "philosophy" behind Weil's conjectures, a sort of "yoga of virtual weights", at the level of the ℓ -adic cohomology of a finite type diagram on a body. He had not tried to give a precise explicit formulation, and the relationship between what passed for the different remained entirely mysterious. b) One of the two main motivations that guided me from the beginning of the sixties, to develop a "yoga of patterns", was

precisely to connect "virtual weight structures" together for different reasons. (See on this subject the note "Remembrance of a dream — or the birth of motives" (n° 46), and more particularly p. 208.) From then on, it became clear that this structure had to find oneself on all the possible "realizations" of a motif, not only the ℓ -adic realizations — and in particular on the basic body C) on the realization of De Rham-Hodge.

c) Made aware by me of this philosophy of virtual weights, the ultimate source of which is the motive, Deligne brings to this yoga an important precision, with the presumption that the

that he had spoken about the motives as early as 1979).

(*) It is true that this affirmation came, not through the spontaneous initiative of Deligne coming to bring me "material details" to enlighten me and to demonstrate his complete good faith, but under the unforeseen pressure of the need to "keep face", when I had just expressed to him in person my feelings about the incredible operation SGA 4 1/2 - SGA 5. See on this subject the last part of February 18) of the previous note "Duty accomplished — or the moment of truth".

structure of virtual weights on a pattern is linked to (necessarily canonical) filtration by increasing weights. This filtration should therefore be found on all the realizations of the motif - both the p -adic realizations, and (on body C) that of De Rham-Hodge.

This “presumption” of Deligne was the starting point of his theory of “mixed” Hodge structures (which I call “Hodge-Deligne structures”), and one of the two essential technical ingredients of his definition in form of these (the other being De Rham filtration, which I introduced in the 1950s). It is the success of his attempt to describe a “Hodge cohomology” for separate schemes of any finite type on C , which can be considered the main (if not the only) “evidence” we now have about the validity of the “presumption” on the existence of a filtration of weights on motives.

Of course, it was part of my major work program around patterns, of which Deligne was informed first-hand and on a day-to-day basis, to explain a notion of “Hodge coefficients” on a finite type diagram on C , of such that a pattern on X corresponds to a “Hodge realization”, and that for smooth and pure patterns on X in dimension l ”), we find the notion (more or less known already) of “families of hodge structures” (studied in particular by Griffiths in the sixties). Furthermore, for variable X , these categories of “Hodge coefficients” had to satisfy a formalism of the six operations, reflecting the same formalism at the level of the patterns. Deligne's contribution represents a first step towards the accomplishment of this program — namely (essentially) the description of the category $Hdg(X)$ for X reduced to a point (*), and that of the “realization” functor ie, essentially, the construction of a cohomological theory on separate C -schemas of finite type, with values in this category of Hodge-Deligne structures.

(165) (February 22) Since his visit last October, and even already since his letters at the end of August (**), my friend Pierre has been with me the cream of ex-students and good boys, filled

(*) to do this well, Deligne's definition would have to be completed by the introduction of a suitable triangulate category Hdg (is this also the category derived from Hdg ?). That he failed to do so seems to me to be one of the first signs (among other later ones) of the disaffection with the yoga of derived categories and the six operations which raged until the “turning point of the Perverse Colloquium”, in nineteen eighty one.

(**) See the note “The duty accomplished — or the moment of truth” (n^o 163), where I “situate” this visit, thus

visibly with a touching good will to dispel the unfortunate misunderstandings which have crept between us, and to make me feel his good dispositions and his good faith.

It was understood that he would keep confidential, until the planned pre-publication of *Récoltes et Semailles* by my university (the USTL), the content of the readings he made of my notes, and even their existence. I don't know if he completely kept his word - the fact remains that I have the impression, through various echoes that have come back to me (***) that he must have said a word to one and to the other, to suggest that this might be the moment to give some signs of thoughtfulness to the master (the one about whom we sometimes talk in small groups, but who we carefully refrain from naming in public..).

I also have the impression that deep down, my friend does not believe (or does not want to believe, at least) that I am indeed going to publish the Burial, at the same time as the first part of *Récoltes et Sowing*. This is very consistent with the image of the "sugar daddy", being scrupulous about naming anyone who might be upset, and very willing to acknowledge in public the various failings of his own which come to mind. Reading this part "Fatuousness and Renewal", of which I had a brief echo before my friend's departure on vacation and before I sent him the introduction to the Funeral, did not worry him one bit. , quite the contrary - it would have rather stimulated an air of self-satisfaction which has become very familiar to me in him - this air a condescending or at least protective suspicion towards the decidedly deceased master. It's not at all the same thing with the Funeral, where the cards are suddenly put squarely on the table! I suspect that reading the introduction must have come as a shock to him — and it's a shame I wasn't aware at the time, perhaps something would have happened. Still, he

"than the two letters at the end of August (received after the silence of almost two months, which followed my sending of the introduction and the table of contents of the Funeral).

(***) So, I received a preprint from Illusie, undated (I imagine it must be last minute), of a presentation from an unnamed seminar (non-corresponding presentation, is- he specified, to no oral presentation of the seminar). In the title, incredibly but true, my name appears but yes: "Deformations of Barsotti-Tate groups, according to A. Grothendieck", by Luc Illusie! And in the introduction there is still "Grothendieck" as long as your arm — I thought I was dreaming. Clearly something must have happened...

There was a letter with it, where he asks me for my insight into points of Grothendieck-style homotopic algebra, and wonders why "people (ie Quillen et al.)" in K-theory work with sheaves rather than with the complexes (pseudo-coherent or perfect) of the panoply that I introduced more than twenty years ago. We actually wonder why... In my response, I had to suggest that it was not up to him or any of my ex-students to ask me such questions. I haven't had any sign of life from him since.

given time to pull himself together, before coming to see me, suddenly, five minutes before his move to the United States. And he came with such good intentions, and the meeting took place in such a family atmosphere, so “cakey”, that it seems to eliminate, so to speak “by the absurd”, that said sugar daddy can himself take seriously a certain text which hardly resembles him (let's say no more about this text, which it is better to forget...), or even disseminate it among people who are just as reasonable and “good” in all respects, that my friend Pierre himself and that ex-deceased as he always knew him... (*).

As he had promised me, and in the very days following his return to Bures, my friend sent me this biographical notice he had spoken to me about, which he had written in 1974 (or 1975) for the National Fund for Scientific Research (Belgian) (*). It is a fairly short text, of two small pages, which I read with interest and which I have just reread just now (this is the third reading, I think). At first glance, however, I did not have the impression that this text brought anything new, and that it merited my attention in the Burial. It is true that the technique of sleight of hand, which was already sufficiently known to me from my friend, is illustrated here in a particularly striking way, in a compact text of around a hundred lines. My name appears there four times (just like that of Serre, and that of Weil three times) - without anything to suggest that he perhaps met me other than as an anonymous listener of my seminar (on a theme unspecified) in 1965–66. In three of the four passages where I am mentioned, I am in one breath with another mathematician (twice Serre, once Rankin), so as to avoid giving the impression that I could have played a role with him somewhat special. This is, moreover, a technique which had already proven itself elsewhere (**). As it will not be long, I will allow myself here to quote: in full the three passages where my modest person appears,

(*) However, there was at no time a hesitation in my intention to make public all my notes on the Burial, in the same way as the first part of *Récoltes et Semailles*; and I have, of course, left no ambiguity on this subject.

(*) This biographical note is mentioned for the first time in the last footnote to the note “The nerve within the nerve — or the dwarf and the giant” (n^o 148). See also the end of the previous note n^o 164 (part V 2).

(**) I am thinking here of the laconic reference of a line, quoting Serre in one breath (without naming him) and “Grothendieck's conjectural theory of motives”, in the announcement (at the Nice Congress) by Deligne of his results in Hodge theory. For details and comments, see subnote n^o 78f of the note “The

to enlighten the reader who, like me, does not have the text of the biographical notice.

The third paragraph continues with the evocation (which has just been made) of the year 1965–66, spent “in the ideal atmosphere of the École Normale Supérieure as a foreign resident” (***):

“In Paris, I followed the Grothendieck seminar and the JP Serre course. Three hours of lessons per week but, despite happy and hard work, the rest of the week was barely enough for me to assimilate them (1651). From Grothendieck I learned the modern techniques of algebraic geometry, from Serre the fascinating beauty of number theory (1652). Serre's courses were devoted to the theory of elliptic curves, where... ”,

to continue on the charms and variety of these Serre courses. The reader who is not in the know will think that it is these courses, at a rate of three per week, which were the object of the “happy and hard work” of which the author speaks (implied: no need for work to assimilate the “greatest natural generalities” of a Grothendieck seminar... (165).

In the fifth paragraph, regarding his demonstration of Weil's conjectures, we read:

“My most notable success is having demonstrated the “Weil conjectures” (...). I undoubtedly arrived there to be familiar both with the work of Grothendieck and, in a completely different field, the work of Rankin on modular forms.”

We will admire the dubious “without doubt” placed there masterfully!) and the “in a completely different domain” suggesting that my work would have nothing to do with modular forms (*)), and especially the “so much with ” by which I have the honor of being introduced, to put on the same victim” (n° 78).

(***) For some reason that escapes me, Henri Cartan is not named here. Perhaps it is because Deligne, encouraged by a certain deliberate remark in me towards him (see the note “L'être à part”, n° 67 i), wanted to carefully avoid any appearance that he could have been someone's student. The situation of “normalien” immediately gives rise to the association of ideas “student of Cartan”, and such an association would have been reinforced by mentioning Cartan by name.

(*) It is true that “modular forms” represent a regrettable gap (among many others) in my mathematical culture, just like analytical number theory, which I have never yet “got” into. But I am still sufficiently informed to know that an understanding of modern forms

foot the vast foundation work that I had done (**), with a “punctual” technical idea borrowed from Rankin.

Finally, in the following paragraph evoking Deligne's work on Hodge's theory, it is said:

“Inspired by arithmetic, and more particularly by Grothendieck's conception of the deep meaning of Weil's conjectures, I generalized (in a non-trivial way) his theory to the case of arbitrary varieties and (in collaboration with Sullivan) to other invariants of the “form” than just cohomology. The root of this theory is already old, with Picard's treatise on the “algebraic functions of two independent variables” (around 1890), but we probably know little more about it today than a vague skeleton.”

I had to take the trouble to copy this passage to realize that “Grothendieck's conception of the deep meaning of Weil's conjectures” was the masterfully “thumb” way for my brilliant ex-student not to name the words if, without however being able to blame him for having passed them over in silence! There is no doubt that “his [therefore, my] theory”, about which I am only now wondering (this whole passage had escaped my attention in previous readings., can only mean the famous theory of motives , which there was no question of mentioning by name for four years already (and which we will not mention for another eight years i). The wording was even so vague and, to put it bluntly, incomprehensible except to a small handful of people involved (who will no doubt not have had the opportunity, like me since, to read this pre-Eulogy), that it was not even worth emphasizing here that this “theory” (which he had generalized) was, however, entirely conjectural! The “generalization” in question can hardly designate anything other than the Hodge-Deligne theory, given the context. This is a small symbolic satisfaction that my friend pays for itself, by asserting here (without fear of ever being contradicted, given the place, and the elusive vagueness

dular forms is hardly thinkable without the ideas coming from algebraic geometry, which gives the theory its “geometric” content, and that the deepest questions of the theory of modular forms are intimately linked to the presence (for a long time tacit) reasons. As we will see, these also appear, just as tacitly, in the next paragraph of the biographical note (aka Funeral Eulogy (3)!).

(**) On the notion of schema and the development of a formalism of flat cohomology, to which Deligne is careful not to allude, except in the previous quote by the kind and impersonal euphemism “modern techniques of algebraic geometry”.

of the formulation) that the Hodge-Deligne theory (which still remains in its infancy) would “generalize” the vast picture of motives that I had shown him. In this one, however, a “Hodge theory” which has reached full maturity, appears as one of the “planes” of the painting among many others (*). As for the “other invariants of the form”, it was “well known” to me from the sixties (as part of my “yoga of patterns”) that “arbitrary” algebraic varieties (as Deligne insists) had a “type of motivic homotopy”, whose higher γ_i ($i \geq 2$) generalize the motivic “geometric” fundamental group, and are explained (for a given fiber functor on a field of numbers K) as affine algebraic pro-groups on K .

As for the reference to Picard as the “root of this theory”, this is, it seems to me, an entirely bogus passage, introduced for the double motive of “doing good”, and at the same time introducing the the final paragraph, which immediately follows it (*). The term “skeletal wave” also seems to me to be the expression of another “symbolic satisfaction” that my friend pays himself, by dealing in his heart of hearts and yet without appearing to do so (always in the same “thumb!” style).) this vast vision from which he was secretly inspired while maintaining it buried (**), as being nothing more than a “vague skeleton”.

Ultimately, these scams turned out to be more interesting than I expected, when I was about to point them out in passing, out of conscience. What

(*) (February 27) For details on this subject, see in particular the note “The Melody at the Tomb — or Sufficiency” (n° 167).

(*) This final paragraph will be the subject of the note (n° 165) which follows this note.

(**) The vision of motives remained “buried” in two ways. On the one hand vis-à-vis the outside world, the mathematical public, by abstaining from any allusion to the notion of pattern (except in the half-line “thumb!” of Hodge I, in 1970, cf. note 78), until 1982 when the notion was exhumed “with great fanfare”, under the tacit authorship of Deligne (see notes n° 51 et seq.). But on the other hand, even for his personal use, I see that this vision was stripped by Deligne of its true breath, of what made it something other than a collection of all-purpose recipes (to recognize oneself in it). the cohomology of algebraic varieties), but a dream force large enough and deep enough to serve as an inspiration, a line on the horizon, for perhaps generations of arithmetic geometers.

The term “skeletal wave” by which Deligne refers (always tacitly) to this vision, makes striking the gravedigger’s dispositions in which he maintains himself, in his relationship to this dream and to the worker from whom the dream came. These are not the conditions where one can still feel a breath (as he had felt it previously), nor embody a dream. We do not embody a dream by using it for our own ends (and while denying it...), but only by making ourselves its servant.

strikes me the most, at present, it is not (as during the first readings, quick and superficial) the perfection of the “thumb!” style, already known to satiety, it is rather that this text, written new years before the Eulogy (***), prefigures it in a striking way, and this (it seems to me) in two ways. On the one hand by the vagueness of rigor which must surround each appearance of my modest person (as opposed, here, to the luxury of technical details which accompany the evocation of the Serre course). On the other hand, and in the same sense, by the complete silence which is made around the étale or ℓ -adic cohomology, as a new and essential tool which I developed from nothing, and without which the conjectures de Weil would probably not be demonstrated even a hundred years from now! In fact, as in The Eulogy, the word “cohomology” is not pronounced in relation to my name — nor is it alluded to that Deligne's proof of Weil's conjectures was simply the last step in a long journey, the longest and also the most innovative part of which was accomplished by someone other than him, even before my brilliant student appeared on the mathematical scene (*).

(¹⁶⁵) As I point out a few lines later, the wording irresistibly suggests that the “three hours of lessons per week” designate the “courses of JP Serre” which have just been discussed, and which will be discussed again two sentences later. Actually, Serre only gave one course per year (at the Collège de France), one hour per week. If we try to remove the ambiguity by interpreting the text as referring to “courses” of Serre during successive years (contrary to what the context suggests), we come across another inconsistency, because Serre changed the theme each year, without in any way being limited to that of elliptical curves (as it is said two sentences later).

While the person of Serre is used here by my friend to try to misrepresent the role that was mine in the crucial years of his training as a mathematician, it is interesting to note that the one and only reference of which I am aware in the literature, where it is said that Deligne was my student, is from the pen of Serre, who thus repairs (without pointing out them) the flagrant omissions of the work of my brilliant ex-pupil himself. even.

This is the report made by Serre in May 1977 on the subject of the work of Pierre Deligne, for the

(***) see the two notes “The Eulogy (1) — or compliments” and “The Eulogy (2) — or strength and the halo”, n^os 104, 105.

(*) This contribution from another is glossed over by Deligne under impersonal terms such as “modern techniques [or elsewhere, “powerful tools”] of algebraic geometry”.

International Committee responsible for distributing the 1978 Fields Medals. This report was made public after the distribution of the Fields Medals at the 1978 Helsinki Congress. The report begins with these words:

“Deligne's first works, directly inspired by Grothendieck, whose student he was, concern various technical points of algebraic geometry. I limit myself to mentioning them: ...

Further on, Serre also mentions the influence of my ideas and results in the demonstration of Weil's conjectures, and (via the patterns) in Deligne's work on modular forms, but not in Deligne-Mumford's work on multiplicity. modularity of algebraic curves of type (g, i) , nor in the idea of Hodge-Deligne cohomology, whose relation to the yoga of patterns and the conjectures of Weil seems to have escaped him. (It is true that Deligne does his best to hide it.)

The speech on Deligne on the occasion of the awarding of the Fields medal would have been another opportunity, following established usage, to publicly recall this link to my person which had been hidden until then by the person concerned. For some reason that escapes me, the mathematician responsible for presenting Deligne's work was not JP Serre, but N. Katz, the “co-author” with Deligne of SGA 7 II (see note n on this subject § 164 (II 5)). Needless to say, N. Katz makes no allusion to the link in question, which was nevertheless well known to him and first hand. (On the other hand, he casually repairs a certain number of somewhat embarrassing omissions from the illustrious laureate regarding me...).

¹⁶⁵₂) The choice of qualifiers here (“modern techniques” for me, “fascinating beauty” for Serre) is certainly not the result of chance. I clearly perceive the intention in my friend to evacuate (symbolically) this fascination precisely, which since our meeting (and perhaps even before this one) linked him to my person and to my work, which he saw to be made and deployed before his eyes, day by day.

I was able to note on other occasions a deliberate intention by my friend to look at and present my publications (notably the EGA (“Elements of Algebraic Geometry”) and SGA (“Seminar of Algebraic Geometry of Bois-Marie”) as sort of “compilations” of more or less technical results, which “everyone” has always known, and for which I would make the laudable effort to put them in black and white, in order to finally provide

the missing references and we no longer talk about them. However, he knows well, deep down, what to expect: that each of the volumes of the EGA and SGA present ideas that I introduced and of which for years I was the sole holder and advocate, and techniques of which no one had dreamed of (except me), and which I had to develop, test and perfect with tireless patience, before they were perfectly honed, ready to enter the domain of the "well known". He knows it better than anyone, but at the same time, this deliberate statement that he has displayed for more than a decade has ended up becoming "second nature", he himself has become its first (if not the only) dupe. .

I was struck by this again a few weeks ago, when my friend, full of thoughtfulness towards me since his visit to my house in October, sent me a copy of an exchange of letters with Dr. Heinze (in responsible for "Ergebnisse der Mathematik" at Springer) regarding a project to reissue the EGA (many volumes of which are out of print or about to be out of print). In his response, Deligne unreservedly recommends the complete reissue, "ne varietur" has little in common, saying that with one exception (the second part of EGA III, where the presentation would have been better using the derived categories sic !)), this treatise "has aged very well". Its great merit would be to provide the essential references: "Thanks to it [EGA], in algebraic geometry (as opposed to analytic geometry, for instance) one can march securely on the ground without having to worry if this or that is indefed in the literature". (He continues with a number of constructive suggestions, regarding possible appendices that could be added to some of the volumes, and mathematicians who would be able to provide them...)

It is typical of the relationship between Springer and me that this correspondence (concerning a reissue of books of which I am the author) continued with Deligne, and without Springer having deemed it necessary to contact me. first inform about this project. It was more than a month later (in a letter dated 24.1) that Dr. Heinze spoke to me in passing, as if out of conscience, about the thing — that Mr. Professor Deligne "had been so kind to tell me give a copy of his letter of 12/19/84 (it was really too kind...), and that "of course, we [Springer] would be interested in knowing your opinion on this subject [the reissue project]" (it's really too much of an honor...). I replied that, given the procedures in use in the Springer house in matters of publishing (thinking of the publication of SGA 7 and SGA 5 in the Lecture Notes, without even notifying me, and even less asking for my agreement), it seemed perfectly superfluous to me to inform the Springer Verlag of "my

opinion", visibly irrelevant. Things are there...

(166) (February 23) Finally, I didn't get to my real point yesterday, when talking about the biographical sketch of my friend Pierre. The encounter with the "vague skeleton" (aka, pattern theory) was an unforeseen episode, at a time when I was already preparing to continue with the final paragraph of the notice, immediately following the last passage cited. So here is finally the final word in the "biographical note", which I wanted to get to from the beginning:

"To conclude, I would like to emphasize how precious contact is to me with the work of mathematicians of the past from 1800 to the present day), whether direct or relayed by more learned people than me, such as A. Weil and JP Tight. We "are dwarfs perched on the shoulders of giants", and the most beautiful modern mathematical theories are motivated by the hope of solving some of the problems they have bequeathed to us.

Pierre Deligne"

As is often the case, my first reaction to these lines, a sort of profession of faith in this case, stopped at the surface, in the literal sense - but I must have felt, however, vaguely, that beyond the literal sense there was fish under the rock. This quote (from a undoubtedly famous mathematician, whom I was supposed to have read, "like everyone else") did not come to mind. I felt there a deliberate display of modesty, even humility, which had all the makings of a pose, and which simply did not correspond to the simple reality of things. Ultimately, this deliberate statement borders on absurdity: if each generation was "smaller" in size than the previous ones, the human species would have long since died out, exhausted, reduced to a paltry mass of homunculi! I know well that creativity in man is no less today (nor, undoubtedly, greater) than a hundred years, or a hundred centuries ago. I also know well, to speak only of mathematics, that such ideas and such works of people I knew well, without excluding myself from their number, would have been to the credit of even the greatest of mathematicians of the past. . And I also know well that my motivation in doing math, and no more surely that of most of my former friends in the mathematical world (*), does not lie in "the hope of solving some of the problems" bequeathed by my predecessors

(*) Including, by the way, Pierre Deligne himself!

! If it were otherwise, our science would be powerless to renew itself — it would have ceased to be creative.

What must have shocked me even more in this borrowed profession of faith, or better said, pained me, was that I knew above all that the one who made it, more than any other person in the world that I had known, had received in sharing “means” which had amazed me, and that I had also experienced a “freshness” in his approach to mathematical things, by which he was called to do great things, as few mathematicians have had the privilege to do so. There was pain within me, and also a sort of disappointment, because behind the pose of one who claims to have found humility in dealing with the great men of the past, I felt an abdication. An abdication of this creative force in him, which he seemed to have forgotten for a very long time, and which made him something very different from what was suggested by this derisory image of the dwarf, perched on the shoulders of a giant (*).

This is the first time, since my first reading of the biographical note, that I have tried to identify what feelings this reading initially aroused in me. In the days that followed and without deliberate comment on my part, it continued to work. It was this last passage in particular which continued to run through my head, like something decidedly unusual, and which had not “passed”. Behind the apparent absurdity of the profession of faith which closes this short biographical text, I had to sense a meaning, which was undoubtedly directly perceived at an unconscious level, and which gradually rose towards the superficial layers, without there being, however, a reflection strictly speaking, as far as I remember. I knew well, after all, that my friend Pierre was hardly more accustomed than me to haunting the writings of the past. If he certainly read more than me, it was not the old grimoires, but rather the latest reprints and preprints which circulate in well-informed circles, and of which he always had the first. And I also knew that it was not from Picard or from other venerable precursors of the last century or even this century that my friend had mainly drawn the inspiration which had nourished his work, since (and even before) my departure from the mathematical scene! And if it is indeed true that he enjoyed “perching on the shoulders” of someone, not in a public and rhetorical profession of faith, but secretly and real-

(*) (February 25) This impression of “abdication” is strongly associated with that aroused by a certain “third part” of my Funeral Eulogy. See the mention made of it at the end of the note “The Funeral Eulogy (2) — or strength and the halo” (n^o 105), p. 459–461.

ment, I was after all well placed, since I was thinking about a certain Funeral, to know who had been the one who had, in some way, paid the price. In the place of he-who-is-not-named- never (**) (and which nevertheless always remains present...) we verbally substitute "the great men of the past", to whom in the previous paragraph we have just tacitly attributed the authorship of the motifs (alias "which today is little more than a vague skeleton") — thus making more striking the true identity behind the figure of substitution...

I have observed many times that there is a force in man, apparently of a universal nature, which pushes him to express against all odds, often in a roundabout and symbolic way, desires and intentions (both conscious and unconscious) which cannot manifest themselves openly, thus giving them an outlet and a satisfaction which may seem derisory (in "rational" terms and according to current consensus), and which are no less substantial . It is a force, in a sense, which pushes us, as if in spite of ourselves, to proclaim the truth of our being to anyone who is willing to hear it (and there is indeed in each of us, "someone" who has a keen ear...), and this even though what is thus "proclaimed" would be the greatest secret and would be anathema, before others as well as before ourselves. The preferred terrain for the expression of this force is the dream, and this is one of the reasons why the dream is a powerful key among all to allow us to enter into the knowledge of ourselves. But due to the very intimate, personal nature of the dream, which speaks to us about ourselves to no one other than ourselves, this means of expression is in no way sufficient for us, unsuitable as it is for affirming the truth of our being in front of others, even symbolically in front of the whole world. It is thanks to this that behind each nonsense which seems to defy reason, there is a "meaning" — or to put it better, nonsense is the privileged means of expression, chosen by the unconscious with an instinct infallible, to proclaim this meaning, both hidden and ostentatiously displayed before all (*)!

This is surely what I sensed obscurely, in the days following my reading of this "nonsense "1: the "dwarf" (yet born to be giant) perched on the shoulders of a "giant"

(**) Or, if we cannot avoid it, we pretend to call it "by the band", in the style of "thumb!" strictly...

(*) For another example, particularly ostentatious, of a meaning proclaimed by an apparent nonsense, see the note "The joke - or "the complex weights"" (n° 83). See also the comments in the note "The surface and the depth" (n° 101), notably at the end of the note (p. 440), and in the one which follows it, "Eloge de l'écriture" (n° 102).

(with much more modest means than those of the so-called “dwarf”, perched on him while denying him...), one of the reasons (**) for my difficulty in becoming clearly aware of the meaning revealed by this nonsense, was undoubtedly my reluctance to recognize myself in this cookie-cutter image of the “giant”; or rather, perhaps, to recognize myself in a certain pose or trademark image which was indeed mine and which, through the unexpected medium of this grating nonsense, suddenly called out to me! It was only weeks later, in the note of December 18 “The nerve in the nerve — or the dwarf and the giant” (nŷ 148), that I finally returned to the unusual image of the dwarf and the giant. , this time by working on pieces, at a time when the context of reflection on the Burial was ready to welcome it.

This image immediately revealed itself (the same day) as a “power image” crucial for understanding my friend's relationship with me, and more deeply and above all, for the beginning of an understanding (probably called to remain forever fragmented) of the re-relation of my friend to himself, that is also to say: of the particular form taken by the division in his own person. And to the extent that the Burial was implemented, above all others, by my friend ex-student and ex-heir (*), it is also this same image which appears to me now as a stubbornly neuralgic force. at work throughout this long Funeral, like its true nerve. It is at the center of reflection in the fifteen days following the crucial moment of its appearance in the notes, throughout the nine notes which follow, between December 18 (with the note already cited “The nerve in the nerve - or the dwarf and the giant”) and the note of December 3, “The Enemy Brother — or the handover” (nŷ 156).

The “validity” of the role of neuralgic force-image that this image takes on in my reflection

(**) Another reason, and which seems to me to have been the main obstacle, is a certain inertia, or more precisely, a sort of pusillanimity in “believing the testimony of one's eyes, even though what one sees is quite unheard of, never seen before and ignored and denied by everyone”. I was confronted with it again recently in the note “Duty accomplished — or the moment of truth” (nŷ 163). See in particular note b. from p. (**) on page 782., where I probe this kind of “disbelief” in the face of the evidence...

(*) It is true that in this “implementation”, he acted in close collusion with “The entire Congregation”, to which he served in a way as an instrument for the accomplishment of a collective will.

(See the note “The Gravedigger — or the entire Congregation”, nŷ 97.) But it is possible that this same force-image that I perceived in my friend was also present at the level of an “unconscious collective” in the said Congregation, finding its expression in the individual unconscious of many of its members, and in particular, in some of those who were my students (and not only in Deligne alone).

(May 12) This intuition has come a long way since these lines were written, and now it imposes itself on me with the force of evidence. See on this subject the note “The messenger (2)” (nŷ 181).

of innocuous appearance, that is to say also, the question of the reality, in the psyche of my friend himself, of such a force-image, expression of deep conflicts and driving force for irrepressible acts of compensation (*) — this question, it seems to me, cannot be resolved by a “demonstration”, that is to say by a so-called “objective” approach which would be supposed to win the support of any interlocutor in good faith and sufficiently informed. For me, there is no doubt about this reality, and my deep conviction is not the result of such a “demonstrative” approach. It deepened, it is true, during the reflection of these two weeks mentioned earlier (a reflection of which I will not attempt to give a “summary”, or “assessment”) here. But it was present from the first day - from the moment I took the trouble, for the first time since reading it, to note in black and white what it inspired me, as if under the dictation of a voice. silent (**) which would then have “reminded” me of what deep down, already, I “knew”.

I had to “know” it, through faculties of perception that were certainly not extraordinary, but incomparably more refined than those that we commonly allow to come into play at the level of a conscious awareness of things. These mechanisms of repression of what is perceived “somewhere” in us, and which does not “fit” with the routine logic of our received ways of seeing (or rather, of not seeing) the reality around us — these These mechanisms, it need be said, are as strong in me as in anyone else. If there is a difference in this respect between me and others, it is that I have ended up realizing their silent action in me, and above all, since I sometimes “meditate” : that I sometimes take the trouble, under the impulse of an indiscreet curiosity, to ask about these things that I wish to know, which has the effect of bringing to the surface of consciousness what was obscurely perceived in the lower layers deep and make it take shape.

The initial perception is transformed during the work, which gives it shape while bringing it into the open. This work is at the same time a decantation, by which little

(*) By this term “irrepressible”, I in no way intend to suggest that the presence of this force has become a sort of inevitable fatality, which would have escaped the responsibility of my friend. The action of such a force in us is only “irrepressible” to the extent that we take pleasure and persist in evading the knowledge we have of it, in order to cash in on the various benefits and gratifications that we have. we “buy” through this deliberate “ignorance”. The price is exorbitant, it is true, but also ignoring this price is part of the same “deal”.

(**) This image of “dictation” by a “silent voice” came to me more than once, I believe, in the writing of *Récoltes et Semailles*, and each time as something taken for granted. This is in no way the repetition of some “style effect”, but reflects (it seems to me) a common aspect, more or less evident from one situation to another, of the process of discovery.

little by little the conscious translation of perception (into intelligible words) emerges from the subjective a-priori which tainted it without my knowledge. In this particular case, one of these distorting aprioris (detected in the last of the notes cited earlier) is the inveterate mechanism in me that leads me to “see myself in yang”, and this even in situations where, visibly, it is the yin side of my being, “the woman in me”, which provides the key to understanding (or at least, one of the keys, or one of the “illuminations”, essential for a nuanced understanding). I have spoken elsewhere of the signs, all “subjective” certainly and yet unmistakable, which tell me the progress of such work (*), and others also which warn me when I am going the wrong way, or when there is momentary trampling, which ends as soon as it is detected.

(167) (February 25) Most of yesterday was spent writing a long letter to a young colleague, Norman Walter, who seems motivated to embark on the theory of motives, unfazed by a conjuncture decidedly not encouraging. This time it was eight tight pages (typewriter), on the “six operations” for the categories of patterns and for the most important “categories of coefficients”. This made me realize again, with amazement, that for the twenty years since the question has been asked (not in the literature, it is true...), none of the “good” categories of “usual” coefficients (sic!) for the cohomology of schemes has not yet been defined at present, with the sole exception of “-adic coefficients” for prime to the base scheme X ; and again, this work, of course within the framework of triangular categories. es (indispensable for the six-operation formalism), done in Jouanolou's thesis, has never been published. I myself have never held a copy of this student's thesis work in my hands (**). These are striking signs of the general disaffection affecting the program of foundations which I had undertaken in the sixties, and which I certainly would not have suspected would not

(*) See on this subject the note “The child and the sea — or faith and doubt”, n° 103.

(**) Jouanolou's thesis work, done without real conviction (which distinguished it from that of all my other “students before my departure”), dragged on, and the defense did not take place until after 1970. No more than for that of Deligne, I do not remember being informed of this defense, and even less having been contacted to be part of the thesis jury. Jouanolou did not see fit to send me a copy of his work. I wrote to him last year to ask for one. He informed me (without comment) that to his regret there were none left...

(May 12) My memory here misled me — in fact Jouanolou's thesis defense was done in 1969. For details on this subject, see the final note (not yet written at the time of writing these lines) n° in the sequel “The tenth nail (to the coffin)”. 1767 ,

would not continue on the momentum acquired, but that it would be broken (or “cut off”...) as soon as I left the mathematical scene...

When the prime number is nilpotent on the diagram . . . the category of “-adic coefficients on

The construction in form of this triangulated category, without even mentioning the six operations, is still waiting for someone to tackle it. As for the “joining together” of the “ordinary” -adic case (although not found!) and the previous “crystalline” case, via a “mysterious functor” that I glimpsed at the end of the sixties, to arrive at the definition of the category of coefficients $Z \tilde{y}(X)$ without restriction on it is still not done even in the simplest non-trivial case of all, $X = \text{Spec}(Z)$

(*) The sign $\tilde{y}$ after the indication of the base ring for the chosen theory (here, the ring Z) indicates that we are working, not with “constructible sheaves” without more (-adic in this case, in a suitable sense) but with “constructible” complexes of sheaves, objects of suitable triangulated categories (the description of which in form can be delicate, even though the category of constructible sheaves, in this case $Z(X)$, would already be known). By working with patterns (by which, most often, we mean “iso-patterns” ie “patterns up to isogeny”, forming a Q -abelian category), the categories of natural coefficients to “realize” such (iso) motifs must themselves be Q -abelian, so here we will take $Q(X)$, $Q\tilde{y}(X)$.

When we want to work with all of them at once, the most natural thing is to work with a category of “adelic” sheaves (or complexes of such), whose base ring is the ring of adèles $Z \tilde{y} ZQ$, obtained in “tensorizing” the product of all categories of coefficients $Z \tilde{y}(X)$ by Q .

We will pay attention that when the prime number is not prime in the diagram . . . then in the description the “-adic coefficients” on X in the vicinity . . . nilpotent elements of QX cannot be neglected — they intervene of the fiber $X()$ of

A fortiori, it will be the same for the adelic coefficients on I also have . . . what the impression that the two main types of coefficients, the adelic coefficients and those of De Rham-Mebkhout (provided that these are provided with all the richness of structure to which reference is made below), are of comparable “fidelity”, as (weakened) descriptions, or “realizations”, of the same motif, surrounded very closely by both. On the subject of this “fidelity”, I had also put forward conjectures in the sixties, similar to those of Hodge or Tate (which my friend buried with the rest...). I plan to return to this in the volume of Reflections which will be devoted to the “vast table of motifs”. We feel a strong relationship between the two types of coefficients (adelic, De Rham-Mebkhout, the latter taken here “up to isogeny”). The advantage of the latter over the former, which makes them appear “thinner” in certain respects, is that the natural base ring for them is Q , whereas it is the ring of the adèles (much thinner). big) for the adelic theory.

As for the De Rham-Hodge coefficients $\mathrm{DRH}\tilde{g}(X)$ (*) for a general scheme, I had little precise idea how to describe them, and Deligne did not manage to define them in a really satisfactory way. The innovative idea here is due to Zoghman Mebkhout - and we know under what conditions of adversity he had to work, and what was the fate that happened to his person, once the scope of his ideas had been (very partially) recognized. Still, we finally have a sure guideline for approaching a construction in the form of categories $\mathrm{DRH}\tilde{g}(X)$, in terms of conditions of finitude, holonomy and regularity on complexes of "crystals" (absolute — that is to say relative to the absolute base $\mathrm{Spec}(\mathbb{Z})$), with perhaps the additional data of a "De Rham filtration" and another "filtration by weights" — and with the hope that we manage to do something, moreover, which holds up without being restricted to the zero characteristic, and which for a given positive characteristic restores more or less the "habitual" (sic!) crystal coefficients. The extraordinary thing is that I seem to be the only person in the world who feels the task - Zoghman Mebkhout himself, undoubtedly taught by bitter experience, does not seem to have the slightest desire to think even for a day moreover to questions of the foundations of his philosophy! I would be wrong to be surprised by this, as I see Deligne preaching by example with Hodge's theory, cutting short his own momentum, which had animated him "in my time" and giving rise to an approach rich in promise. (not held...). I suspect that the formalism (not even yet in limbo) of the Hodge coefficients (above complex algebraic varieties language of the sixties) "De Rham coefficients", or also "De Rham-Hodge", to recall the link of the filtered De Rham object with the associated graduated object (called "de Hodge"). But given the crucial role of the philosophy of Mebkhout in understanding these categories of coefficients (which always remain hypothetical, of course), it would undoubtedly be better to call them "De Rham — Mebkhout coefficients" (notation $\mathrm{DRM}\tilde{g}(X)$) or, strictly speaking, "De Rham-Hodge-Mebkhout coefficients", $\mathrm{DRHM}\tilde{g}(X)$. When

(*) (May 12) As we will see below, this name and this "improvised" notation prove to be inappropriate. I finally opted for the notation $\mathrm{DRM}\tilde{g}(X)$ or $\mathrm{Meb}\tilde{g}(X)$, dual to $\mathrm{DRD}\tilde{g}(X)$ or $\mathrm{Del}\tilde{g}(X)$, for the coefficients respectively of De Rham-Mebkhout, and those of De Rham-Deligne. The latter were left behind by their father in 1970, and adopted by me with full knowledge of the facts in the year of grace 1985, as one of the basic ingredients (with the Mebkhout coefficients) of the Grothendieckian panoply...

gories of Hodge coefficients $Hdg\check{y}(X)$ (which I certainly would not call Hodge-Deligne, whereas Deligne seems to me to have done everything to hide the problem, far from highlighting it!), in a more or less less "tautological", as well as the six operations above, from the coefficients of De Rham-Mebkhout, to which we simply add an additional structure (of a transcendent nature, that is) called "de Betti". It therefore appears to me that the main questions that arise for the description of "categories of "natural" coefficients" for the cohomology of algebraic varieties (*) are currently the following

- 1) Description of the category of ℓ -adic coefficients $Z\check{y}(X)$, for a given prime number ℓ and for any scheme X (not necessarily "prime to ℓ "), and of a formalism of the six operations for these coefficients. (This question appears more or less equivalent to that of the "mysterious functor".)
- 2) Description of the category $DRM\check{y}(X)$ of the "De Rham-Mebkhout coefficients" for or possibly, analogous any X diagram . categories $DMR\check{y}(X/S)$ for relative schemes ($DMR\check{y}(X) = DMR\check{y}(X / \text{Spec}(Z))$), and a formalism of the six operations for these coefficients.

It is possible that for 2) there are several possible variants, depending on the richness of structure that we decide to introduce into these coefficients. The "God's theorem" (aka Mebkhout) shows us in any case a priori (for Mebkhout, without having to introduce "on top of that" filtrations à la De Rham or/and by weight. A third important additional type of structure which will necessarily exist on the De Rham-Mebkhout crystal complex K on "Frobenius"

$$K(p)^{(p)} \check{y} K(p),$$

where $K(p)$ designates the restriction to the subscheme $X(p)$ deduced from X by reduction mod. p , and where the exponent (p) designates the "Frobeniusé" of $K(p)$, ie its inverse image by Frobenius

(*) These questions, in a sense, are preliminary (or tacitly supposed to be resolved) for the development of the yoga of motives with all the precision and generality which is incumbent upon it, and which I saw in it since the sixties.

$X(p) \cong X(p)$. Thus, depending on the additional structures (among the three that we have just named) that we can propose to introduce on a crystalline complex, we can predict a priori eight variants in total, for a notion of “De Rham coefficients -Mebkhout”.

It is only work on parts which will be able to show us which of these variants actually give rise to a formalism of the six operations. It is also true that for the purposes of the yoga of patterns, while we propose to find simple “algebraic” objects, which “stick” as closely as possible to the patterns, to describe them as faithfully and richly as possible. possible structure, it is the “richest” coefficients which a priori appear “the best”. It is there, in their great richness, that the main charm of the Hodge coefficients resided - even to the point that one could hope to reconstruct from scratch the category of patterns on C (if Hodge's conjecture were true) , or even, those of the patterns on any X of finite type on C .

This brings to my attention that it is possible that some of the structures are “super-felicitous”, that they arise from the others (but in a way, it is true, if hidden, that it will be difficult to explain in down-to-earth terms) (*). For example, on the De Rham cohomology (relative on S) of a smooth diagram X on another S , I demonstrated (towards the end of the sixties) (**) the existence of a connection (absolute) canonical without curvature, which I called the Gauss-Manin connection. It follows that the Hodge-Deligne structure associated by Deligne has a smooth X scheme on C (and surely even that associated with any scheme of type

(*) As a remark which goes in the same direction, I point out here the need to pay attention to possible compatibilities, more or less hidden, to be imposed on all the structures associated with a given type of “cohomological coefficients”. I am thinking here, above all, of the compatibilities (of a more or less algebraic nature) which are automatically realized in the case of “motivizable” coefficients (ie, which come from a pattern). It is plausible that it will be necessary to impose them in the categories of coefficients envisaged, if we want to have a formalism of the “six operations” (independently even of the intention of “identifying” the reasons as closely as possible). I am thinking in particular of the conditions of holonomy and regularity at infinity for the Mebkhout coefficients, and also (if we put De Rham filtration as an additional structure) the Griffiths-style conditions linking De Rham filtration and Gauss connection -Manin. These examples make it quite clear, I suppose, how the fundamental task of describing the “right” categories of cohomological coefficients, with the “six operations” constraint, will require fully exploring and using all the structures considered to date on “the cohomology of algebraic varieties”, and the relations which can link these structures. This was, from the beginning, the main purpose of the yoga of patterns - to provide a unity behind a disparity, and at the same time, a safe common thread for recognizing oneself in this disparity.

(**) (May 2) In fact, it was from the year 1966.

finite X on C) is canonically provided with such a connection, relative to the prime subfield Q). If indeed motivic cohomology itself is already reconstituted from its “Hodge realization”, this means that on any Hodge structure that one could call “motivic” or “algebraic” (ie coming from a pattern), there would be such a canonical Gauss-Manin connection. It would therefore not be difficult to describe other canonical structures, more subtle, associated with a Hodge-Deligne structure, and whose existence “follows from the pattern”: existence of operations of certain Galois groups profinis on $\text{Bet}(K) \tilde{Y} Z$ (where $\text{Bet}(K)$ is the “network” underlying the Hodge-Deligne K structure), and “Frobenius structure” on “mod p reductions” (for almost all p). It is precisely this rich multiplicity of structures without apparent links, whose hidden link is “the motif” common to all these structures - it is this richness which for me represented and still represents) the particular fascination of the theme of the cohomology of algebraic varieties, and the fascination of “motifs”, which are like the delicate common melody which gives life and meaning to this theme with its innumerable variations (*).

If there is anyone, apart from me, who heard and felt this melody and who allowed himself to be imbued with it for a long time, as it burst forth and unfolded before him, it is Pierre Deligne.

If there is someone to whom I have entrusted something living, a delicate and vigorous thing into which I had put the best of myself, nourished over the years by my strength and my love - it's him. It was a thing made to unfold into the open, to grow and to multiply - a thing which was seed and which was womb, ready to transmit the life which was in it. This short contact of yesterday and today was a bit like a reunion with something I had long lost sight of — reunion

(*) March 26) After my short reflection on the (intimately linked) questions of the various types of “categories of coefficients” (to “identify the patterns”), and the “algebraic conditions” that a co-homology class must satisfy “algebraic” (ie coming from an algebraic cycle which was discussed at the beginning of yesterday's note (n° 176), I decided to include a reflection on patterns, “coefficients”, and conjectures standard, from volume 3 of *Réflexions* (containing the last part of *Récoltes et Semailles*). I believe from now on to have the principle of a description in the form of “the” triangulated category of motifs on a diagram, at least in the crucial case (to which we should be able to reduce ourselves by passages to the limit) where this one is of finite type on the absolute basis Z . As the only new ingredient compared to my ideas of the sixties, there is the “philosophy of Mebkhout” (expressed by the “God theorem”). Moreover, I suppose to have solved the problem (surely accessible from now on!) of the “mysterious functor”, which plays a crucial role in the complete description that I now foresee.

with not words or concepts, nor inert objects, but with a thing filled with intense life. And this contact also makes me realize again that this “thing” that I had left behind is vast and deep enough to inspire the entire life of a mathematician who would give himself body and soul to it, and other mathematicians after him. — because his life will undoubtedly not be enough for the task (*).

It's a strange and welcome coincidence that this meeting happened at the time. I have just had another “encounter” just as unexpected: the encounter with this text in which my friend expresses himself, while refraining from naming it, about this thing that was most dear to my heart, among all those which I placed in his hands. “We probably know little more today than a vague skeleton”...

These words continued to haunt me over the past three days. I clearly recognize the complacency – the complacency of someone for whom “nothing is beautiful enough for him to deign to rejoice in it”. And, without having looked for it, the memory of the “tomb” came back to me (**). The same impression came back to life in me, expressing itself through this same silent and insistent image. This living thing that was dear to me, I had previously thought I was entrusting it into loving hands - and it was in a tomb, cut off from the benefits of the wind, the rain and the sun that it languished for these fifteen years where I lost sight of her. Today I find her bloodless, “a vague skeleton...”, object of the condescending disdain of the one who wanted to use her, and who was careful never to give of himself.

(*) (March 26) It seems possible now that I overestimated the scale (but certainly not the scope) of the task. See on this subject the note by b. from p. previous one, dated this same day.

(**) Concerning this impression, strong and long unexpressed, which haunted me after the “second round-nant” in my relation to Deligne, see the note “The tomb” (n° 71).

THE FOUR OPERATIONS

(on a remains)

(¹⁶⁷) (April 22) The note which was to follow here had the name planned for a long time: "The four operations" (name which will be explained in detail at the beginning of the following note (*)). I thought I would dedicate a note or two to this "putting things in order" (of an investigation which had then seemed to me to be complete). It's been almost two months since then, and given the influx of unforeseen twists and turns, I haven't yet finished completely covering the subject. A year later, it is as if the surprise scenario of the discovery of the Burial was repeating itself, on a different pitch.

Finally, in the table of contents, the famous "Four operations" came to designate not a note or two, but a whole copious whole, a bit dense I fear, of thirty notes and sub-notes (**). They are grouped into eight parts (1) to (8), with (I hope) suggestive names, from (1) "The nest egg" to (8) "The sixth nail (in the coffin)". Along the way, I was led to completely rework the four notes (***) which had formed the "first draft" of the "Four Operations" (between February 26 and March 1). I explained myself at the beginning of the note "The threshold" (n^o 172) of March 22 (exactly a month ago), about this departure from the spirit followed everywhere else in the writing of *Récoltes et Semailles*.

The four notes in question are: "The silence", "The maneuvers", "The sharing", "The Apotheosis" (n^os 168, 169, 170, 171) (***), devoted successively to making an overall sketch of each of the four "major operations" of evasion and appropriation, around my work first, then that of Zoghman Mebkhou. I would advise the reader to first limit himself to reading these four notes, excluding the footnotes (more copious here than in any other part of *Récoltes et Semailles*), and the subnotes (exceptionally numerous and also fleshed out) to which reference is made in the "main" text. He could continue this momentum with the following four main notes

(*) (May 12) After splitting this old note "Le silence" (n^o 168) into four, the "next note" is "The four operations" ("putting in order" of an investigation)" (n^o 167).

(**) (May 12) Since these peremptory lines were written, this number has further increased to five quantity and one notes and sub-notes, and nothing proves that (like a sea...) it will not rise again...

(***) (May 12) These notes, having taken on prohibitive dimensions, were finally divided each into several, in notes n^os 168 (i)-(iii), 169 (i)-(v), 170 (i)-(iii), 171 (i)-(iv).

: "The threshold", "The family album", The climb (2)", "Les Pompes Funèbres — "im Dienst der Wissenschaft"" (n°s 172–175), which, for their part, have nothing technical anymore.

The reader curious to become acquainted in more detail with the tortuous mazes of these "four operations" can include in a second reading the footnotes and sub-notes, and even (if he has not read the first part of the Funeral, or if he feels the need to refresh his reading memories), refer gradually (as I myself have often done) to the passages from the Funeral I (or "The dress of the Emperor of China") to which he is extensively referred.

The essential content of each of the thirty notes which constitute (or which describe and comment on) "The four operations" is, each time, of a non-technical nature. It seems to me that it can be understood by any interested and intelligent reader, even if he is in no way an expert in the cohomology of algebraic varieties, nor even a mathematician or even the slightest "scientist". For anyone who hesitates to get involved and get caught up in all the mysteries of "the art of scam", I would particularly recommend the following sub-notes, the substance of which seems to me the richest, and of which the interest visibly exceeds that which can be taken in the "dismantling" of "shenanigans" which are sometimes absurd and always put together with art (for the use of those who only want to be bamboozled...). These are the sub-notes "Eviction" (n° 1691), then "Real maths...", "... and "nonsense", "Shenanigans and creation" (forming the first three among the five sub-notes grouped under the name "The Formula") and finally the four sub-notes to the note "The Apotheosis" (n° 171), concerning the strange adventure of Zoghman Mebkhou: "Eclosion of a vision - or the intruder", "The mafia", "The roots", "Carte blanche pour le pillage" (n°s 1711 to 1714). These are therefore eight sub-notes (among a total of twenty-one (*)) that I particularly recommend to the attention of the reader.

As for the other thirteen sub-notes, the reader who will not care about their "documentary interest" could nevertheless read them, in moments of leisure, in the spirit in which he would read an incredible novel of detective adventures, where the improvised amateur detective (in my modest person) follows the trail and gathers the "clues", some tenuous and elusive and others so enormous that no one could see them anymore; which clues end up assembling into a colorful and undeniable picture (of manners), where a "second Mon-

(*) (May 12) Became twenty-seven in the meantime, not counting the sixth nail in the coffin (which has seven pleasant and delectable notes).

Mr. Verdoux (alias Landru), smiling and affable, proceeds to dismember and burn his candid and innocent victims, under the tender (even admiring) eye of all the good people of the neighborhood. They have long been accustomed to the somewhat peculiar smell, which obviously no longer bothers anyone. There is even more than one who has taken the example of his friendly and clever neighbor, and the chimneys purr and chirp loudly.

The “detective”, fully edified, only has to tiptoe away: visible-ment, the agreement is unanimous here, and all is for the best in the best of all worlds...

(¹⁶⁷) (February 26) (*) I seem to have gone around, more or less, the Funeral. An incomplete tour certainly, and provisional - but for the moment, I don't think I will go much further. I feel that it is a step back that I need now, and that it is now time to finish. It remains for me to take stock of what I learned during this impromptu meditation that was the writing of *Récoltes et Semailles*.

It is the reflection on the Burial which has constituted by far the greatest part of my work. This reflection continued consecutively on two very distinct levels. There was first of all, after the very necessary “act of respect” that was the double note “My orphans” and “Refusal of an inheritance — or the price of a contradiction” (n^o s 46, 47), the progressive discovery of the Burial “in all its splendor”. I had been smelling it for seven or eight years - this “wind of discreet derision” towards a work and a certain style, and this equally discreet “end of non-acceptance”, and flawless, reserved for those who still pretended to be inspired by it and who, in one way or another, “beared my name”. This is the aspect of the Burial, by a fashion and by an “unfailing consensus”, which is examined in the note “The Gravedigger — or the entire Congregation” and in those which precede it (n^o s 93–97), forming the Procession X alias “The Funeral Van”. This aspect, the apprehension of which had remained diffuse over the past years, for lack of taking the trouble to devote detailed reflection to it, became considerably clarified during the work, without however being enriched for me. truly new.

The new fact on the other hand, which I was confronted with for the first time on April 19 last year, or the “news item” if you like, is a certain large-scale operation which

(*) This note, which was initially to be called “The Four Operations” and followed by “The Melody at the Tomb — or Sufficiency” (note n^o 167), is almost two months prior to the note (of an introductory nature) which precedes, “The detective — or life in rosé” (n^o 167). I recommend reading the latter first.

was made around my work, and also that of the only mathematician who assumed, after my departure from the mathematical scene, the thankless and perilous role of “continuer of Grothendieck”: Zoghman Mebkhout.

The discovery made this April 19 (from the volume Lecture Notes 900, from 1982, where the reasons are exhumed, after twelve years of dead silence (*) and without mention of my person) was the starting point of this that we can call an investigation, in the restricted sense of the term: an investigation into the fate that had been reserved for my work, and first and foremost by those who had been the first and main depositaries of it, namely, my students. This investigation brought to light a good number of facts, some more unexpected than others, which over the days and weeks, came together into a picture, in some way external, of what the Burial was like and who were the main actors. This table is undoubtedly not complete, but it is sufficiently rich in perfectly precise and irrefutable details to satisfy my curiosity in this direction. This is the first of the two “levels” of reflection, to which I alluded earlier. It essentially corresponds to the “first breath” of the reflection on the Burial, continuing from April 19 until around June 10, and ending with the “illness episode”.

This is also, more or less, the “Burial I” (or “The Robe of the Emperor of China”) part of my notes. We must also add the note “The Funeral Eulogy (1) — or the compliments” (n° 104), which is from May 12, but was rejected (a little arbitrarily no doubt) in the subsequent and final procession “The Funeral Ceremony”, part of “Burial II”. I would also add to this “investigation”, forming the “first level” of the reflection, the note which follows the cited note, namely “The Funeral Eulogy (2) — or the force and the halo” (n° 105), (*), continuing further in the comments of the following note “The muscle and the guts (yang buries yin (1))” (n° 106). These last two notes are from the end of September - beginning of October. Also, in the line of “Eloges Funèbres” ie that of the (very rare) written documents where Deligne expresses himself somewhat about me, we can attach to this investigation the two notes recently sparked by the biographical notice of Deligne, namely

(*) (April 19) For a correction regarding these “twelve years”, see the subnote “Pre-exhumation”, n° 1681 .

(*) This note was also planned for the day after May 12, when the previous note “The Funeral Eulogy (1) — or the compliments” was written. I then realized that the text that I had just looked at a little more closely was a real mine, which I was far from having exhausted... (For some details on The Funeral Eulogy, see the beginning of the note “The Apotheosis”, n° 171).

“Requiem for vague skeleton” and “The profession of faith - or the truth in the false” (nŷ s 165, 166). Finally, there is also added the note “Dot the i's” (nŷ 164), giving a certain number of details (especially material), most of which were provided by Deligne himself during his visit to my home last month. last October (**).

After the illness episode, putting an end to all intellectual activity for more than three months, the “second wind” of reflection (or the “second level” of which I spoke earlier) was motivated by an effort to understand the meaning of this set of facts, some of which are really very big, not to say incredible, that the investigation in April and May had brought to light. The central part of this reflection is “The key to yin and yang”, largely independent of the theme of the Burial itself, which nevertheless reappears periodically, to relaunch each time a meditation on my person, on my life and about existence in general.

It is obvious, moreover, that the two levels of reflection, “investigation” and “meditation”, are in no way independent or clearly separated, but that they interpenetrate. Concretely, this is reflected by the presence, already throughout the first part of the Burial, of an effort to understand the meaning of what I discovered over the days, and also by the appearance, in the second part again, of material facts adding to those already obtained during the preliminary “investigation”.

My purpose, for the moment, is to take stock, or a broad summary, of the facts that emerged day by day throughout the investigation. facts that I have never yet taken care to order in a somewhat coherent manner. It will therefore be an ordering of what is known to me now about this “large-scale operation” targeting my work (*) and that of Mebkhout. Depending on whether it is the latter or mine which has paid the price, and depending on the part of my work which has been taken as a target, I in fact distinguish four main operations (“the four operations”, in short) , which I would like to review first. It turns out that the order in which they came to my attention during the reflection also coincides (apart from a mini-inversion of the last two) with the chronological order in which they were triggered, after my “departure”. ” in 1970

(**) See the note on this visit “The duty accomplished — or the moment of truth” (nŷ 163).

(*) According to the facts known to me, this is exclusively the part of my work, placed between 1955 and 1970, devoted to the development of my ideas on the cohomology of diagrams and on algebra (co) homological.

(and even before).

(168(i)) I Operation “Motifs”

Inspired by certain ideas of Serre, and also by the desire to find a certain common “principle” (or “pattern”) for the various purely algebraic “avatars” known (or anticipated) for the classical Betti cohomology of a complex algebraic variety, I introduced the notion of “motif” towards the beginning of the sixties. Throughout the sixties and especially from 1963 (**), and alongside my fundamental writing tasks, I developed a “yoga” (or “philosophy”) on this theme that was both rich and , and precise.

This vast theory, which remained conjectural and will undoubtedly remain so for a few more generations (***), nevertheless offered immediately (and until today) a very reliable guide for recognizing oneself in the situations where the cohomology of algebraic varieties intervenes, both to guess “what we have the right to expect”, as well as to suggest “the right notions” to introduce and sometimes, to provide approaches to demonstrations.

I say on this subject in the Introduction to Harvests and Seedlings (“The End of a Silence”, p. xviii):

“Among all the mathematical things that I had the privilege of discovering and bringing to light, this reality of patterns still appears to me as the most fascinating, the most charged with mystery — at the very heart of the profound identity between “geometry” and “arithmetic”. And the “yoga of patterns” to which this long-ignored reality led me is perhaps the most powerful instrument of discovery that I have released in this first period (*) of my life as a mathematician.”

(**) The year 1963 was that of the strong “start” of equal cohomology (developed in the SGA 4 seminar in 1963/64), which finally brought abundant grist to the mill of motivic reflections, which until then had a bit of speculation. It was from the following year that I developed the formalism of the “motivic Galois group”, the detailed conceptual basis of which was developed (following the theoretical program that I had submitted to him) in the thesis of N. Saavedra, published only in 1972 (Springer Verlag,

Lecture Notes n° 265). (***) (April 8) It now seems to me that this theory is not as far “on the horizon” as it might have seemed to me — if only we finally get down to it ! See on this subject the comments in the note “The miser and the crumbling” n° 177) of March 27.

(*) If I restrict here to “this first period of my life as a mathematician”, it is by thinking of “yoga

Apart from provisional sketches of a possible explicit construction (among many others) for the category of semi-simple patterns on a body, the ideas that I had developed on this theme in my personal notes remained at the stage of oral communication. I was far too absorbed by numerous other tasks of writing basic texts (**) to find the leisure of the few months required to develop my handwritten notes, so as to make them an overall “master builder”. of the inner vision that had developed in me, sufficiently “excavated” to seem publishable. From 1965 and until my departure from the mathematical scene in 1970, my privileged interlocutor for my motivic (and other) meditations, and also the only one who fully assimilated the yoga of patterns and who felt it the whole scope, was Pierre Deligne.

We will find details on the subject of “yoga of motives” (more detailed than in the part of the Introduction from which the cited passage is extracted) at the end of the note “My orphans” (n° 46) and especially (concerning in particular the genesis of yoga) in “Remembrance of a dream — or the birth of motifs” (n° 51). For the insertion of the “yoga of patterns” in the formalism of the six operations (which remains, even today and since my departure, ignored by my cohomologist students, as a fundamental structure in homological algebra...), see the note “The melody at the tomb — or sufficiency” (n° 167). For the connection of ideas (entirely hidden in the literature) around the yoga of weights (which constitutes one of the essential ingredients of the yoga of patterns) and the Hodge-Deligne theory (directly resulting from the latter yoga), see the note “Dot the i's” n° 164 (part II 4), as well as the subnote (n° 1641) which follows it.

(168(ii)) The “Motifs” operation consisted, first of all and after my departure from the mathematical scene, in the systematic evasion of the yoga of motifs and of the very word “motive”;

of Anabelian algebraic geometry”, which seems to me to be of comparable depth and scope. This is discussed, somewhat, in “Outline of a Program”, which will be included in the “Reflections” following Harvests and Seeds.

(**) These are above all the texts EGA (Elements of Algebraic Geometry, in collaboration with Jean Dieudonné) and SGA (“Séminaire de Géométrie Algébrique du Bois Marie), the latter written alone or in collaboration (with students in particular), following guiding ideas and project managers of my own. During the years 1959 to 1969, the average “flow” of these texts, all of which without exception became standard reference texts, was approximately a thousand pages per year. This foundational work stopped abruptly overnight, as soon as I left the mathematical scene. See on this subject the note “Yin the Servant, and the new masters” (n° 135).

and then/ after a silence of twelve years (*), and with the exhumation (in 1982) of a narrow version of yoga, in the hiding of my modest and deceased person, as having something to do with said yoga .

The first obvious evasion of yoga, in the form of "yoga of weights", already took place in 1968, therefore even before my departure, in the article by Deligne (at Publications Mathématiques) on the degeneracy of spectral sequences. It is discussed first in the note "canned weight and twelve years of secrecy" (note written before the discovery of the "memorable volume" of exhumation), and in detail at the beginning of the note "The eviction" (notes n^o s 49, 63).

This sleight of hand, in the absence of any reaction (**), continues and is accentuated with the articles Hodge I, II, III by Deligne, exposing the beautiful generalization of Hodge's theory developed by him in 1968/69. While this theory comes directly from the yoga of motives (as recalled above), no allusion in this direction is made in Hodge II nor Hodge III - something all the more obvious since Hodge II constitutes Deligne's thesis , who had been my student during crucial years of his training (*)

As for the short "announcement" Hodge I (at the International Congress of Nice in 1970), Deligne limits himself to a cryptic reference of half a line to "a conjectural theory of Grothendieck motifs" (in one breath with a bogus reference to Serre, obviously intended to mislead (**)). The scam continues with the presentation of "yoga of weights" at the Vancouver International Congress (1974), where Serre's name nor mine is

(*) (April 8) For a correction regarding these "twelve years", see the sub-note "Pre-exhumation" (n^o 168(iv)) which follows this note "The Silence".

(**) It was from me in the first place that such a reaction could and should have come. While with hindsight the lack of honesty in the presentation of this article appears obvious to me (see cited note, n^o 63), I myself did not have the uprightness (or honesty) to took note of this, in the presence of a "slight discomfort" when I held the article in my hands and looked through it quickly. Regarding the role of a certain complacency or ambiguity in me, which appeared to me during the reflection on the Burial, see the note "Ambiguity", n^o 63. At the conscious level at least, the thought of the possibility of professional dishonesty, in Deligne or in any other of my students, had never occurred to me; or rather, — I rejected it on various occasions where the dishonesty was blatant and was brought to my attention by this "discomfort" never identified.

(*) There was a sort of collusion between Deligne and me to avoid his relationship as a student to me, it being understood that he was far too brilliant for me to be able to claim to have been his "master". I update and examine this complicity in the note "Being Apart" (n^o 67).

(**) This is Serre's article on the Kahlerian analogues of Weil's conjectures, which had been the "detonator"

more pronounced. In this communication, no more than in Hodge I at the International Congress of Nice (1970), he does not say a word about an important part of the yoga that he got from me, in the motivic context (which remains strictly you): the behavior of the notion of weight by the “six operations” and, first and foremost, by Rf and Rf^* . This is one example among many others of a practice that has become common, and of which Deligne seems to have been one of the very first promoters: it is to reserve the exclusive knowledge of the “big problems” which arise in a specific domain of mathematics, to a restricted group of “people in the know” (or even, to his person alone), so as to ensure total hegemony, instead of making them available to the scientific community and allowing everyone to draw inspiration from them (***). Now, this problem is not mentioned anywhere before it is resolved by Deligne in his article “Weil II” of 1980 (in the case of Rf), without of course mentioning me (who had communicated the conjecture to him relevant in the motivic context, of which the p -adic context that it deals with is a reflection, in the same way as would be the context of the coefficients of De Rham - Hodge...).

To the extent (very fragmentary) that I know Deligne's work or can form an idea of it, I believe I can say that the yoga of motifs that he took from me was the main source of inspiration throughout his work. He maintained this occult source, maintaining until 1982 (*) a dead silence around the notion of motive. The only exception

tor” triggering me on “standard conjectures”¹. This is a fine article, which we are not trying to minimize here. But I know very well that Deligne himself would be hard-pressed to explain how this article would have been “a source” for his generalization of the Hodge theory — and no doubt no one has ever thought of asking him. Having closely witnessed the emergence of the Hodge-Deligne theory, I know well what its source was (see on this subject note n° 164 already cited) - and that it is in no way in the presentation of Demazure on the BA of the definition of the patterns that he found it! He cites this article as a reference to “Grothendieck's conjectural theory of motives”, so as to give the impression to any reader who was not really well informed (and there were not many who were well informed. ...) that said “conjectural theory” was reduced to the presentation in question by Demazure, thus taking advantage of the absence of any more detailed published trace on the yoga of motives.

(***) On the subject of this new mentality, of which I never encountered a trace until the time of my departure in 1970, see the note “Yin the Servant, and the new masters”, n° 135, as well as the end (dated February 28) of the note “The maneuvers” (n° 169)(x). It is this mentality that I wanted to capture by the name “Le magot” given to all the notes and sub-notes (n°s 168-1698) relating to the first two among the “four operations” around my work. (x) This

ending became the note “The hoard” (n° 169(v)). (*)

(April 8) See, for a correction, the already cited subnote “Pre-exhumation” (n° 168 (iv)).

(unless I am mistaken (*)) is the “half-line witness” from 1970, just as incomprehensible (**) to anyone other than to him and me (and, strictly speaking, to Serre perhaps) as two years later early (in the article on the degeneracy of spectral sequences) his cryptic reference to “considerations of weight” which had made me conjecture “a particular case” of its degeneracy result (cf. note already cited “Eviction”, n^o 63).

(168(iii)) Sudden change of scenery with the publication of the “memorable volume” Reading Notes 900 (***). The motifs are unearthed with great fanfare, and part of the initial yoga is finally revealed. In this volume, where my name appears two or three times “in passing” and as if by the greatest chance, nothing could make the reader suspect that I have anything to do with the ideas developed there. These ideas are presented in such a way that there can be no doubt in the reader’s mind that the volume’s brilliant lead author, Pierre Deligne, has only just discovered them and is presenting them hot and cold. It is true that, no more than in Nice or Vancouver, he does not claim that it was he who discovered the yoga of weights which is explained there for the first time in literature, it is not said anywhere clearly here that it is he who found all these beautiful ideas developed (apparently) for the first time in the volume, centered moreover around a beautiful theorem of which he is indeed the author. This is the “thumb!” style. where he is a master, on which I comment first in the note “Thumb!” and in “The Dress of the Emperor of China” which follows it (nos. 77, 77); see also the previous notes, written in the emotion of the discovery of the “memorable volume”: “The Burial — or the New Father”, “The new ethics — or the rat race”, as well as “Appropriation and contempt ” (n^o s52, 59, 59).

In fact, not only were all the main ideas in volume LN 900 concerning motifs known to me in the sixties (where Deligne had every opportunity to learn them from me from 1965), but also the central problem of the book had been raised by me (and, of course, communicated to Deligne) at the end of the sixties. For

(**) As explained in note b. from p. previous, the object of this thumb reference was not to be “understandable” or to inform, but rather to mislead (doubly). As for the filiation of ideas. ranging from patterns to Hodge-Deligne structures (described in the two notes cited above), I have every reason to believe that I am the only person in the world, apart from him, who knows it.

(***) Springer Verlag, Lecture Notes in Mathematics, n^o 900, Hodge cycles, Motives, and Shimura varieties, par P. Deligne, JS Milne, A. Ogus, KY Shih.

for details in this sense, see the note “Dot the i's” (n^y 164) (in part I thereof).

As I point out in the Introduction to *Récoltes et Semailles* (in “La fin d'un se-cret”, p. xviii), Deligne was not the only one to whom I spoke in detail about the yoga of the motives, even if he was the only one to make it his own intimately. If there was total evasion, for around ten years (*), of the very existence of this yoga, and later of the role that was mine to discover it and to develop and deepen it, this sleight of hand could only have been accomplished with the connivance of a good number of mathematicians whom I counted among my friends, and in particular, with that of each of my “cohomologist students” (commutative) (**).

This swindling was done for the dubious “benefit” of a single person, but through the joint acts and omissions of a good number.

Aside from Deligne and my other cohomologist students, it is the responsibility of the co-authors with Deligne of the “memorable volume” LN 900 which seems to me to be the most heavily committed, namely that of JS Milne, A. Ogus and KY Shih. These are mathematicians whom I do not know personally, and nothing allows me to prejudge their bad faith; For me, however, this in no way detracts from their full responsibility, as co-signatories of this unusual volume.

(168(iv)) (April 8) I was recently reminded of Deligne's article “Values of L functions and periods of integrals”, published in 1979 (proceedings of Symposia in Pure Mathematics, Vol.

(*) According to a “commented bibliography of motifs” that Deligne was kind enough to communicate to me last August, “there were still two sporadic works in the literature on motifs after my departure, one and the other another in 1972 (in the thesis of N. Saavedra, prepared with me, and in a report by S. Kleiman). The next reference, due to Langlands, takes place in 1979. Afterwards, it is LN 900 in 1982. Unless I am mistaken, the word “motif” does not appear in any published text by Deligne, between 1970 and 1982 — nor does there is no allusion, in a published text (with the exception at most of the biographical note examined in notes n^y s 165, 166) to the fact that he was able to learn anything from me...

(April 8) On the subject of “unless I am mistaken”, see correction in the sub-note “Pre-exhumation” (n^y 168 (iv)).

(**) I think I can say that all my students before 1970, with the sole exception of Ms. Sinh (who was not there, but worked in Viet-Nam), were aware of them (without necessarily having assimilated them) of my ideas on the motives, on which I also made a series of detailed presentations at the IHES (in 1967). Those of them who remained connected to the theme of the cohomology of algebraic varieties therefore seem to me to be in solidarity with the burial which took place of the yoga of patterns, on the initiative of the main “interested person” Deligne. It is mainly a question here of JL Verdier, L. Illusie and P. Berthelot, who moreover each stood out in a more active way than by simple connivance, in some of the three other “operations” which will be discussed.

33 (1979), part 2, pp. 313–346), in the same volume as the already mentioned article by R.

P. Langlands “Automorphic representations, Shimura varieties and motives. Ein Märchen Corvallis” (pp. 205–246). This last article (but not that of Deligne) appeared in the bibliography commented on the reasons that Deligne sent me last August, and I was under the impression that it was in this article by Langlands that he is for the first and only time the question of motives in the literature after my departure, before the exhumation of 1982 (apart from the presentations of Saavedra and Kleiman cited in the penultimate footnote).

In fact, in the article cited by Deligne, there is a “chapter 0” entitled “Motifs” introduced by: “We recall. part of the formalism, due to Grothendieck, of the motifs” (my emphasis). The presentation given is such that it clearly appears that the general principle of construction that I had given for a category of patterns (semi-simple, it is implied) on a body, was multivalent - moreover in the section 0.6 it is said that “one of Grothendieck’s definitions of patterns is obtained in...”. In this respect, the presentation is therefore honest. It is true that the “yoga” part of the motifs exposed here is the most elementary part, which practically already existed in literature (in the presentations of Manin, Demazure, Kleiman, Saavedra), and where my authorship was therefore particularly notorious. . (It would seem, however, that the evasion of my person - and that of Serre - in the yoga of weights, and later in the group of Galois motivique, passed without the slightest hitch...)

As I have already had occasion to point out (in the note “Escalation (2)”, n° 174), it would seem that there was, after the provisional culmination of “Operation Burial” in 1977 (with the operation “SGA 4 1/2 — SGA 5”), a relative lull until the “apotheosis” of the Pervers Colloquium in 1981, which Colloquy marks the end of any attempt to restrain in the carving up of 'a remains. (See the note “L’Apothéose”, n° 171.) Deligne’s article clearly places itself under the sign of this lull. I presume that Langlands’ interest in motivic yoga had forced his hand to finally “sell the wick” (already stale) about the motifs, at a time which was not yet psychologically ripe to move on purely and simply. silently mention the name of the deceased. There was, in the barely three years that followed, a striking “escalation” in fact (to use the expression of the note “The maneuvers” which follows this one), between this timid “pre-exhumation” motifs, and the “exhumation with great fanfare” which took place with the “memorable volume” LN 900 in 1982.

(April 22) The (mini) discovery commented on the preceding page continued and amplified considerably in the days that followed. I have in fact read the cited article by R. p. Langlands, and also and above all, the next day, the “sixth nail” in my coffin (*), taking the form of the book by (my ex-student) Neantro Saavedra Rivano, called “Tannakian Categories”. There is therefore still a substantial “continuation of the story” (of “Operation Motifs”), which I developed in the series of subnotes (n^os 175) grouped under the name which was necessary, “The sixth nail (to the coffin)”. It seemed preferable to me to postpone this continuation to, at 175, the end of the investigation “The four operations”, because the new facts appeared throughout it, and especially in the note “The Apotheosis” (n^o 171). and in its four subnotes (**)/ appear essential to me to properly situate this “suite” and give it its full meaning.

(169(i)) (February 27) I come to the second of the “major operations”: II The “equal cohomology” operation.

As with the reasons, it will be useful to first provide a few words of context.

The idea of the existence of a theory of “cohomology” of an algebraic variety on any field k , which would associate with such a variety (at least if it is projective and smooth) “cohomology spaces” whose the body of coefficients would have zero characteristics (for example a p -adic body), and whose properties would model the well-known properties of “Betti” cohomology (defined by transcendental voice when the basic body is the body of complexes) — this idea is found “between the lines” in the statement of the famous conjectures of Weil (1949). It was in cohomological terms, in any case, that Serre explained Weil's conjectures to me, around 1955 - and it was only in these terms that they were likely to “hook” me. Indeed.

Nobody then had the slightest idea how to define such a cohomology, and I'm not sure that anyone other than Serre and me, not even Weil if it turns out, had even the intimate conviction that it must exist. We didn't have a good geometric grip

(*) This is the sixth of the “nails” in the order of their discovery, but the first of the six, seen in the chronological order in which they were “placed” with skill by my friend Pierre, with the patented material provided (for the service of science) by the well-known funeral company Springer verlag GmbH (Funeral Service “Lecture Notes in Mathematics”)...

(**) (May 11) Since these lines were written, the cited note has split into four distinct notes (n^os 171 (i) to (iv)) and increased by eight other subnotes (n^os 171 (v) to (xii)).

direct than on the H^1 via the theory of abelian varieties and their finite order points (development peated by Weil), and via the Albanese or Picard varieties associated with a non-singular projective algebraic variety. This construction of H^1 suggested that the fields of “natural” coefficients must be the p -adic fields $\mathbb{Q}_p$, for prime number distinct from the characteristic.

For equal to the characteristic (when it is non-zero), very partial results of Serre, convincing especially in the case of algebraic curves, suggested that we should be able to take as base body the field of fractions of the ring witt vectors of k (assumed perfect). So one could hope that there would be an p -adic theory (with a grain of salt for $p \neq \text{char}(k)$) for every prime number p and in a proper sense, they should “all give the same result”. Finally, when k has zero characteristics, so that we have (at least in the case of non-singular projective cohomology of algebraic varieties) and those of De Rham (which I had introduced taking inspiration from the differentiable De Rham cohomology), these immediately provided cohomological theories having all the desired properties (*), and they still had to give “the same result” as the hypothetical p -adic cohomologies.

These questions were at the center of my reflections and my published and unpublished mathematical work, between the years 1955 and 1970 (the year I left the mathematical scene).

If we put aside my work in coherent cohomology (formalism of “six operations”, Riemann-Roch-Grothendieck formula), we can say, roughly speaking, that the essential part of my cohomological work consists of identifying the answers, or the major lines of answers to these questions. At least from the perspective of conjectures. Weil, acting as the main source of inspiration, my reflection on the cohomological theme materialized in four main currents, or “threads”, closely intertwining to form a single and vast

frame.

Thread 1. I developed with the assistance of collaborators (**), a formalism of coho-

(*) In particular, in the 1950s, I developed the formalism of cohomology classes (from Hodge and de Rham) associated with an algebraic cycle.

(**) The main collaborator for the development of the formalism of equal cohomology was Artin. The p -adic adaptations are developed in the thesis of my ex-student P. Jouanolou (which he unfortunately did not take the trouble to publish, which I never held in my hands, and which has become impossible to find). I

-adic mology of schemas, first with residual characteristics, having all the known properties (and beyond...) of the familiar "discrete" cohomology of topological spaces. Apart from three open questions (***), of a technical nature, we can say that we had, "in principle" from 1963, and "in fact" from 1965/66 (with the developments of the SGA 5 seminar, following to SGA 4 in 1963/64), of complete mastery of this cohomology, within the general framework of so-called "equal" cohomology — in the form of the duality formalism of "six operations". The principle of the definition of equal cohomology dates back to 1958, and I proved the "key results" necessary and sufficient for the complete formalism (including theorems of the "weak Lefschetz" type and the notions of cohomological depth in the flat context) in February and March 1963.

Thread 2. With the yoga of patterns, I discovered the philosophy which allows us to link together the different -adic (and other) cohomologies of a variety, as being so many

intends to give details on the subject of the development of stale cohomology, in "historical" comments which I intend to attach to the Thematic Sketch (to appear in the Reflections following R and S).

(***) These three "open questions" are as follows:

has. The "cohomological purity conjecture" (equal version) for a regular subscheme Y of a regular scheme X . The relevant statement is proven when both is excellent with zero characteristics.

b. Even more serious is the question of the validity of the finiteness theorem for $R_i f_! \tilde{y}$, for f separated morphism of finite type of Noetherian schemes (excellent if necessary), when f is not assumed to be proper. We need this result to define $Rf_! \tilde{y}$ (and two others among the "six operations") in the "con-structible" -adic framework. I proved the finiteness result using hypotheses of resolution of singularities and "cohomological purity" (cf. a)), which for the moment do not apply to algebraic varieties of char. $p > 0$. I point out, however, that in the context of the torsion coefficients (as opposed to the -adic coefficients), the formalism of the duality of the six operations (thus including the duality of Poincaré) had been established by me in 1963 without finiteness conditions. This implied for example "finitude" for H_i with constant or locally constant coefficients (torsion or -adic) for a smooth scheme (not necessarily clean) on an algebraically closed field.

vs. Validity of the "dibuality theorem" on a regular diagram is excellent. Situation similar to b).

The situation was notably improved by the elegant demonstration by Deligne (in 1973?) of the finiteness theorem, for a morphism of finite type schemas on a regular S schema of dimension $\tilde{y} \leq 1$. This case covers most applications (algebraic schemes on a field, finite type schemes on $\mathbb{Z}$ in particular).

In the same situation of a finite type diagram X on a regular diagram of dimension 1, and by similar simple arguments, Deligne also manages to prove the biduality theorem.

different “realizations” of a “motive” which is common to all, and which is the “motivic cohomology” of this variety. This philosophy originated at the beginning of the sixties, with a “yoga of weights” directly inspired by the conjectures of Weil (and an idea by Serre inspired by them, concerning a notion of “virtual Betti numbers” associated with an algebraic variety (*)). It was enriched in 1964, in the momentum of the start of p -adic cohomology, with the crucial notion of “motivic Galois group”.

Thread 3. Inspired by the ideas of Monsky-Washnitzer, who had constructed a “ p -adic” co-homological theory (with constant coefficients) for smooth and affine algebraic varieties in $\text{car. } p \neq 0$, in 1968 I identified a general definition for a “ p -adic cohomology”, which I also call crystalline cohomology (**). This theory was supposed to encompass “coefficients” (called “crystalline”) not necessarily constant or locally constant, and to give rise to a formalism of “six operations” just like the p -adic theory. It was assumed from the outset, at least, that for smooth varieties, this cohomology has the relationships expected with the De Rham cohomology, and that it generalizes that of Monsky-Washnitzer (*).

(*) See on this subject sub-note n° 469 to the note “My orphans” (n° 46).

(**) This terminology is now (and for a long time) established by usage, as is the expression “crystalline site”. The two new ideas (compared to those of Monsky and Washnitzer) which led me to this theory, are that of crystal (of modules etc.), linked to an idea of “growth” above “thickenings” (infinitesimal in particular) of an initial diagram, and on the other hand the introduction of a structure of powers divided into the ideals of increasing the thickenings envisaged, so as to ensure the validity of a “formal Poincaré lemma” (with divided powers). Thanks to these two ingredients, the De Rham cohomology of a smooth scheme on k is interpreted as the “ordinary” cohomology, with coefficients in the structural bundle of rings, of a suitable “crystalline site”.

Strangely enough, the crucial intuition of crystal (as well as the broader intuition of topos) seems to have been left behind by my students, as well as the common thread (omnipresent in my cohomological reflections) of the “six operations”. This, it seems to me, is the main reason for the regrettable stagnation that we see in crystal cohomology after my departure, and also in the (closely related) so-called “Hodge-Deligne” theory, since the first strong start of both.

It seems to me to be at least plausible, not to say obvious, that in either direction, the philosophy developed (in general indifference...) by Zoghman Mebkhout would have an essential role to play. But his timid suggestions in this direction (to Berthelot in 1978) visibly fell on deaf ears, coming from such an insignificant character...

(*) P. Berthelot's thesis, taking my ideas as a starting point, provides an additional justification, by establishing a duality formalism for clean and smooth varieties, sufficiently rich while

Thread 4. The unifying geometric notion, linking by a common “topological” intuition the étale cohomology and its immediate variants (linked to the topologies of Zariski, fpqc, fppf etc.), the crystalline cohomology, and finally the “Betti” cohomology defined in the transcendental context, and (even more generally) the bundle cohomology of any topological spaces, is the notion of “site”, and, beyond this, more intrinsic and more hidden, that of topos. This, from 1964 and the following years, gradually came to the forefront. I express myself about the scope of this notion, central in my work, today banned from geometry, in the note “My orphans” (n° 46), pp. 180–182, from which I will limit myself here to extracting the following passage:

“This pair of notions [the diagrams, and the topos] potentially contains a vast-scale renewal of both algebraic geometry and arithmetic, as well as topology, through a synthesis of these “worlds”, too long separated, in a common geometric intuition.” (*)

at least to write a crystalline cohomological expression for the ordinary L function of such a variety over a finite field. But, as I point out in the note to b. from p. previous, we are far, even today, from a mastery comparable to that which we have in p -adic cohomology, which would be expressed by a formalism of “six operations” for general “crystalline coefficients”. These (according to what Deligne told me recently) have not only been defined at the present time, nor have the good “Hodge coefficients” (above complex algebraic varieties) 1 for some comments on the “problem of coefficients”, crucial in my opinion for an understanding of the cohomology of algebraic varieties, see the note “Melody at the tomb — or sufficiency” (n° 167). This problem was clearly present for me throughout the sixties, but was buried (among many others, and by the care of my cohomologist students) until today...

(April 23) See also on this subject the note “The tour of the construction sites — or tools and vision”, n° 178.

(*) I propose elsewhere (in subnote n° 1361 to the note “Yin the Servant (2) - or generosity” (n° 136), to call this “new science” by the name of arithmetic geometry in his childhood, “so vast that until today I had not thought of giving it a name”, born at the beginning of the sixties in the wake of Weil’s conjectures, and including the “yoga of patterns” is “like the soul, or at least like a neuralgic part among all”. By this name, I would like to suggest

“the image of a “geometry” that would be developed “above the absolute base” $\text{Spec } \mathbb{Z}$, and which admits “specializations” both in the traditional “algebraic geometries” of the different characteristics, and in “transcendent” geometric notions (above the basic bodies

The language of topos, and the formalism of equal cohomology, are developed in the two consecutive and inseparable seminars SGA 4 (in 1963/64) and SGA 5 (in 1965/66) (**). The first is done in collaboration with others (*), and develops, in addition to the language of topos, the key results of equal cohomology, including the key statements of starting in duality (six operations style). The second, where I practically went it alone (**), develops in much more detail a complete formalism of duality, including the formulas of fixed points leading to the cohomological theory of functions L (which constitutes an important part of the set of Weil conjectures). I express myself on the subject of this double seminar in the note "The remains..." (n° 88), in these terms:

"The set of two consecutive seminars SGA 4 and SGA 5 which for me are like a single "seminar" develops from nothing, both the powerful instrument of synthesis

C , R , or Q ...), via the notions of analytical or rigid-analytic "manifolds" (or better, multiplicities), and their variants.

(loc. cit. p. 637). I write above (same page):

"Beyond the construction of the new algebraic geometry, and through the "mastery of étale cohomology" (and that of p -adic cohomology which results from it), it is the development of a master of work of this new science still in the making, which was in my eyes my main contribution to the mathematics of my time."

(**) A second edition (in three volumes) of SGA 4, completely revised compared to the original edition (especially with regard to the language of sites and topos, and categorical additions) was published in the Lecture Notes (Springer Verlag) in 1972–73, n° s 269, 270, 305. for the vicissitudes of SGA 5, see the details given below. An "illusie edition" of a copiously dismantled version of the original seminar was published in these same Lecture Notes (n° 589) in 1977, eleven years after the end of the oral seminar.

(*) The development of the language of sites and topos, from my initial idea of 1958, was mainly under the impetus and with the help of M. Artin, J. Giraud, JL Verdier. See for details the historical commentary promised, already cited in a previous note by b. from p.

(**) The only exception (if I remember correctly) is provided by jp Serre who gave some nice presentations on the finished groups and the SerreSwan module associated with the Artin driver, which I needed for the development of "the general fixed point formula that I had in mind. It was planned that these presentations would appear in SGA 5, but seeing the turn of events. Serre had the good sense to make them available to the mathematical public by publishing them elsewhere. For all other talks, I was the sole speaker, or, if there were others towards the end, they followed the detailed notes I had developed for the seminar. The task of the editors (sic) was therefore limited to cleaning up the notes that I had made available to them.

and discovery that represents the language of topos, and the perfectly developed, perfectly effective tool that is equated cohomology - better understood in its essential formal properties, from that moment, than was even the cohomological theory of ordinary spaces. This set represents the deepest and most innovative contribution I have made in mathematics, at the level of a fully completed work. At the same time and without wanting to be, while at each moment everything unfolds with the naturalness of obvious things, this work represents the most vast technical "tour de force" that I have accomplished in my work of mathematician. These two seminars are for me indissolubly linked.

They represent, in their unity, both the vision, and the tool — the topos, and a complete formalism of étale cohomology.

While the vision remains challenged even today, the tool has for more than twenty years profoundly renewed algebraic geometry in its aspect, for me, the most fascinating of all — the "arithmetic" aspect, apprehended by an intuition, and by a conceptual and technical background, of a "geometric" nature."

* *

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(169(ii)) The "flat cohomology" operation consisted of discrediting the unifying vision of the topos (such as "nonsense", bombing etc.), and at the same time also and by assimilation, the role which had been mine in the discovery and development of the cohomological tool; and on the other hand, to appropriate the tool, that is to say the authorship of the ideas, techniques and results that I had developed on the theme of flat cohomology. Here again, the "beneficiary" of the operation is Deligne (*), and it is his exceptional ascendancy (probably due both to his exceptional means, and to his implicit situation as "heir" of my work) who "passed" an operation of this scale (of clearing and appropriation), without apparently making a single wrinkle...

It was also in 1965/66, in the SGA 5 oral seminar precisely and through the texts already

(*) There were, however, substantial repercussions for Verdier, as we will see later: first of all in 1976, when he "kicked off" for the dismantling of SGA 5 with his "memorable article" (see "episode 3" of an escalation below), and then in 1981 during the "Pervers Colloquium" (which will first be discussed in this regard, in the note "Partition" (n° 170 devoted to "Operation III").

written from the previous part SGA 4, which the young and newcomer Deligne made his first learning, both of the theory of diagrams, of homological algebra (Grothendieck style) and of the new techniques of étale cohomology (born two years before) (**) — techniques which were therefore the basis of all his subsequent work.

In the operation (which I have elsewhere called “operation SGA 4 1/2 — SGA 5”) mounted by my brilliant ex-student, I discern four “main works” inseparable.

Maneuver 1. Discredit the mother seminar SGA 4 - SGA 5 as a “gang of nonsense” and other niceties of the same nature: this is done by the gang (and “casually”) in the various introductory texts to the volume, from the pen of Deligne, called by the strange name “SGA 4 1/2” (subtitle: Étale cohomology) published in Lecture Notes of Mathematics n° 569 (Springer Verlag). See, for details on debinding in the form of the double seminar SGA 4 - SGA 5 where Deligne learned his trade and found his basic tool for all his later work, the note “La slate rase” (n° 67).

Maneuver 2. Sabotage an overall draft of my SGA 5 oral presentations (*). Normally this should have been done within a reasonable time frame (a year or two at most), by the care (in the absence of other reliable volunteer editors) of my cohomologist students, who had had the privilege of learning a good part of their profession there, as well as ideas and techniques that for many years they, along with the other listeners of the seminar, were the only ones to know. It was also the best (and fastest) way

(**) This is what I remember (having somewhat forgotten it) in the note (from May 27 last year) “Being apart” (n° 67). I would add that it was in this same SGA 5 seminar that the young Deligne also learned, from my contact (but “as if he had always known it”, it must be said) the art of putting black on white the description (or “theory”) of an overlapping and at first glance complex situation, in a form which is at the same time convenient, striking, clear and rigorous. This did not prevent him, twelve years later, after having set his hand to ransack this seminar, from displaying vis-à-vis what remained of it (and the SGA 4 component which forms its basis) airs of disdainful condescension and contempt.

(*) As I specified three notes (by b. de p.) above, there were detailed notes for each of my oral presentations. Their clear drafting would have meant work for me of the order of a few months. If I didn't. and from the year (1966) of the end of the seminar, it was because in principle volunteers (???) had taken charge of detailed writing. This dragged on until the moment of my departure in 1970, when I completely “disengaged” from this type of question in favor of tasks which appeared to me (with good reason) to be more essential and more urgent. See on this subject the note “The green light” (n° 68), where I wonder for the first time about the meaning of what happened with “this unfortunate seminar”. It was April 27 — and I discovered the reality, the “breath” of the “massacre” on May 12, two weeks later...

for them to familiarize themselves with a substance and with ideas and techniques, which during oral presentations tended to go a little “over their heads” (with the exception of the always dashing Deligne, it goes without saying). Still, this writing, or rather this non-editing, finally dragged on for eleven years - until the precise moment (as if by chance) when Deligne gave Illusie “the green light” to get busy, at the end of the ends, the writing and the publication of this unfortunate SGA 5 hitherto left behind by mutual agreement - the moment when it is well established that it will be published (in 1977) after a certain volume from his own pen — This one, composed (in 1973 and the following years) first for the needs (at least I initially thought I understood) of a popularization of the “ingredients” (“inputs”) of flat cohomology essential for his demonstration (of the last part) of Weil's conjectures, is baptized for the circumstance by the unusual name “SGA 4 1/2”. (This name, however, does not seem to have yet to have taken aback or surprised, or even shocked, anyone except me...(1691) (*)) For details, see the notes “Le feu vert” and “Le reversal” (n° s 68, 68'), where the meaning of the volume called “SGA 4 1/2” begins to appear to me, as well as the notes “Silence” and “Solidarity” (n° s 84 , 85).

Maneuver 3. Dismantle the original SGA 5 seminar, the published version of which (by the “care” of my ex-student Luc Illusie) now represents nothing more than a “remains”, outrageously mutilated. I take a look at this shameless dismantling, or better said, the massacre of what was a splendid seminar entrusted to the hands of my students, in the note of the same name (n° 87) - one of the longest and most revealing the reflection on the Burial.

Maneuver 4. To explode the unity of my work on the flat cohomology, work represented by the two inseparable parts SGA 4 and SGA 5, by “cutting it in two”, “by violent insertion, between these two parts , from a foreign and disdainful text” (**), responding to the name

(*) See on this subject, and for details on the original and true meaning of the acronym SGA (from which my name and my person ended up being ousted) the sub-note “Eviction” (n° 1691 which follows to this one (“The maneuvers”, n° 169), and was also initially planned as a b. de p. note here.

(**) This passage in quotation marks is quoted (from memory) from the note “the remains...” (n° 88) — the same one where, for the first time in the reflection on the Burial, I “pose” to finally become aware of the place of the SGA 4 — SGA 5 seminar, within “my work fully completed”. As for the deeper, “carnal” experience of the “breath of violence” attacking this central, harmonious and living part of my work, it was revealed to me in a dream of the very night which followed this reflection. It finds its written expression the next day, in the note “...and the body” (n° 89).

unusual “SGA 4 1/2” (**). This awesome name says what it's supposed to say — it was all about thinking about it! By this name alone, the volume presents itself as the central and fundamental text on flat cohomology, intended to replace the “full presentations of SGA 4 and SGA 5”, “which can be considered as a series of digressions */ including “some very interesting” it is true, but which the central text “should allow the user to forget”.

There is no need for my brilliant ex-student and friend to compromise himself here in long and useless speeches: this single pithy name “SGA 4 1/2” states and poses the unanswerable evidence of an anteriority of this text in relation to the “digressions” called SGA 5 (which, as it certainly could not have been otherwise, were indeed published after him...), and at the same time also, it poses as evidence a (alleged) logical dependence of SGA 5 in relation to the “previous” text.

This incredible imposture of a so-called logical dependence of SGA 5 on the apocryphal text is indeed affirmed in the introduction to it (*), where the author announces without batting an eyelid (and without anyone apparently before me - given the current times - found nothing particular there...):

“... its existence [that of “SGA 4 1/2] will soon allow SGA 5 to be published as is” (my emphasis) —

read: in the state of a ransacked and copiously pillaged remains... Although I had already known for more than a week of my friend's “Motifs” operation, it took me two days (from April 26, with the note “The clean slate”, to the 28, with the note “The reversal” (notes n^os 67, 68)) to arrive at grasping the meaning of this “mystery” that this affirmation represented for me visibly absurd from my brilliant student - and also to understand, at the same time, the meaning of the apparently innocuous acronym “SGA 4 1/2”, which I had not yet stopped to think about the two previous days.

(**) Subtitle: Etal cohomology — by Pierre Deligne... The subtitle also says what it means!

(*) I would like to remind you that Deligne confirmed to me in person, during his last visit to my home (last October), this same delusional thesis - without real conviction it is true, and without pretending to clarify it. In what way my seminar, which formed a harmonious and coherent whole without having waited for it, would depend on the work of Deligne which emerged from it seven years later... This short scene on a station platform, where we were waiting (with his little daughter Natacha) the train which was to bring them back to Paris, is recounted at the end of the note devoted to this visit, “The duty accomplished - or the moment of truth” (n^o 163).

The same imposture of “logical dependence” is clearly suggested in the introduction to SGA 5 by Illusie (1692) (**). It is further made plausible, for an unprepared reader, by the innumerable references to “SGA 4 1/2” which the late editors of my presentations (***) (or those, at least, which we kindly wished to include in the massacre edition) are more likely to stuff their editorial staff. Many of these references are in no way bogus references, but relate to two of the presentations of the original seminar (one written by Illusie, the other - particularly crucial - by “Deligne (*), which were incorporated without further ado in the volume called “SGA 4 1/2” — taking care not to ask me anything or only to inform me, but as something which (in the absence of the late master) would belong to them by right...

(**) For details, see the subnote “The Good Samaritans” (n° 1692) to this note (n° 169), initial-intended as a grade of b. from p. same here.

(***) (April 9) detailed verification done, the “late editors” in question (and that is a euphemism...) are limited to my dear ex-students Luc Illusie and Jean-Pierre Jouanolou. The editorial offices of Bu-cur and Houzel were ready before my departure, and Illusie did not push his servility so far as to slip in references to a text called “SGA 4 1/2”, which did not see the day only ten years later. He and Jouanolou were content to wait for Deligne's “encouragement” to write what was their responsibility/eleven years after the completion of the seminar and, for the presentations that they had already written “in my time”, to stuff them bogus references to the pirate text of their brilliant friend and protector.

(*) This is the presentation “The cohomology class associated with a cycle, by A. Grothendieck, written by P. Line”. It is also specified that this presentation was “inspired by notes from Grothendieck, which formed a state 0 of SGA 5 IV” - by which it is suggested, undoubtedly, that it was by an act of charity that we got rid of SGA 5 of this sad state (zero), to make this beautiful presentation in a brilliant volume...

As for the presentation which Illusie was responsible for (ex-chapter II), which disappeared from SGA 5 to reappear (in a new form) as an appendix to Deligne's presentation on the theorems of finiteness in equal cohomology, he developed the finiteness theorems relevant for the $Rf_! \tilde{Y}$ (under hypotheses of “purity” and “resolution”, see the note of b — of p. (***) page 841), and the theorems of “generic Kunnet” and “generic local acyclicity” type. No one before me had ever thought of formulating only such statements in co-homology - Moreover, the so-called “outdated” demonstrations of the oral seminar, in addition to principles of dependence (allowing for example to deduce from a statement of finiteness for the functor $Rf_! \tilde{Y}$ the similar statement for $Lf_! \tilde{Y}$ aka) of $\tilde{Y}$ and for $RHom(.,.)$), introduced a uniform technique for using the strong form (a la Hiron - the resolution of singularities, which has proven itself elsewhere — and it is there and nowhere else that Deligne and my other cohomologist students have it learned. It was subsequently used, in particular, in my demonstration of the “algebraic De Rham” theorem for smooth varieties on the field of complexes, and in that of the theorem of Mebkhout-the-nom-named, called “theorem of Riemann-Hilbert” alias “theorem of the good Lord” (which Mebkhout did not have the advantage of learning the method in SGA 5, of which she had

This act of banditry also allows my ex-student Deligne to achieve this brilliant reversal of roles, to be able to present me on the cover of the book (and while also refraining from consulting me...) as his collaborator (for the development of widespread cohomology!) (*) — collaborator a little “confused” around the edges (**) it is true, but “collaborator” all the same...

disappeared...).

Seven years later (??) Deligne found an elegant method to prove in a few pages the finiteness of Rf_* , as well as the biduality theorem (very close technically), under very non-restrictive hypotheses (if not optimal, at least) (see b. de p. note cited). Nothing, neither in Deligne's presentation nor in his friend's appendix, could make the reader suspect that I have anything to do with the notions introduced and used (such as local acyclicity and its “generic” variant), or in the proven statements (of finitude, of biduality, and of Kunnet and of generic acyclicity), and in the links between these. My name is absent from both the text and the bibliography, which consists of four references to Deligne, all after 1970, that is to say my “departure”.

I find myself there again, at the turn of this note by b. from p. explanatory, in the face of the deliberate intention of making a “clean slate” of the provenance and roots of what my brilliant students handle with such mastery (as if they had always known it...) — that is to say say that of erasing the traces of a past, the past before my “death”.

(March 16) For the particular role reserved for Deligne's “finitude” complements, see the subnote “The Trojan horse” (n° 1693) to this note “The maneuvers”.

(*) This staging (where I appear as the “collaborator” of my student Deligne) is all the more brazen given that it had been seven years since I had clearly and publicly indicated my intention to no longer publish mathematics (and even less, therefore, as a “collaborator”, one might think...).

(**) In his summary (of which he sent me a copy) of “SGA 4 1/2” for the Zentralblatt (in September 1977), Deligne takes pleasure in talking about the “confused state — although rigorous — of SGA 5” (my emphasis), which (one would have suspected) the new text was supposed to “remedy”...

(***) These are the results of finitude (already mentioned three b. de p. notes above and in the one cited there), filling in a few pages two gaps in the mother seminar SGA 5, plus one presentation on the “modulo” fixed point formulas n and p . The problem of explaining such formulas, and the relevant conjecture for an expression mod p of the Artin-Weil function L for a diagram of finite type, on a finite body had been posed by me from the SGA 5 seminar, and were surely part of the problems (unworthy of any mention in the introduction of Illusie to SGA 5) posed in the closing presentation (presentation disappeared body and well, with many others, in the Illusie edition). Deligne had found a common solution of great elegance, using the “symmetrical Kunnet formula” (which he developed, for the purposes of the case, in one of the apocryphal presentations in SGA 4). It was understood (and taken for granted) that these results would be included in the drafted version of SGA 5, from which they were directly inspired. It is hardly necessary to specify that in the presentation (of eight pages) which is devoted to this formula in the volume called “SGA 4 1/2”, my name is not mentioned.

As for the pirate text called “SGA 4 1/2”, in addition to the two presentations already mentioned, torn from their original context SGA 5, and in addition to numerous “digests” of some of the results of SGA 4 — SGA 5 particularly important for arithmetic applications, plus an original chapter of applications to trigonometric sums, and finally apart from “State 0” of Verdier’s “thesis”-sic (which will be discussed later with “operation III”), it consists of a handful of complements (very useful, certainly (**)) to the cohomology formalism developed in SGA 4 — SGA 5. There would be enough here to make a nice article, a little heterogeneous, of around thirty pages (or around fifty, including the chapter “Trigonometric sums”). In the somewhat decent disposition of my brilliant ex-student, it would have gone without saying to include these few additions, each in its place, in the two or three presentations of SGA 5 from which they were inspired and which they completed. Instead, they serve as a pretext for the pure and simple deletion of presentation II of SGA 5 (with the blessing of Illusie, who was responsible for the drafting and who “supplies” by transforming this presentation in an appendix in “SGA 4 1/2” to the chapter on finiteness theorems), and to also rename the theorem of biduality in equal cohomology (which I had identified in 1963, on the model of the “coherent” analog which I had discovered in the fifties) “Deligne’s theorem” (*) (which said Deligne was also going to generously “give in” to *on

(*) The biduality theorem, or “local duality theorem” (the two names are those that I gave it), both in the coherent context and in the “discrete” context (even, in particular), is in the nature of a “local” Poincaré duality theorem, valid for “manifolds” (algebraic or analytical, or “moderate” spaces etc.) which can have any singularities. It is a theorem of an entirely new type, in the arsenal of “basic facts” in the cohomology of spaces of all kinds, and it is an important and profound complement to the duality formalism known as “the six operations” that I developed, to express with maximum flexibility and generality all the phenomena of the “cohomological duality” type (Poincaré genre).

It is part, with the introduction of the functor Lf^* (the “unusual” reverse image), of the main innovative ideas these that I introduced, in the formalism of duality of varieties and spaces “of all kinds”; both form, as it were, the “soul” of the overall yoga of the “six operations”.

In the coherent case, the proof of the biduality theorem is also trivial. However, it is what I without hesitation call a “deep theorem”, because it gives a simple and profound vision of things that are not understood without it. (See on this subject the observation of JHC Whitehead on “the snobbery of young people, who believe that a theorem is trivial, because its demonstration is trivial”, observation which I take up and on which I embroider in the note “Snobbism of young people — or the defenders of purity”, n° 27.) In the discrete case, the demonstration is also profound, using all the force of the resolution of Hironaka’s singularities.

friend Verdier, four years later, as part of the “package” called “Verdier duality”...).

(169(iii)) The “equal cohomology” operation continued throughout the eleven years, from 1966 to 1977, which elapsed between the end of the SGA 5 seminar and the publication, in quick succession, of the volume -saw cut “SGA 4 1/2”, followed by the massacre edition (called “Illusie edition”) of SGA 5 (*). It was accomplished, above all, thanks to the united participation, through acts and omissions, of my five “cohomologist” students: P. Deligne, L. Illusie, J.L. Verdier, J. p.

Jouanolou, P. Berthelot (**). It is the responsibility of Illusie (apart from that of Deligne) which

Attribute the authorship of such a theorem to Mr. to Verdier alone), under the pretext that the said gentleman copied in a neighboring context an already known demonstration, or that he knew how to broaden the conditions of provisional validity (which I had identified in 1963) - and this without judging useful even to recall its origin, is what we called “in my time” a fraud. I still have to wait, in short, for the relevant purity and resolution theorems to be demonstrated, so that (in equal cohomology) I can perhaps once again claim a title of authorship at least on the biduality theorem (in the optimum framework, this time, excellent diagrams) - in an era where the great key ideas which inspire and give meaning to theorems have become objects of general contempt.

(May 11) I would like to point out that the validity of the formalism of biduality in the analytical case was of course known to me as early as 1963, when Verdier learned it from me. In SGA 5, I did not fail to always note in passing the area of validity of the ideas and techniques that I developed. In the SGA 5 massacre edition, Illusie took care to remove all traces of such comments. (*) (March 12) It now

seems inaccurate to me to consider that the “Equal Cohomology” operation would have ended in 1977 with this double publication “SGA 4 — SGA 5”, which would be its “culmination” (as I (write two paragraphs below). I allowed myself to be misled here by the deliberate intention (convenient at times, but artificial) of wanting to “cut” the “Burial” operation (of the late master and his faithful) into four separate operations — whereas these are in fact indissolubly linked. The real “culmination”, or rather the apotheosis of the “Eternal Cohomology” operation, and at the same time of the entire Burial, took place four years later during the Colloquium (known as the “Perverse Colloquium”) in Luminy in June 1981 (which will be discussed mainly with “Operation IV”).

In this conference, where the all-round cohomological formalism (consistent and scalable) is at the center of general attention, my name is no longer mentioned...

(**) This solidarity was expressed, for each of these five ex-students, first of all by omission, by abstaining from any effort to contribute to making available to all a vast set of ideas and new basic techniques, by which they learned their trade and from which they were the first to benefit from “launching” them, but from which they insisted for ten years to reserve exclusivity for themselves; and after 1976, by their silence in the presence of the very large operations of a Verdier (in 1976) and a Deligne (assisted by Illusie, the following year). In addition to Deligne and Illusie, Verdier played an active role in the “Etal Cohomology” operation, giving, with “the right reference” (see “episode 3” below), the “coup de sending” to dismantling

seems to me to be the most heavily committed, due to the fact that it was he who assumed responsibility for the massacre edition, thus making himself the docile instrument of Deligne (*).

There can be no doubt about Deligne's intention of appropriating the "true" authorship of étale cohomology. It is attested by the very spirit of the entire "equal co-homology" operation, undoubtedly unique in the annals of our science. It is also expressed, discreetly first in 1975, in Deligne's biographical note (where any allusion to a cohomological tool that I would have placed in his hands, and which could have played a role in his demonstration of the last part of Weil's conjectures (**), is absent), and strikingly eight years later, in the brief but eloquent set of three texts (from 1983) which I called "Eloge Funèbre" (in three shutters) (***). They are examined with the care they deserve in the two notes "The Funeral Eulogy (1) — or the compliments" and "The Funeral Eulogy (2) — or the strength and the halo" (n°s 104, 105) (and taken up, in a more penetrating light, in the later note "The funeral of yin (yang buries yin (4))", n° 124). As for the autobiographical (and in no way funereal) "Eloge" of Deligne, I cover it in the two notes "Requiem for vague skeleton" and "La. profession of faith - or the true in the false" (n°s 165, 166) (****)

of SGA 5, thus showing his friends that the time was definitely ripe for the large-scale operation which followed the following year without problem. As for Jouanolou, his active contribution was limited to "following the movement", peppering his presentations at will with rigorous references to the pirate text, and doing his best to distract the composer from the variational themes that he unfolds with mixed conviction...

(*) Illusie also became Verdier's accomplice, whose deception he covered up the previous year by refraining from any allusion, in the introduction to SGA 5 or elsewhere, to my presentations on homological formalism and that of the homology class associated with a cycle.

(**) (March 12) Nor is there any allusion in this text, nor (to my knowledge) in any other text from his pen, to the fact that a substantial part of these conjectures had already been established by someone other than him. See on this subject the subnote "The Conjecture" (n° 1694) to the present note "The maneuvers".

(***) In my reflection on the Funeral, the meeting with L'Eloge Funèbre, the same day (May 12 last year) when a certain picture of a massacre burst into my investigation, marked an important moment. The long reflection "The key to yin and yang" (which gives its name to the second part of the Funeral) was triggered five months later by an unusual "association of ideas", which appeared the day after this meeting. . It was aroused by a certain deliberate intention (tacit, of course, but nevertheless widely displayed...) of "role reversal" in the two "minute portraits" that I had just looked at a little more closely...

(****) for details concerning this autobiographical notice, see also the last note of b. from p. (dated December 29) at the end of the note "The nerve within the nerve — or the dwarf and the giant" (n° 148).

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The operation culminated in 1977 (*), with the publication (in the appropriate order) “SGA 4 1/2 (sic) — SGA 5”. This is the (provisional) culmination of a long eleven-year escalation in the burial of my work and my person, each new stage of which is emboldened by the tacit encouragement found during the previous stages, by the general indifference and apathy (when not an eager welcome...) towards their dubious character. I've already mentioned some of these steps, with the “Patterns” operation reviewed previously. I noted three other episodes, more directly linked to the “Scale Cohomology” operation, which I now have to review. Episode 1. It concerns the fate of a certain conjecture of the “Riemann-Roch dis-cret” type. I introduced it in 1966 during the SGA 5 oral seminar, in the final presentation where I identified and commented on a certain number of open problems

and unpublished conjectures. This presentation was completely lost in the Illusie edition, where no allusion is made (and not without reason...) to the conjecture in question, nor to any other of the numerous questions which were raised there. However, seven years after the seminar, the conjecture reappears in the analytical context under the pen of Mac-Pherson, without allusion to any SGA 5 seminar (or to a schematic context), and under the unusual name of “Deligne-conjecture Grothendieck”. This is the well-known article (**) where Mac-Pherson proves this conjecture in the analytical context.

During his visit last October, Deligne told me that in 1972 he had limited himself to

Brussels, on the occasion of the award of the “Quinquennial Prize” to Pierre Deligne, in 1975.

In this two-page autobiographical note, just as in the minute portraits which constitute the “Eulogy”, the art of thumb-slewing is practiced just as much on the theme “motifà”, as on that of the -adic cohomology. In the two texts, written eight years apart, the nerve center around which the appropriation reflexes were concentrated seems to be “the” Weil conjecture.

(March 12) In a more absolute and more definitive way than in the “praise texts” examined in the four notes cited, the intention of appropriation bursts forth and is displayed in the Luminy Colloquium of June 1981 (see the note by b. from p. of the same day, page 853, above). Or to put it better, an appropriation hitherto symbolic and by intention, which previously had expressed itself in groping maneuvers (encouraged by the eager support of some and the indifference of all), became during the brilliant Colloquium (at the very less in. the unanimous consensus of all the brilliant mathematicians assembled on this memorable occasion, and thanks to the general euphoria) a fait accompli.

(*) (March 12) This is a very temporary

“culmination”! See the first of the notes of b. from p. dated today, in this same note “The maneuvers” (p. 853).

(**) Mac Pherson, Chern classes for singular algebraic varieties, *Annals of Math.* (2) 100, 1974, p. 423–432.

communicate as is to Mac-Pherson my conjecture (which he had learned, with the other listeners of SGA 5, during the oral seminar). He told me he was surprised by the name given by Mac-Pherson, without taking the trouble to write to him about it to make him correct the situation. On this subject, see the note "Dot the i's" (n° 164, part II 1), and for further details on the conjecture itself, the long subnote n° 871 to the note "The massacre" (n° 87) (*). Episode 2. It concerns the vicissitudes of the SGA 7 seminar, devoted to the questions of mon-odromy in étal cohomology, which took

place, under the joint initiative and direction of Deligne and me, between 1967 and 1969. The initial ideas and overall conception of the seminar were due to me, and Deligne made several contributions, the most important being his demonstration of the Picard-Lefschetz formula in the étal context.

As with SGA 5, the writing of the oral presentations drags on for several years - it is a bit of a repetition of the (beginning of the) scenario of the (non-)writing of its unfortunate predecessor! The publication ended up taking place anyway in 1972 and 1973 (in Lecture Notes n° s 288, 340), by the care of Deligne, when I had disappeared from the mathematical scene for three years - On his initiative, the seminar was divided into two parts, the first presented as directed by me, the second as directed by him and N. Katz (whom Katz had been simply a speaker among others, during the second year of the seminar) (**).

In the first volume SGA 7 I published under my name, the detailed theory of evanescent cycles, which I had presented in a series of presentations opening the seminar, is "slashed" in a twenty-page summary by Deligne (the other presentations had been written within a reasonable time, by myself and by other seminar participants). As for volume II published under the joint signature Deligne-Katz, and where the part I took in the development of the main themes and results is no less than in volume I, this part is systematically evaded. I give details on this subject in the note "Prelude to a massacre" (where I try to understand the meaning of the mini-operation SGA 7) and especially in

(*) This conjecture will therefore appear for the first time, in its original and complete form, in *Récoltes et Semailles* only, and this almost twenty years after I recommended it to the attention of my students.

(**) For the meaning that I discern in this cut, which no mathematical reason justified, see the note "Prelude to a massacre" (n° 56) cited below, and also the sub-note "The eviction (2)" (n° 1691) to this note "Maneuvers".

the note "Dot the i's" (part II 5), nos. 56, 164.

I will limit myself here to recalling the biggest scam. It concerns the transposition that I had made, in the context of étale cohomology, of the cohomological theory of "Lefschetz brushes" and the "irreducibility theorem". This transposition of classic results, proven (when they are indeed proven...) by transcendental means, was (as is often the case) nothing automatic. I remember spending days if not a whole week there. There is, to my knowledge, no other demonstration known to date for the main facts, other than the one that I then identified using spectral sequences and the "well-known" structure (which I had determined in 1958) of the "moderate" fundamental group of an algebraic curve (*). This theory is reproduced in SGA 7 II, in a presentation by Katz (exp. XVIII) and according to the notes that I communicated to him. In the introduction to the volume, Lefschetz's brush theory is presented (with the Picard-Lefschetz formula proven by Deligne) as one of the two "key results" of the seminar, without any allusion being made to a role that I would have played in any of the themes that are developed in this volume. The only reference that I know of in the literature, where such a role for Lefschetz's theory appears somewhat, is a laconic and ambiguous footnote (**) (after the title ("Brushes of Lefschetz") of Katz's presentation, and the name of its author) "According to (brief) notes by Grothendieck".

In Deligne's article "La Conjecture de Weil I" (1974) (***) published the same year (1973) in "Publications Mathématiques", this theory of Lefschetz's brushes appears as an important technical ingredient of his demonstration of Weil's conjectures. In this article, Deligne does not yet pretend to evade my role in the formula of p -adic traces (which is another crucial ingredient of his demonstration, whose authorship

(*) In the introduction to Katz's presentation which will be cited, he also seems to generously attribute this theorem to my ex-student Michèle Raynaud, who exposed it in the SGA 1 seminar of 1960/61.

(**) This note is ambiguous, due to the fact that it is careful not to assert authorship, which could just as easily be due (in the absence of mention to the contrary) either to the author of this presentation XVIII, or to the other co-signatory of the volume (as the introduction to it suggests by omission). The fact of following Grothendieck's ("brief!") notes in no way means that there are not several demonstrations (including some earlier ones) from which he would have done me the honor of choosing mine. This is (as elsewhere in the same volume) a typical example of the "thumb!" style. dear to my friend Deligne, who obviously made a name for himself...

(***) See the subnote "The "Conjecture" (n° 1694), from a note by b. page right here.

was still too notorious in well-informed circles) (*); on the other hand, when he takes care to formulate the results of Lefschetz's theory which he is about to use, no allusion is made to me. He simply refers to the relevant presentations of SGA 7, and there is little chance that an unfortunate reader will ever unearth the elusive footnote of his friend Katz... Episode 3. The last episode which known to me in "escalation" takes place in 1976, a year before the "culmination" with the operation

"SGA 4 1/2 - SGA 5". This concerns the publication in Asterisk (n° 36 (SMF), p. 101–151) of an article by J.L. Verdier entitled "Homology class associated with a cycle". Verdier was one of my five cohomologist students, and (like his friends) he had attended the SGA 5 seminar, wisely taking notes without really knowing what he had gotten himself into there. In the ten years that have passed since then, he, like his friends, ended up finding his way there. The fact remains that in this article he takes up a certain number of ideas that I had developed in the seminar in question, at length and in breadth and "in front of listeners who asked for mercy", around the theorem of biduality and above all, around the formalism of homology and cohomology classes associated with a cycle (**). In this article, my name is not mentioned (except once, as a joke

(*) The following year, however, in his autobiographical note (examined in the two notes already cited, s 165, 166) n° Deligne cannot deny himself the satisfaction, however symbolic it may be, of escaping this role. It is true that this was a text with very limited circulation, which perhaps no "in-the-know" mathematician had held in their hands except me. But three years later again, in the volume called "SGA 4 1/2" intended to become a current reference text, the same evasion (but implemented with a completely different skill, given the circumstances...) took place. found edited, this time intended for a large audience of "users", not specialists in flat cohomology. For a dismantling of this masterfully carried out deception, see the group of subnotes "The Formula" (n° s 1695 — 1698) to this note, as well as the two subnotes which precede it, "The Trojan horse" and "" The "Conjecture" (n° s 1693, 1694).

(**) The idea of defining the homology of a diagram (or "space"...) as its hypercohomology with values in a suitable "dualizing complex" dates back to the 1950s (in the coherent framework), and had been taken up by me, with a wealth of details, in the framework given during the SGA 5 seminar. The methods that I had developed on the theme of the class of cohomology (first) and homology (then) associated to a cycle, from the second half of the fifties (in the coherent framework), and of which I presented a synthesis (equal version) in SGA 5, were "all-purpose techniques", applying equally well to continuous "coefficients" (De Rham, or Hodge style) as well as discrete ones and both in the schematic and analytical or differentiable framework (among others). The needs of such a theory had also been among my main motivations to develop (from the 1950s) a formalism of "supported" cohomology in a closed state (with the very useful spectral sequence "of passage from the local overall"), intended to provide an "algebraic" equivalent

of a very particular kind...), and no allusion is made to any SGA 5 seminar that the author might have heard of. Details will be found in the two notes “The good references” and “The joke — or “the complex weights”” (always the same weights, no error...) n° s 82, 83.

It is from this “memorable article” that the formalism of duality on complex analytical spaces, for analytically constructible discrete coefficients, reproducing the one that I had developed (from 1963 and above all, in SGA 5 in 1965/66) in the flat schematic context, surreptitiously became the “duality of Verdier” — while waiting for five years later (in the euphoria of the Luminy Colloquium of June 1981) the same sleight of hand to occur. also does for equal duality. But here I anticipate (just as I have already done with the episode of the “memorable article” itself) on the. third major operation, this time having Verdier as the main (if not the sole) “beneficiary” — operation which will be discussed below (*).

(169(iv)) This article by Verdier shed unexpected light for me on the fate suffered at SGA 5 at the hands of some of those who were my students. He showed me what kind of “benefit” they could find in the exclusivity they had from the knowledge of the ideas and techniques that I had developed in SGA 5, for their benefit above all others. It also showed me, without a doubt, the connivance and solidarity of all of my cohomologist students with this type of operation. By calling this article “the good reference”, I did not believe to name it so well - it has indeed become (as it has been confirmed to me from various quarters) a standard reference text, which none of them could certainly ignore. This is what ends up imposing itself on me in the notes “Silence” and “Solidarity” (nos. 84, 85). I knew that I need not be surprised that in the Illusie edition of what was one day the SGA 5 seminar, no allusion is made, at any time, to a formalism of homology (and homology classes associated with cycles) that I would have developed in this seminar - and there was no need to talk about it in fact, since (ten years later) his friend Verdier had already taken charge of provide the missing reference to general satisfaction (*).

for the classic (and elusive) “tubular neighborhood” of a closed subspace. It was also on this occasion that I developed for the first time (both in the coherent and discrete context) statements of the cohomological “purity” and “semi-purity” type.

(*) See the notes “Sharing”, n° s 170 (i) — (iii).

(*) As for the cohomology variant (just touched on in Verdier’s article, which Deligne abstains from

The “good reference” provided by Verdier, just like the “memorable volume” consecrating the partial exhumation of the motifs by Deligne, is for me pure and simple plagiarism. The same is not yet true of the text called “SGA 4 1/2” (**). Certain shapes are still kept there, in the “thumb!” style. de rigueur, which excels in constantly suggesting the false, without ever (or almost... (1693) (***)) going so far as to say it clearly. My first confrontation with “SGA 4 1/2” and with the particular form that this style takes (that of disdainful depreciation (*)) takes place in the note “The tabula rase” (n° 67).

But the operation in question strikes me above all, more than banal plagiarism could, by a certain dimension of impudence. None of the other three operations reaches this extreme dimension in my eyes (**). And it affects me more strongly than any of the other three perhaps, because even more it affects me like an act of violence.

moreover to quote), it is awarded (as we have seen) to Deligne. As I am duly presented as the author of the presentation hacked by Deligne, there was no major reason to silence the disappearance of SGA 5 from my presentations on this theme. Illusie mentions it “in passing” in the introduction to his pen, without the thing being considered worthy of an explanation (and no one before me seems to have been surprised by it, in fact...). On the contrary, from the second sentence of this introduction, it is made clear that

“the only important changes compared to the primitive version concern presentation II [finitude theorems] which is not reproduced, and presentation III [Lefschetz formula]...” (emphasis mine) .

Given the little and given the context, I should not be surprised if my ex-student affects not to see other “important changes” in the living and harmonious body that I had previously entrusted in his hands and those of my other students, body reduced in the Illusie edition to the state of a deformed remains 1 And it is just a “change” not “important”, among many others, that this sharing made by two inseparable friends of one of the “packages” of presentations that I had developed with infinite care: the part awarded to Verdier having become, for a year already when SGA 5 was published, “the” good reference that everyone was waiting for (Deligne dixit), and that awarded to Deligne becoming “the” good reason to duly cite the essential basic text “SGA 4 1/2” at each turn of the page, and moreover, to present their late master as the humble (and confused) collaborator of his most brilliant student...

(**) (March 21) The reflection continued in the series of sub-notes grouped under the name “The Formula” (n° s 1695 to 1698) showed me that this impression was erroneous, despite “certain forms” which are still kept... (***) see on this subject the sub-note “The Trojan horse” (n° 1693), from a note by b. from p. right here which was supposed to explain this “or almost...”.

(*) It is the “depreciation” which aims to make a clean sweep of the “gang of nonsense” amassed by a “confused” predecessor (“although rigorous”...) and rough draft...

(**) (March 11) This assessment is of course entirely subjective. In writing this line, I also

lence, like a massacre “for the pleasure” of a beautiful work that I had completed and into which I had put myself entirely — for the benefit, above all others, of those very people who no longer subsequently to ransack it, to make fodder for their self-importance, and (under the good exterior of people of high class and exquisite company) come to display a discreet insolence and these airs of complacent contempt (** *).

169 (v)) (February 28) The two “operations” that I have just reviewed, just like the (fourth (called “the Pervert Colloquium”) which will be discussed later, were carried out with the participation or connivance of a large number, for the “benefit” (it would seem) of a single one. This is a striking common point in these three operations, confirming the reflection continued in the note “The Gravedigger — or the entire Congregation” (n° 97).

But I see in the first two operations, made around patterns and flat cohomology, a more insidious common point, concerning a certain spirit which animated them. This is a question of a certain internal attitude towards the possession of high-level scientific information with limited circulation, or at the limit, confined information.

had a sort of hesitation, thinking of the unimaginable “operation” of the Pervers Colloquium (or “operation IV”, which will be discussed further). This memorable Colloquium constitutes a true collective apotheosis of the Burial of my person, through that of a reckless continuator (Zoghman Mebkhou) interposed. It was on this occasion that I realized that this apotheosis is at the same time a natural extension, and a final outcome of the “Equal Cohomology” operation, including the episode “SGA 4 1/2 — SGA 5” was, in reality, only a very temporary “culmination”. In the latter, my student Deligne cannot help but here and there still allude to my modest person and to my work, even if reluctantly, and to distinguish himself from it with disdainful epithets. In the Luminy Colloquium of June 1981, on the other hand, where flat cohomology was at the center of general attention, my name (as well as that of the unknown person on duty Zoghman Mebkhou) was not mentioned at any time...

(***) This complacency and this contempt are displayed quite clearly in and between the lines of this volume called “SGA 4 1/2” (without doubt unique of its kind, in the history of our science). They also made their appearance, in the same year of the publication of this volume (but in more discreet tones), in Pierre Deligne's personal relationship with me. (See the note “The two turning points”, n° 66*) I found them in the nonchalance of such and such among those who were my students, abstaining from responding to such and such a letter telling him about things that were important to me. heart or which had pained me. I found them, in light and casual touches, between the lines in the introduction to the “Illusie edition” (or massacre edition) of a work done with love, and also last year, in the air of condescension fatherhood of yet another student (which is discussed in the note “The joke — or “the complex weights””, n° 83).

to a group of a few people linked by alliances of interest (or even to a single person), and who use their power to block traffic as long as it seems advantageous to them to reserve the “benefit” “exclusive.”

Thus, after my “departure” in 1970, Deligne was the only one (apart from me) to have intimately assimilated the “yoga of patterns” and to have felt its full scope — to put it to the use we know. My five cohomologist students (including Deligne), and perhaps two or three other ex-auditors of SGA 5 who had the perseverance to really assimilate its substance, were the only ones to have at their exclusive disposal the ideas and techniques that I had developed in this seminar.

In either case, speaking to Deligne in countless tête-à-têtes between 1965 and 1969, or to the restricted group of SGA 5 listeners in 1965/66, if it is true that it was indeed “for their intention above all others” that I explained and developed at length before them a certain interior vision, it was not as representatives of some “interest group” that I placed these things in their hands which were of value to me. For me, it went without saying that I addressed them as animated people like me, alongside the natural desire to give their proofs and to make their contribution to a common knowledge of mathematical things, by a spirit of service / towards a “mathematical community” without borders in space or time (*). And what I placed in their hands, I knew well that these were not “curiosities”, museum pieces, but living and burning things, made to grow and to spread - and that was indeed what was immediately anticipated by those to whom I was speaking (*). If I addressed them, it was, not as to some sort of shareholders to whom I had entrusted shares, in the name of I don't know which

(*) On the subject of such a “spirit of service”, see in particular the note (also cited below) “Yin the Servant, and the new masters” (n° 135).

(*) (April 10) This did not prevent some of them from doing their best, afterwards, to uncover what they had hoarded for a long time, after having had difficulty at first (apart from Deligne) to grasp its meaning and scope and to assimilate it. I see in this tone of debauchery (which is added to the “hoarder” attitude, discussed below) a double compensation. On the one hand, that which evacuates a discomfort (created deep within them by this diversion of something which is not theirs, but that of everyone), by pretending to devalue in their own eyes what has been diverted. On the other hand there is compensation towards the “father”, felt as the incarnation of a creative force which would surpass them (while they are unable to assume the similar force, which rests in them just as in the one to whom they secretly blame...). My “deceased” state, and the example given by the direct heir, created a favorable situation to “let out” a secret antagonism, the “father” now being felt as being in a position of weakness, of inferiority.

common “interests”, but rather as people to whom I was connected by a common adventure — people, therefore, who would be keen to act as relays of the “information” that I communicated to them (even if it meant putting some effort into it). them as they wish, by passing it on to those around them...), just as I myself relayed it in their favor (**).

It is with the hindsight of almost twenty years that I realize that there was a fundamental misunderstanding between them and me — we were not “tuned to the same waves”. What I had entrusted as living things in hands that I believed to be loving, were hoarded like a sort of hoard that we would hasten to bury. The possession of the loot represented a certain derisory power certainly, given the price... - if only the power to retain, to prevent (even if only for a time that a living thing, made to to flourish and to swarm, flourish and swarm.

I tried to grasp the two attitudes, of different essence, which confront each other in this “misunderstanding” (***), in the two notes “Yin the servant, and the new masters”, and “Yin the Servant (2) — or generosity” (n^o s 135, 136). I would not like to seem here to pose as the exemplary incarnation of the “attitude of service”, opposed to the “caste attitude”: the one where “knowledge” becomes the distinctive sign of an elite and (at a more advanced stage in the degradation of morals) the means of arbitrary power over others. As the reflection in Fatuity and Renewal (the first part of Récoltes et Semailles) showed, the reality is more complex. I was able to see in my own person, and in certain of my actions in my past as a mathematician, the seeds of the general degradation that I see today.

And it is just as true that this “drive to serve” in me has been a powerful driving force for action, particularly in the development of my written mathematical work, and more particularly, in the tireless pursuit of the two series of texts. of EGA and SGA foundations (*).

(**) It is therefore to this “mathematical community without borders” that I addressed myself, at the same time as to them and through them. I have explained elsewhere (see the note by b. de p. (*) page 847) why I did not take it upon myself, at least in the year following this seminar, to rewrite it clearly to make it available to everyone.

(***) In writing these lines, and this word “misunderstanding”, the association imposed itself on me with the letter from Zoghman Mebkhout (quoted in the note “Failure of a teaching - or creation and conceit”, n^o 44), which spoke of a “sort of incomprehension” between my students and me (although setting aside Deligne.-.). I was not sure then that I understood what “kind of incomprehension” he wanted to talk about, would it be the same as this “misunderstanding” that I am talking about here — and that he would have excluded Deligne from it, by his remarks deliberate (which surprised me more than once in my friend) to only see it “in rosé”?

It would seem that I was unable to communicate to my students anything about this impulse, nor the attitude that reflects it. The work undertaken, to the extent that it embodied an attitude and “service” dispositions of a community, stopped abruptly after my departure (**) — as if by a sudden blow of a saw or chainsaw. . (*).

By the echoes that still reach me here and there from the world I left, I see that this spontaneous attitude, which I had in common with the benevolent elders who welcomed me during my beginnings, has become (just like this very benevolence) a stranger in this world which had been mine.

(1691) (March 9) (**) The sign SGA is an abbreviation for “Séminaire de Géométrie Algébrique du Bois Marie”. “It designates (or at least, designated in the sixties) the seminaries in which I developed, between 1960 and 1969 (and in collaboration with students and others, from 1962) my program of foundations of new algebraic geometry, alongside the texts (less “advanced”, and in style more canonical) from the EGA series (“Elements of Algebraic Geometry”) (***). These seminars took place at “Bois Marie”,

(*) This “tireless pursuit” often went against another impulse just as strong in me, that of letting go of all the “tasks” that were holding me back, and of launching myself ever further into the stranger in front of me who constantly called me (and still calls me...).

(**) (April 10) In retyping these lines, I am struck by a singular irony of the situation, the meaning of which (just like that of the Funeral as a whole) is not fully grasped at this moment Again. It is the one who has invested himself entirely in “service” tasks for the benefit of a certain “mathematical community”, who finds himself ousted from his very work, and with the tacit and unreserved approval of said “community”, by those who have made the refusal of service a caste imperative and second nature.

The apparent paradox, however, seems to me to be resolved to a large extent, by remembering that the “community” to which this “service impulse” in me was addressed was in no way the sociological entity (with its “caste” notables etc) who was an unreserved participant in my Funeral; but it was this “mathematical community without boundaries in space or time” that was discussed above. (For comments on the distinction and confusion between these two “communities”, see the first note in b. de p. to the later note “Respect” (n° 179).

(*) On the subject of the “chainsaw” effect, cutting short (notably in each, or almost, of those who were my students) the living and vigorous momentum of a work which was beginning, see the two notes “The co-heirs...” , “... and the chainsaw” (n° s 91, 92).

(**) This sub-note comes from a note of b. from p. to the main note “The maneuvers” (see b. de p. note (*) page 848)

(***) Written with the collaboration of J. Dieudonné.

place (in Bures sur Yvette) where the IHES has been located since 1962. In fact, the first two seminars (between 1960 and 1962) continued in a makeshift premises in Paris (at the Thiers Institute), in front of a audience which should hardly have exceeded ten people, and in front of whom I strictly acted “rider alone”. The acronym SGA dates from these years, when there was no question of “Bois Marie” yet. I later added this pretty name to the initial name “Algebraic Geometry Seminar”, to make it more austere.

It goes without saying that the sequence of these seminars, from SGA 1 to SGA 7, is numbered in chronological order. It went without saying that the overall concept of each of these seminars came from me. It was inspired by my global and long-term aim, to lay vast foundations of algebraic geometry, and increasingly, those at the same time of a larger “geometry”, which I strongly felt from all or less from 1963 and following, and who remained unnamed. (Today I would call it “arithmetic geometry”, a synthesis of algebraic geometry, topology and arithmetic (*).)

The last of these seminars was SGA 7, which continued (unlike the previous ones) over two consecutive years, 1967–69, and which was run in collaboration with Deligne.

The volume with the misleading name “SGA 4 1/2” is (as explained above, pages 847 and 851) made up of texts after 1973, therefore also after the last of the SGA seminars, if we take into account apart from those looted in SGA 5, and the famous “State 0” from a “thesis” by Verdier (which will be discussed with Operation III). All questions of dates aside, the heterogeneous nature of the texts composing this volume is in no way in agreement with the spirit in which I continued the SGA series, each volume of which presented extensive foundational work on a part of my program which had not yet been developed anywhere else — therefore excluding volumes of “digests”, or compilations of already known and well-developed results, or even new results but of a sporadic nature. Strictly speaking, giving Deligne's volume the name SGA 8 (assuming that I agree to it) would have been improper, by suggesting through such a name the idea (in no way founded) of a continuation of the work which I had continued in the previous seminars SGA 1 to SGA 7. As for the acronym “SGA 4 1/2” chosen by Deligne, it is not only “improper”, but it in itself constitutes a deception and a imposture. This is something which seems to me to be obvious, for each of the numerous mathematicians who, since 1977, have had the opportunity to read this volume, and who also know the meaning

(*) See note b on this subject. from p. (*) to the P. 844.

of the acronym SGA, inseparable from my person and my work, and thereby also, from a certain spirit. This does not prevent the fact that this imposture, in the very name of a standard reference text, has been tolerated by the “mathematical community” for eight years, without apparently “making any wrinkles”. I see there, with the Pervers Colloquium of 1981 which is a natural extension, the great disgrace of the mathematical world of the 70s and 80s, a disgrace which seems to me unprecedented in the history of our science.

There was a precursor episode to this eviction operation, aimed at giving the impression that my person would only play an occasional, messy and accessory role in the development of fundamental SGA texts. This is “mini-operation SGA 7”. This operation is discussed in “episode 3” (of an escalation) in the note “The maneuvers” (n^o 169), and especially (from the point of view that interests me here) in the note “Prelude to a massacre” (n^o 56). This concerns the publication, in a separate volume SGA 7 II, of part of the original seminar, under the names of Deligne and Katz and to the exclusion of my person (and avoiding the role which been mine in the development of its main themes and certain key results). I write on this subject, in the note cited (n^o 56):

“This “SGA 7” operation is in no way a continuation of the work continued in the SGA, but I feel it as a sort of brutal “cut of the saw” (or chainsaw...), putting an end to the SGA series, by a volume which ostentatiously stands out from my person, while it is linked to my work and bears its mark just as much as the others.”

These volumes SGA 7 I and SGA 7 II do not yet display an air of condescension and barely veiled contempt towards the work from which they come* If this step in escalation could have accomplished, however, four years later, it is because the previous steps (among which this apparently innocuous SGA 7 mini-operation) have “passed”, without ever (to my knowledge at least) causing in the mathematical world the slightest reaction.

I would like to end with an edifying (no doubt provisional) epilogue to the operation-eviction of me from the SGA, an eviction implemented by Deligne with the tacit approval of “the entire Congregation”. This is the very “cool” response that was given to me recently by Ms. Byrnes, in charge of “Lecture Notes” in the Springer Verlag, to whom I had written to ask for clarification on the subject of a volume named SGA 5 and published under my name in 1977 in the “Lecture Notes”, without Springer having deemed it useful to

ask for my agreement, or even to inform me of this publication made by him.

I learned from his letter (received a month later) that it was all the more useless to bother with such a formality, that it is wrong that I claim to be listed as the author of the said volume SGA 5, published by L. Illusie, since I only appear on the cover as director of this seminar! (And one wonders, in retrospect, what the late director was going to do at this seminar...) I wrote, just to see, to MKF Springer himself, about various strange experiences that I had had with the Springer Verlag since 1972 (the year when SGA 7 I was published under my name in the same way — it is true that I am no more “author” of it than I am of SGA 5.. .). I'm still waiting for his response...(*).

(March 16) This sub-note has received the appropriate name, “Eviction (2)”. The sign (2) reminds us that there was already another note called “Eviction” (n° 63), to which I had occasion to refer recently (with the operation “Motifs”). The “eviction” which was mentioned (very discreetly...) in this note is the one which took place in 1970, during the episode of my departure from IHES, which departure visibly suited my life perfectly. young and brilliant friend, recently installed in the place (*). The connection between these two “evictions”, one from IHES, and the other from the SGA series, seems obvious to me. I notice a striking progression, in the nature of an “escalation”: the first time, it is simply the eviction of my person from an institution, to which I certainly felt very strongly attached (I could see myself ending my days there, really!), but from which I detached myself very quickly and without any residue of regret. The second time, it concerns the eviction of my person from the SGA, which themselves represent (symbolically surely, and even more than symbolically) my work as a mathematician - work to which I remain attached even today. It is true that my “eviction” from IHES has been complete for fifteen years - while I doubt, despite everything, that the same is true for my eviction from a work to which I had devoted a good fifteen years and thick of my life.

I thought about the fact that I had previously made it easier to oust myself from the SGA, by following my spontaneous movement to present those among my students and collaborators who had

() (April 9) for the rest of the story, see the note “Les Pompes Funèbres — — im Dienst der Wissenschaft” (n° 175).

(*) The episode of my departure from IHES (in 1970) is discussed in the section “The unfinished harvest” (n° 28) and in the notes “The salutary uprooting”, “The eviction”, “Brothers and spouses” (n° s 42, 63, 134), and finally in the subnote (n° 134) to the last cited note.

invested full time, at certain times, in the development of one of its seminars, as “directing” the seminar in the same capacity as me. This was not the custom of my time, and is certainly even less so today. I don't know if I did well. On the one hand, this did not entirely correspond to reality, in the sense that there was no symmetry in the role that I played there, and in that of my collaborators, even brilliant and fully invested in everything like me. This presentation of things therefore goes in the direction of “ambiguity” (or “complacency” for brilliant young mathematicians) which I examine in the notes “The ascension” and especially “The ambiguity” (n° 63, 63). If this ambiguity established by me encouraged some of those who collaborated intensely with the SGA at one time or another to “evict me” (in a more or less partial or more or less complete way), I would be wrong to blame them! I simply reap what I sow.

But that in no way prevents me from making a public statement about what happened.

On the other hand, it is also true that this relationship that I established with certain colleagues could be perceived by them as a mark of esteem and trust (which it indeed was), and at the same time encourage them to invest fully in the task, just as I invested in it. But I tell myself now that such esteem and such confidence can be expressed in an equally clear and encouraging way, without being tainted with ambiguity. It was a bit as if I “purchased” an investment commensurate with the task, by granting an “advantage”, an “advantage” moreover which (with hindsight) seems doubtful to me. Because it is a false advantage to appear what you are not. And it is quite obvious that in the creation of an appearance (if not entirely false, at least) a little false around the edges, it was my responsibility before that of anyone else, of me who appeared as an elder, who was committed.

The reflection clearly joins more and more with that of the note “Ambiguity”, in the unforeseen day of a “species situation” of which I had in no way thought when writing it. I realize that, just like my relationship with the “young genius” (by no means unknown) Deligne was false, due to the fact that through a false modesty I refrained from assuming the role of elder and “master” who was beautiful. Well mine with him, my relationship with other brilliant young people, investing fully in a task which then seemed “common” to me (*), was also false.

(*) I begin to realize that this was an illusion, at the end of the note “The green light” (n° 68), p.

The reflection continued in the Funeral showed quite clearly that if there was a “common” task, it was for the space of a year or even two, the time for the young man to do (let’s say) a thesis (which is already not bad). The very year of my departure in 1970 sounded the signal for an immediate and almost total abandonment of this vast set of visibly burning “tasks”, and which were indeed “burning in my hands” just the day before (**). Aside from Deligne’s work on the Weil conjecture, it was at the same time the beginning of a long stagnation in each of the major themes that had most fascinated me — a stagnation which (apart from the “resumption” partial triggered by the philosophy of Mabkhout-the-non-named*) continues today (*).

(1692) (March 13) (**) In this introduction to SGA, Illusie warmly thanks Deligne, among other things to have it

“convinced to write... a demonstration of the Lefschetz-Verdier formula, thus removing one of the obstacles to the publication of this seminar”

(my emphasis), in short: the obstacle of Illusie’s lack of “conviction” in writing what he had committed to writing for eleven years - which lack ends suddenly, as it was said above, at the precise moment when the good Samaritan Deligne gave “the green light” to the good Samaritan Illusie that he “could go”...

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(**) This immediate abandonment of a program and burning tasks, the very day after my departure, is mentioned in the note “Instinct and fashion — or the law of the strongest” (n° 48), and especially in the double note “The co-heirs...”, “... and the chainsaw” (n° s 91, 92), where I try to review (according to the echoes which have come to me income) what became of the themes that had been taken up by my various students “before 1970”.

(*) (March 17) This impression of “stagnation” will perhaps take on more meaning. 'concrete in a note later, where I intend to make a short commented enumeration of the most “hot” themes which were on my agenda, and which were left behind, from my departure and with a perfect set, by those who had been my students.

(April 9) See on this subject the note “The tour of the construction sites — or tools and vision”, n° 178.

(**) This sub-note comes from a note of b. from p. in the note “The maneuvers” (n° 169) (**) on page 849). For a more detailed disassembly of the “thumb!” technique. to make bladders mistake for lanterns (to a “user” in a hurry who just wants to believe), see the sub-notes “The Trojan Horse” and “The Formula”, nos . 1693 and 1695 ÿ 1698 .

This is the “true in the false”. As for the falsehood that this wise passage visibly tried to suggest, without having to say it clearly (following a proven and established style...), it is that the SGA 5 seminar would depend on the formula in question (which was only established at the time of the seminar by means of hypotheses for the resolution of singularities, since lifted, in the most common cases, by the finiteness results of Deligne presented in the “previous” volume having the name “SGA 4 1/2” (***)). In fact, as both friends know as well as I, the role of this Lefschetz-Verdier formula in SGA 5 (just as in my proof of the p -adic cohomological formula for L functions) had been purely heuristic, providing motivation to search for and prove “explicit” fixed point formulas (ie where “local terms” could be calculated explicitly). Thus, Illusie joins forces with his friend to create the impression that SGA 5 would indeed be (and in a sense which is not clearly explained by him any more than by his friend) subordinate to the text which, as a result, cannot be called “SGA 4 1/2”.

For details, see the note “The massacre” and its subnote n° 87 — In this note and all of its subnotes, I ended up discovering (better late than never) that this entire introduction written by Illusie, and in general, the overall presentation of the Illusie edition (or massacre edition), is a model of bad faith, served casually and with those airs of candor which are the charm of his person.

This touching impression that Illusie strives to create, that it is indeed thanks to the good Samaritan Deligne (and the second good Samaritan Illusie, it goes without saying) that the unfortunate SGA 5 seminar ended up being published (eleven years later, and in the state that I know), apparently “passed” without any problem. I found this version in Serre's report on Deligne's work, done in 1977, for the International Committee for the award of the Fields medal. I have no doubt about the complete good faith of Serre, who had only followed the mazes of the oral seminar from quite a distance - not to mention that water had passed under the bridge since... He surely took at face value (like everyone else, and without asking any questions) what was said or suggested in the introduction to Illusie, which he had to read one day to see (and he will not have seen anything!)...

Interestingly enough, this same Serre report is also the only place in literature, to my knowledge, where it is said (in this case, from the first sentence of the report) that Deligne was my student. On the other hand, no publication by Deligne could leave

(***) See the note by b on this subject. from p. (***) page 841 and (*) page 850.

suppose to any reader that the author could have learned something from me.

(1693) (March 10) (*) In the subnote (n^y 671) to the note "La slate rase", I point out two examples where Deligne went beyond his usual prudence, and indeed "advanced to say in plain language" the false. For the curious and sufficiently well-informed reader, and who does not have said note and subnote on hand, I point out that, apart from the "kindness" with regard to SGA 4 and SGA 5, and the "oversights" a not very blatant from my humble person everywhere (already pointed out here and there in the note "The maneuvers" and in his b. de p. notes), the patent scams that I have noted are concentrated in paragraphs 3 and 4 of page 2 (in "Breadcrumbs for SGA 4, SGA 4 1/2, SGA 5 seventeen lines are also a model of the art of "fishing in troubled waters", and well deserve a analysis via the menu (*). — admire the beautiful procession here...). These

It is enough for me to note here that in the first of the paragraphs cited, we read that, to establish "in flat cohomology a formalism of duality analogous to that of coherent duality", "Grothendieck used the resolution of singularities and the conjecture of purity" (**). It is also to immediately add that in the present volume (thanks to Heaven and the brilliant author),

(*) This sub-note to the note "Maneuvers" is issued; with a grade of b. of p, to this one, see note of b. from p. (***) page 860.

(*) See, for details commented on the second of the two paragraphs cited, the sub-note "The double meaning — or the art of the scam" (n^y 1697).

(**) The text continues on "purity conjecture", with: "established in a relative framework [??] in SGA 4 XVI, and — modulates the resolution — equals the characteristic in SGA 4 XIX". The "in a relative framework" (incomprehensible to any reader who is not already in the lead) is a way of hiding that this theorem was acquired for smooth algebraic varieties in all characteristics.

(March 17) I am just now noticing the charm of the end of the cited paragraph, which had "passed through" on first readings:

"Various developments are given in SGA 5 I. In SGA 5 III, we show how this formalism [??] implies the very general Lefschetz Verdier trace formula." (emphasis mine.)

We will admire the "various developments" without further precision, whereupon the author (who on other occasions knows how to be precise) continues with "this formalism" (various developments?), which "implies the very general formula of traces"; to immediately make it clear, from the next sentence (in the following paragraph), that the said formula, "in the original version of SGA 5", was "established only conjecturally".

I have just checked in SGA 5 - what are these "various developments" in presentation I of SGA 5, The title tells me: "Dualizing complexes", therefore also theorem of biduality. why "various developments" instead

these “key points are established by another method” (my emphasis), valid “for finite type diagrams on a regular diagram of dimension 0 or 1”, that is to say therefore, in practically all cases encountered by the user.

Thus, Deligne strives to create the impression, and he even clearly states, that the entire formalism of flat duality that I had developed remained conjectural (at least in non-zero characteristics), and that “these key points” were finally established only by him, Deligne, and in the present volume, that is to say by his results of finitude (those already mentioned in previous notes by b. de p., results to which he refers 'elsewhere immediately). This would indeed be good, well!, likely to accredit the fiction of the famous “logical dependence” of SGA 5 in relation to the text called “SGA 4 1/2” (dependence posed by this very name, and by the beautiful procession “SGA 4 — SGA 4 1/2 — SGA 5”), and thereby, to justify the incredible assertion (already cited and commented on) in its introduction:

“Its existence [of “SGA 4 1/2”] will soon make it possible to publish SGA 5 as it is”.

Here is the Deligne version, slipped by the tape here and there in the saw-cut text called “SGA 4 1/2”, and without any ambiguity in the passage from “Ariane's Thread” that I have just cited The reality is that as early as March 1963 I had established in the flat framework the complete formalism of the six operations (thus going far beyond the usual “Poincaré duality”), without any other restrictive hypothesis than that (visibly essential) to work with “prime” torsion coefficients with the* residual characteristics of the envisaged schemes (*). It is only for the biduality theorem in equal cohomology that my proof made use of the hypotheses mentioned by Deligne. This last theorem, which was of a

“theory of dualizing complexes” or “theorem of biduality”? However, it wasn't any longer, and it still felt less muddy! This reminds me that in the famous presentation “Finitude” ie in the “Trojan horse”, the brilliant author demonstrates precisely a “theorem of biduality”, without any allusion to my modest person - which theorem is also called dry (in the introduction to the presentation I in question of SGA 5, written by Illusie) “Deligne theorem”. Clearly everything fits...

NB. For comments about this biduality theorem (treated with such false nonchalance...), see the long note by b. from p. (*) on page 852.

(*) Thus, the “six functors” and the essential formulas concerning them, the most crucial of which is the “duality formula” for a separate morphism of finite type (which can be considered as the most general version imaginable at this time). day, of the classic Poincaré duality theorem), were established by me, without having at any time to impose hypotheses of finiteness on the coefficients. Moreover, Deligne knows this better than anyone, since it was none other than him who made a detailed draft (according to my notes from 1963) of the presentation of SGA 4 where this formalism of duality (centered around the duality formula in question)!

unknown type in cohomology (of “spaces” of all kinds) before I discovered it, only played an episodic role in the SGA 5 seminar, for the demonstration of the Lefschetz-Verdier formula (*), which formula itself only played a purely heuristic role (**). In Deligne's apocryphal text, the role of the said theorem of biduality is also zero (except that of being demonstrated there under helpful hypotheses, and - under the obsequious pen of Illusie and with the encouragement of his friend — suddenly becoming “Deligne's theorem”...).

There is no question here of minimizing the interest of Deligne's finiteness results, which indeed fill a gap (among many others) in SGA 5, as is in the nature of things. No intensely living mathematical theory is complete! But it is clear that Deligne exploited this contribution, as useful as it is modest (he did deeper and more difficult things, and without difficulty...), by inflating it beyond measure, to make it the “Trojan horse” of a monumental fraud operation: the “Equal Cohomology” operation.

This same “Trojan horse” reappears elsewhere, in the already cited “review” of the volume called “SGA 4 1/2”, presented by Deligne for the Zentralblatt (see b. de p. note (**) page 851). In the last paragraph of it, I read:

“We prove that for schemes of finite type on a regular scheme S of dimension one, the usual cohomological operations [not to say the “six operations”, which it does not definitely not name!] transform any constructible beam into a constructible beam.”

(*) (March 17) This does not prevent the fact that in the second paragraph cited, Deligne immediately goes on to point out that this formula “was only established conjecturally”, and that “moreover the local terms were not calculated” (“affirmation” which has no mathematical meaning, but which contributes to creating the impression of “gavage of nonsense” about SGA 5, intended for charitable forgetting...).

I admit that on the first readings of these passages, about a year ago, I was stunned - the meaning of these comments strangely “off the mark”, concerning a text that was otherwise recommended to forget, completely escaped me. It is with hindsight, and thanks to attentive “work on pieces”, that an intention of appropriation finally appears, served by a method of sleight of hand (“to confuse”) which is meticulous and perfect. ment to the point, behind what at first glance had given me the impression of a simple epidermic malevolence, expressing itself in happiness-lachness through the thread of a complacent pen. For a more detailed examination of the method, see the subnotes “The Formula” (n°s 1695 – 1699) to the note “The maneuvers”.

(**) As I point out later (in the subnote “The real maths...” (n° 1695)), this formula was psychologically important, in providing motivation for the development of fixed point formulas “explicitas”.

(Emphasis mine.)

The thing is formulated in such a way as to suggest that before the brilliant volume presented by the author, we did not have a finiteness theorem for any of the famous “usual operations” in equal cohomology (*). However, I had the pleasure of proving the first such finiteness theorem, and the most crucial of all, for the functor Rf (proper support cohomology), and this moreover in the same days (if I remember correctly) which followed my discovery of the definition of such a functor in equal cohomology (coinciding with the “banal” Rf $\tilde{y}$ when f is assumed to be clean). It was in February 1963, before I had the honor of meeting my future student, and at a time when no one except me (and Artin, strictly speaking) was still too sure if cohomology spreads it “existed” well and truly. She began to truly exist in those days.

There remained the analogous question for Rf $\tilde{y}$, which turned out to be more resistant, and is still not resolved with all the generality that (no doubt) deserves. In fact, in that same year (if not the same month), I had done the necessary “unscrewing” (which the first person to come can now do in the blink of an eye...) showing that from the finiteness for Rf $\tilde{y}$, we could prove that of Lf of the “basic” and $RHom$ (...). (**). It is true that it has since become folklore” of ethyl cohomology, and is surely part of the “technical digressions” that my brilliant precursor “SGA 4 1/2” is intended to “make us forget”...

(1694) (March 12) (***) More than once since the publication of Deligne's article “La conjecture de Weil I” (where he establishes the “last part” of the conjectures, which I had left in abeyance), I had noted as a strange thing, but without stopping to think about it until these very last few days, that Deligne speaks of the conjecture of Weil, where the custom had until then been to say the conjectures of Weil. it is indeed in this form, of a series of assertions, some more breathtaking than the others, that the conjectures in question are presented in Weil's article (Number of solutions of equations in finite fields, Bull. Amer. Math. Soc. 55 (1949), pp. 497–508), and this is also how I learned them from the mouth of Serre, around the middle of the fi

(*) This goes well with the “confused state of SGA 5” to which, as was said above in the same review) this volume was intended to “remediate”.

operations among the six, namely Lf $\tilde{y}$ and $\tilde{y}L$ (**). As for the two remaining it is trivial that they transform constructible coefficients into constructible coefficients.

(***) This sub-note comes from a note of b. from p. in the note “The maneuvers” (n^o 169); see note to b. from p. (***) page 857

quantity. It is true that there is in this set of conjectures, heterogeneous at first sight, an obvious unity of inspiration, coming firstly from intuitions linked to cohomological formalism (via the Lefschetz formula), and also (I presume at least) of Hodge's theory.

By creating and developing such a cohomological tool for varieties on any basic field, I was able to demonstrate a good part of these conjectures. I did it, assisted by Artin, Verdier and others, by devoting three well-packed years of my life to meticulous work on pieces, materializing in two thousand "illegible" pages of "gavage of nonsense" and "technical digressions", which allowed Deligne to "slash" the last step in twenty tight pages... Moreover, drawing inspiration from a remarkable "Kahlerian analogue" to the conjectures of Weil, discovered by Serre, I was able to identify (with what I called the "standard conjectures" on algebraic cycles) the principle at least of a transposition of Hodge's theory onto an arbitrary base body (or more precisely, a transposition of this which, in Hodge's theory, is really relevant, from an "algebraic" point of view, for the theory of algebraic cycles on complex algebraic varieties). Even if it means slightly (and obviously) reformulating these conjectures in their initial form (perhaps too optimistic), they are valid at least in zero characteristic, and are "surely true" also in characteristic $p > 0$ (from the moment that Weil's conjectures are...).

It is surely not a coincidence that the same Deligne who insists on putting Weil's conjectures "in the singular" also endeavors to gloss over the role played in their demonstration by the man who was his master, and that it was he again who strove (successfully, given the general apathy) to discredit "standard conjectures" as a dead end, beyond reach, what's more, and as an obstacle, to put it bluntly. , now surpassed thanks to God (and his modest person), on the way to the demonstration of Weil's conjecture (*).

(1695) (March 17) The famous "Weil conjectures", for an algebraic variety X defined on a finite field k , concern the "function L " (called "Artin-Weil") associated with X . This one

(*) (March 16) For some details on this double sleight of hand, see The Funeral Eulogy (notes n° s 104, 105), and the few words on this Eulogy at the beginning of note n° 171 (x) . For a more detailed examination of the art of sleight of hand, see all the subnotes "The Formula" (n° s 1695 ỹ 1699).

(x) (May 11) This beginning of the old note "The Apotheosis" has separated from this one, to become a separate note "The jewels" (n° 170(iii)).

is defined as a certain formal series with rational coefficients, the knowledge of which is equivalent to that of the number of rational points of X on the body k and on all its finite extensions. The first assertion among these conjectures is that this formal series (with constant term 1) is the series development of a rational function on Q . All other assertions concern the particular form and the properties of this rational function. , in the particular case where

$$(L) \quad L(t) = \frac{P_0(t)P_2(t)\dots P_{2n}(t)}{P_1(t)\dots P_{2n-1}(t)},$$

where the P_i ($0 \leq i \leq 2n$, with $n = \dim$ (or more precisely, for the corresponding variety X on the algebraic closure k of the field k)).

Thus, when X comes by "reduction in char. $p > 0$ " of a non-singular projective variety by any embedding of K in C^* . The rational function must satisfy a functional equation, which is equivalent to saying that the roots of P_{2n-1} are exactly the q^f is the cardinal of the base field k , and where f runs through the roots of P_i . (Morally, where $q = p$ this had to "come from" the existence of "Poincaré duality" for the unnamed and undefined "cohomology" of the variety for $i = n$, the zeros of P_{2n-i} were exactly the q^{-n+i} , where f still traverses the zeros of P_i (or, which amounts same thing in view of the duality condition, that the zeros of P_i group together in pairs, with product equal to q for each). The heuristic "reason" here is another important property of the cohomology of complex non-singular projective varieties, this time expressed by the "Lefschetz theorem" (so-called "cow" version). Finally, the last of Weil's conjectures, a "geometric" analogue of the Riemann conjecture, $i/2$ (assertion which is that the absolute values of the reciprocals of the zeros of P_i are all equal to $q^{-i/2}$).

(*) At the time when Weil made his conjectures, it was not even known that the b_i defined in this way were independent of the chosen embedding of K in Q . A few years later, this would result from Serre's theory of the cohomology of coherent sheaves, which gave a "purely algebraic" meaning to the finer invariants $h_{i,j}$ of Hodge's theory.

leads to highly precise estimates on numbers of points of X (*).

The rationality of the function L of a general variety X had been established by Dwork in 1960, by non-cohomological “p-adic” methods. This method therefore had the disadvantage of not providing a cohomological interpretation of the function L , and consequently does not lend itself to an approach to other conjectures, for non-singular projective X . In the latter case, the existence of a cohomology formalism (on a “coefficient body” R of zero characteristic), including Poincaré duality for non-singular projective varieties, and a formalism of cohomology classes associated with cycles (transforming intersections into cup-products), allows in an essentially “formal” way to transcribe the classic “Lefschetz fixed points formula”. By applying this formula to the Frobenius endomorphism of moment $\overline{}$ when he had expressed these conjectures (1949), and it was in any case for Serre as for me in the fifties - hence the initial motivation for developing such a formalism. This was done in March 1963, with $R = \mathbb{Q}$,

= p . There were simply two grains of salt:

- a) It was not clear a priori (although we were convinced that it must be true) that the polynomials $P_i(t)$, which a priori had coefficients in the ring $\mathbb{Z}$ of adic integers, were in fact ordinary integers, and moreover, independent of the prime number considered ($= p = \text{car. } k$).
- b) From the rationality of the function L for a non-singular projective X , we could only deduce that for a general X if we had the resolution of the singularities.

The problems raised by a) played a crucial role, of course, in the emergence and development of the yoga of motives, and in the subsequent formulation of the standard conjectures closely linked to this yoga. They also stimulated reflection to also find a p-adic cohomological theory (subsequently realized by the “crystalline” theory), as a possible approach to prove the entirety of the coefficients of P_i , once we would know (p . e.g. via an affirmative solution to the standard conjectures) that they are rational and independent of (including for $= p$).

(*) From this last of Weil's conjectures, it results at the same time that the writing (L) of the function L is unique.

In any case, from 1963 we therefore had the expression (L) of the function L (but which a priori depended on the choice of), the functional equation, and the good behavior of the Betti numbers by specialization. It therefore remained to resolve question a), to prove the assertion for the absolute values of the roots of P_i , and finally (for added weight) the “Lefschetz-style” relation on the zeros of P_i . This is what was done ten years later in Deligne's article “The Weil I Conjecture”, *Pub. Math.*, from IHES n° 43 (1973) p. 273–308.

As ingredients for this demonstration by Deligne, we therefore had no need for a formula of fixed points more sophisticated than the “ordinary” formula, which was available (without anything “conjectural”) from the beginning of 1963. The only other co-homological ingredient in Deligne's article, if I am not mistaken, is the cohomological theory of Lefschetz brushes (equal version) that I had developed around 1967 or 68, supplemented by the formula of Picard-Lefschetz (proved in the flat frame by Deligne), both exposed in the volume SGA 7 II which was discussed (and from which my name, as by chance, has almost disappeared...).

The “more sophisticated” formula of fixed points, called “Lefschetz-Verdier”, on the other hand played an important psychological role, to encourage me to identify the cohomological interpretation (L) of the L functions, valid for any variety X (not necessarily non-singular projective). This Verdier formula reminded me that there must be formulas of fixed points without non-singularity conditions on X (as was already well known in the case of the ordinary Lefschetz formula), but above all, it attracted my attention on the fact that there are fixed point formulas concerning the cohomology with coefficients in any (“constructible”) sheaf, interpreting an alternating sum of traces (in spaces of cohomology with coefficients in such a sheaf) as a sum of “local terms” corresponding to the fixed points of an endomorphism $f: X \rightarrow X$ (when these are isolated). In this heuristic motivation, the fact that this Lefschetz-Verdier formula “remained conjectural”, because $p > 0$ (for lack of having the resolution of singularities, and hence, the “biduality theorem”), was entirely irrelevant (*).

As so often, the essential step here was to find “the” right formulation (in

(*) (March 20) It was so much so that last year, I had completely and for a long time forgotten this fact, and was taken aback by reading (from the pen of Deligne) that the Lefschetz formula -Verdier “was only established conjecturally in the original version of SGA 5”. I will return to this point in the reflection the next day and the day after (March 18 and 19). (In subnotes n° 1696 and 1697.)

the occurrence for a “cohomological formula of functions L ”). Verdier's formula suggested to me to bring in an arbitrary p -adic (constructible) sheaf, instead of the usual sheaf of coefficients (which until then had remained implicit), namely the constant sheaf. It was therefore necessary, by copying Weil's definition of the “ordinary” function L , to define L “with coefficients in F ”. Once we think about doing it, the definition imposes itself: the one given in my Bourbaki presentation of December 1964 (Lefschetz formula and rationality of functions L , Sémin. Bourbaki 279), which there is no need to repeat here. Furthermore, the plausible “local terms” of the Lefschetz-Verdier formula (in terms of the given bundle of coefficients, and the Frobenius correspondence) were also required. Finally (we are either cheeky or we are not!), why not write the formula here, even abandoning the hypothesis of cleanliness of the “orthodox” Lefschetz-Verdier formula, but working with the cohomology to clean support? !

Thus, the essential step, this time again, was to identify the “good statement” (in this case, the “good formula”), sufficiently general and thereby sufficiently flexible to lend itself to a demonstration, “passing” without problems through recurrences and “unscrewings”. I would not have known (and no one to this day would be able to) directly demonstrate “the” formula for “ordinary” L functions, for any X (or even smooth, but not clean, or vice versa), in terms of cohomology p -adic (with proper supports) with coefficients in the constant p -adic sheaf $\mathbb{Q}$, without going through sheaf generalization. (No more than I would have known, in car. $p > 0$, to demonstrate the ordinary Riemann-Roch-Hirzebruch formula, if I had not first generalized it as a fascitic formula for a proper application of smooth algebraic varieties — and no one, to my knowledge, can do it even today...)

In the Bourbaki presentation in question, I limit myself to giving the general statement of the formula for functions L “with coefficients” in an ordinary p -adic sheaf, and I show how, by very simple unscrewing, we return to the case where X is a smooth, projective curve. I knew very well that once you got there, it was a win — because we “hold” dimension one sufficiently, for the demonstration of the formula in question to become a matter of routine (*). I did not bother at that moment to come up with a good formula

(*) If I speak here of “routine work”, it is in no way in a pejorative sense. Nine-tenths, if not much more, of mathematical work is of this type, as much for me as for any other mathematician who happens to go through moments which, precisely, are something else, creative moments .

of fixed points in dimension one and to prove it, it seemed to me that it would rather be up to Verdier to play. He gave a formula of fixed points, called "Woodshole", the following year, which was sufficient to cover Frobenius and the application to L functions. I read his statement, which did not make sense to me. really satisfied, because it seemed to me that the conditions he imposed on his cohomological correspondence (for the purposes of a demonstration of which I have not become aware) were a little artificial - I would have liked a formula which applied to any endomorphism of an algebraic curve. The SGA 5 seminar was the first good opportunity to develop such a formula that was to my taste. (It is, unless I am mistaken, the one which actually appears in presentation XII of the Illusie edition, having miraculously survived the vicissitudes which struck this unfortunate seminar.) Weil's conjectures had been an initial motivation, and a valuable guideline, to "start" me on the development of a complete formalism of equal cohomology (and others). But I felt that the cohomological theme, which had been at the center of my efforts for eight or nine years already and which was to remain so for the years to come until my departure in 1970, had an even broader scope than conjectures. de Weil who brought me there. For me, the Frobenius endomorphism was not an "alpha and omega" for the cohomological formalism, but one endomorphism among many others...

It seems to me that Deligne's initial motivation for his "operation SGA 4 1/2 — SGA 5" had been the intention of appropriating the sole formula of traces, and through this and as a "corollary", of that of functions L. It is along the way that this statement has broadened into a statement of appropriation of "equal cohomology" quite simply. I believe, moreover, that both "pieces" were too big, and that even today and notwithstanding "SGA 4 1/2" and Colloquy perverse et tutti quanti, "the people" (even those who are not so well informed) "know" that it was not he who created the p -adic cohomological tool, nor did he single-handedly prove "the" Weil conjecture. This does not prevent the fact that to finish with the "Equal cohomological" operation, I would still like to follow somewhat here the twists and turns of my friend and ex-student Deligne in his presentation of the central theme (*) of the volume called "SGA 4 1/2" namely, "the" formula of the traces, leading to the formula

After Verdier, I myself spent time turning the crank of available techniques, delicate and well-oiled, to find and prove a formula for fixed points in dimension one which satisfied me (provisionally at least). This was "routine" work, just as Verdier's had been.

(*) It is also said nowhere in "SGA 4 1/2" that the "Report" really forms the "central theme", not

cohomology of L functions. It is the subject of the “Report on the trace formula” (cited [report] in his book, loc. cit. p. 76–109).

It is in four places in the volume that Deligne makes comments of a somewhat “historical” nature on the formula of traces. The reader of the said volume who is not already in the lead, and whether or not he reads the four passages (which we are going to review), will get the impression that a certain Grothendieck (author or director of a somewhat vague seminar and subsequent to the volume “SGA 4 1/2”, a seminar which we especially recommend not venturing to read) would seem to have had some idea, necessarily a little confused, on the L functions, before that the author of the brilliant volume finally comes to give comprehensible statements and demonstrations that stand up. In the entire volume the only precise reference to this individual is to a certain Bourbaki presentation (from 1964, at the turn of a “Remark 3–7.” (loc. cit. p. 88), which comes as the last ending in a series of three remarks, some more technical than the others (**). We read: “If we admit the formalism of $\mathcal{Q}$ -sheaves... it is easy to bring back the proof of 3.1, 3.2 to the case where X_0 is a smooth curve and where $\tilde{y}_0$ is smooth. This is clearly explained in [2] §5 (for 3.1; 3.2 is treated the same).” (emphasis

mine). In short, this unnamed individual (if is not under the flattering sign [2] (**)) has (not done, of course, but) explained the trivial job - so trivial in fact that it is barely worthy of mentioning it in this final remark, and still having the kindness to suggest that, trivial for

trivial, it is at least explained

more than it is said that the main purpose is to provide the main ingredients of flat cohomology for “the” Weil conjecture. At the time of writing the double introduction to the volume, a proposal of appropriation to the dimensions of the entire étale and p -adic cohomology must already have been present.

(**) In writing these lines, I was under the influence of the striking feeling of the identity between the style that I am probing here, and that which was deployed four years later, for the appropriation “through contempt” of the “God theorem” (aka Mebkhout). I go through the twists and turns in question in the note “The Conjuror” (it’s worth the capital letter...), n° 75. The “sensitive point” was hidden in a remark 4.1.9 (instead of 3.7), again more messy. We cannot stop Progress...

(March 22) It had escaped my notice that there is in fact a second reference in “SGA 4 1/2” to the same Bourbaki presentation from 1974, a reference served with consummate art in the “Ariadne’s Thread”, as we will see in the sub-note “Double meanings - or the art of the scam” (n° 169).

(*) Each in turn — in 1970 (at the International Congress in Nice), it was Serre (in Deligne’s communication “The Theory of Hodge I”) who, instead of being named, was entitled to the acronym [3], in the cryptic line where allusion is made for the first and last time) to “sources” for the theory presented...

clearly. (We already know, from other comments by the brilliant author, that clarity is not really the strong point of the confused person in question...) To put it another way: this chapter "Report on the trace formula" aims object of doing the real work, leaving the trivial extras to those who are there for that...

Since I'm here, I might as well say right away that on this same page is one of the four passages to which I was alluding, containing historical comments on "the" formula of traces. This is section 3.8 (following, of course, the previous remark 3.7). It is explained that we have "two methods" to prove 3.2 (i.e., the trace formula in the only explicit case where it is discussed in this volume, namely the particular case of the Frobenius correspondence) . Needless to say, the individual's name does not appear in either of them. We distinguish between method A called "Lefschetz-Verdier", and method B called "Nielsen-wecken" (this name also rings a bell for me...). Let's see what he says:

B. Nielsen-wecken. A method inspired by the work of Nielsen-wecken makes it possible to reduce 3.2 [the trace formula for Frobenius] to a particular case proven by Weil; this will be explained in the following paragraphs."

In fact, s. 5 (pp. 100–106) is appropriately titled "The Nielsen-Wecken Method." We were previously told that the method was inspired by the work of Nielsen-wecken — so it is surely out of pure modesty that the author of the volume calls the method "Nielsen-wecken". It's even clearer that these aren't guys from today. If the reader takes it into his head to look at the bibliography for a certain presentation XII to which he is never referred (and in a seminar moreover which he is advised to forget), he will know that these are guys who published in the early forties. If he even reads their fine works (which the brilliant author, I bet, has never held in his hands), they will know that their methods are triangulation techniques. It's apparently not the one dXi text. In the absence of any mention to the contrary, it is therefore the modest author of the volume who is also the author of the method. No date is indicated for this, probably out of modesty again, not to say that it was really he who first took on the job of demonstrating this famous formula of traces.

Let's see the so-called "Lefschetz-Verdier" method A, what people say about it. It's not not exactly encouraging:

"If X_0 is clean... the general Lefschetz-Verdier trace formula allows

to express the second member of 3.2 as a sum of local terms, one for each point of X . The reader will find this in the original version of SGA 5, this formula unconditional proof in the final version, which is still too modest to remember that it is thanks to him that the day was saved - in any case we will be careful not to read this damn SGA 5 J. In the case curves, case to which we can reduce (3.7), the ingredients [??? — we give up...] were all available.”

But then, if they were (perhaps a reader more alert than the others will ask, if there is one), why all this nonsense about a Lefschetz-Verdier formula which was not proven that and patati and patata? Didn't we just say that the real work was done in dimension one? Answer: it's the so-called “cuttlefish” method: ejecting ink to fish in murky water! At the point where the reader is, he is already completely convinced that this is surely not the right method. It is with dull eyes that he scans the following paragraph, which will give him the rest: “To deduce 3.2 from the Lefschetz-Verdier

formula, we must be able to calculate the local terms [please, in what a hassle ...]. for a curve and the Frobenius endomorphism [ah! they deflate!], this had been done by Artin and Verdier [and they did it together again!] (see JL Verdier, the Lefschetz fixed point theorem in étale cohomology, Proc. of a conf. on Local Fields , Driebergen, Springer Verlag 1967) and the definitive version of SGA 5) [one wonders what the original version might have looked like, poor us!].” (Here and above, emphasis mine, out of pure malice!)

It is out of charity, obviously, that the brilliant author refrains from referring to the relevant presentation of the seminar doomed to oblivion, or from even suggesting that “the” formula is indeed found there! The indestructible and curious reader, who would have thought to dig into it, would have found a presentation XII with the unusual name “Formulas of Lefschetz and Nielsen-Wecken in algebraic geometry, by A. Grothendieck [always the same person, my word!] written by I. Bucur [don't know]”. Surely the individual and his acolyte will have copied the presentation of their brilliant predecessor, overloading it with unnecessary details...

In this famous “report”, nothing that could make the reader suspect that it exists (apart from the formula of Lefschetz-Verdier or rather, one should say, of Lefschetz-Verdier-Deligne, in any case uninspiring, as he emerges from the author's disillusioned comments

himself) an explicit trace formula and everything, for something other than the sole endomorphism of Frobenius. Both in the passage cited, referring to Artin-Verdier, and in another (quoted below) referring to SGA 5 (especially not to name the average person), it is suggested that work was done only in the case of Frobenius endomorphism. We are friends with Verdier (and we prove it to him), but for the formula of the traces, it is a thing understood: thumb reference to Verdier in agreement (in a breath with Artin (*), and drowned in the middle of a technical and uninspiring text, forgotten as soon as read) - but it is clearly understood and there is no mistake: the formula for the traces is him, Deligne!

It is true that the said Deligne has more than one string to his bow, and that it is not for nothing that he has scattered these historical comments (sic) in four different places, just to catch up in one what we could criticize him for having omitted (or overdone) in the other.

There he can fall back on the introduction to the same chapter, everything has been planned 1 It is an introduction of seven lines, which deserves to be cited in full (*).

(1696) (March 18) I had to stop mid-start yesterday, because it was getting prohibitively late, and it had become clear that I would not finish with "The Formula" that night! Before returning to certain twists and turns around the said formula, I would like to first take the opportunity, in the specific case of the beautiful "Lefschetz-Verdier" formula, to put my foot down a bit. This formula perfectly illustrates something which seems essential to me, to which I returned with insistence more than once during Ré-coltes et somesilles and from the Introduction (**), but in terms which remained perhaps be a little too "general".

This formula is a striking example of a statement which is profound, and whose demonstration is "trivial" (1696bis). When Verdier told me that he had identified and proven a Lefschetz formula for "cohomological correspondences" (which had not even been defined until then) on any algebraic varieties ("proper", all the same)

(*) I had already encountered this proven technique of Deligne, of drowning a fish to hide away So-and-so (here Verdier, a friend nevertheless and to whom we will grant substantial compensation elsewhere), by naming him in one breath with another - so we can't blame him for not being generous! This is the so-called "dilution by assimilation" method of sleight of hand. The art in the method is to find the gentleman who is a "pair" with the person who needs to be evaded. For me, it's always Serre that my friend resorts to... (*)

(March 20) I come back to this introduction in yesterday's reflection. (Cf. "Double meanings — or the art of the scam", subnote n° 1697.)

and for any constructible “coefficients”, I was at first incredulous. Perhaps the idea had crossed my mind of a Lefschetz formula with more or less general “coefficients” — I must have written one at least, a long time ago/for “locally constant” coefficients. ie in a local system. But I didn't believe it for general coefficients — it seemed too good to be true! It didn't take long for Verdier to convince me. Writing the formula straight away and demonstrating it to me must have taken a quarter of an hour — and again, it's because I'm slow, especially when it comes to ascertaining something so unexpected. This is what we can call a “trivial demonstration” in terms of what is “well known”, I mean. And following the wind that is blowing these days (and of which JH C Whitehead has already felt the first whiffs (**)), there is therefore only one step (blithely taken by the majority) to classify the theorem in itself as “trivial” — one formula among ten or a hundred, which “fall” on their own from the co-homological formalism — here, from the complete formalism that I had just developed in the standard framework the previous year (1963): the six operations, and the biduality theorem.

If I say that the theorem discovered by Verdier (following the path traced by Lefschetz) is “profound”, it is not here for the reason (however relevant) that this formalism from which its demonstration arises is itself “profound”. Moreover, this same wind of fashion has for a long time (and with the unconditional support of Verdier himself, what's more!) classified as formalism among the “big tartines à la Grothendieck”, which we brush aside. with one hand, while tacitly using said “toasts” at each step (without naming them).

The question even if this theorem “remained conjectural” (as Untel points out with an air of commiseration), or was entirely established in all characteristics (as it is now, thanks precisely to the “biduality theorem” bearing the name of this same So-and-so) is for me just as incidental, when I say that it is a profound theorem, and which substantially enriches our understanding of the “cohomological theme” of all kinds (discrete or continuous coefficients, and “varieties” or “spaces” of any kind...). The same thing could also be said of the ordinary Lefschetz formula, in the case, say, of a differentiable (or other) compact variety, and of an endomorphism of that with isolated fixed points: the “formal” demonstration, from a formalism of duality in cohomology, takes up one page, if not a few lines. In both cases, however, there was creation —

(**) See Introduction 4, “A journey in pursuit of the obvious”.

(***) See on this subject the note “The snobbery of young people — or the defenders of purity” n° 27).

something new and substantial, which had escaped everyone until then, which “did not exist” (yet), suddenly appeared...

Where exactly is “creation” located, in this case? I believe that more than one mathematician, and more than one of those who were my students, who nevertheless once knew what a creation is and who have long forgotten it, would have an interest in meditating on this case, or on any other similar one, closer to it. I know very well that if I had proposed to myself, or to one of the students or other colleagues among those who were then well “in the know” of the cohomological formalism (*), to explain a general formula of Lefschetz, to any coefficients and any “cohomological correspondences” (it's up to them to define them ad hoc I) also, on any compact (sorry, clean) variety, everyone would have arrived there infallibly, by putting in a few hours or days, or as necessary a few weeks (**). Once the problem is posed (even if it is still vague, while the main terms are still waiting to be defined...) and seen, to “solve” it (in this case, find 1 a good formulation, suggested by the existing cohomological formalism) becomes a “routine” question what Weil calls, in the same sense I believe, an “exercise”). This “routine work” involves flair, a minimum of intelligence and imagination for sure, but (as I have written more than once) it is then “the things themselves which tell us how to approach them, as long as we know how to listen to them. (And if we don't know how to listen to mathematical things, we would have done better to choose another profession...) It is not in this work that the spark of which I want to speak is placed, which makes the new thing (**).

The creative moment, the spark that triggers a process of discovery, was here the one where the problem was seen, and moreover, “accepted” — when the intention was born to really look, to go all the way to to have a clear heart, to “see” what exactly the “real” do-

(*) There weren't many of them then to “be in the loop” (nor now either, given the turn events have taken...) — but there must have been some three or four, apart from Verdier and me. Digne had not yet appeared in. 1st area...

(*) Of course, I assume here that the person in question has really “engaged” with the problem posed, therefore that the “feeling” that I would have had about it (otherwise I would not have proposed it) has “passed”, and that the student or colleague really “triggers.” It is not at all an obvious thing that “it happens” — far from it!

(**) And even less does the “spark” emerge in such adjunct work, done perhaps ten years later. which would establish that the hypotheses which make such a demonstration “work” are indeed verified where one expected them...

The validity of this Lefschetz formula, which everyone claimed was “understood”. What made the spark fly was not “virtuosity” or “power” (in the usual sense of cerebral power, to master difficult techniques or memorize overlapping situations...). It's an innocence: everyone thinks they have understood Lefschetz's formula, but me, poor me, I don't yet have the impression of understanding, and I would like to be clear about what is 1 In a case like this, once we get started, it's a success: things tell us what needs to be done, and we do it. Going “to the end” can mean in one case, proving “the” right theorem (in terms, in the present case, of an already existing formalism — that this formalism itself is “established”). ” or that it “remains conjectural” is irrelevant here). In another case, this can mean: identifying “the” correct conjecture (*); and that this is often itself provisional, that it will perhaps prove false or insufficient, and that it will have to be adjusted or expanded, is also incidental. This conjecture is one of the stages on the path to a deeper collective knowledge of things (in this case, mathematical things), a stage which could not be avoided (**).

depth and fecundity are closely linked qualities — the latter appears to me to be the tangible sign of the former. The very first sign of the fertility of the formula discovered by Verdier came the same year (if not in the days or weeks that followed, I would no longer be able to say): this formula was the main motivation , leading me to write a cohomological formula for “coefficient” L functions in any p -adic sheaf.

The fact that technically I did not have to make any use of the Lefschetz-Verdier formula is irrelevant here. What is certain is that without this formula as a common thread, or rather

(*) The two cases, the one where “the spark” (followed “to the end”) leads us to a theorem, or on the other hand to a conjecture, are not of a different nature. “To the end” means: to make a still diffuse intuition fully materialize, by probing it in all its aspects and by all the means at our disposal. A theorem is not by nature more “complete” than a conjecture. There are visibly provisional theorems (even lame and askew), just as there are conjectures (such as the set of Weil conjectures) which give the impression of an entirely completed, perfect whole. This does not prevent the fact that these same conjectures of Weil were a starting point towards other developments (first conjectural like them), more vast and which encompass them. In this sense we can say that no thing in mathematics, as long as it is alive, is “finished” or “definitive”.

(**) Regarding the dynamics of discovery, and the crucial role of “error” in it, see (in the first part of R and S) the “Error and discovery” section (n° 2).

: who whispered to me that there “must be something”, such a thing as a function L “with coefficients” in a sheaf — without this insistent voice, I would not even have thought of extracting the right notion, and the relevant formula that goes with it; where I would undoubtedly have arrived there in the following years, but first having to discover by my own means this other formula of more general scope, which was “on the way”, which had to be discovered.

Psychologically, the two situations are very similar. Just as Verdier had to first bring out the notion of “cohomological correspondence”, to clarify the “problem of the Lefschetz formula” (beyond the “ordinary” formula), so I had to bring out the notion of function L “with coefficients”, to clarify the “problem of the formula of L functions” (implied: beyond the case of the “ordinary” L function, associated with a clean and smooth X ...). The “creative moment”, the one where a spark passed, is the one where I saw this problem: defining such Generalized L functions — and I took it on, going to the end of this problem.

Once the problem was clearly seen, and assuming that I managed to “pass it on” to any of the people around me who were “in on it”, it was clear that he would not have been able to stop himself. to solve it, in “the” only natural and reasonable way, undoubtedly taking a few days (as must have been the case for me), definitions, statement, demonstration and everything (*).

It is true of course that the “unscrewings” which bring us back to dimension one are “easy”, and even “trivial” if we insist on it. It is not in this kind of unscrewing, which the first comer will do as well as me (or will not deign to do), that there is discovery. The discovery is in a notion that no one had thought of, even though it is obvious: that of a “coefficient” function L . In this notion and in the formula which is inseparable from it, there is the possibility (in the context of finite type schemes on the prime field $\mathbb{F}_p$, or more generally, on the absolute base ring $\mathbb{Z}$) of interpreting the “six operations” in cohomology, starting with the functor $Rf_!$, (operations therefore of a “geometric” nature) in terms of operations on “function fields L ”, ie in “arithmetic” terms. This was a new step in the direction inaugurated by Weil's conjectures in 1949, towards the marriage between geometry and arithmetic, through the cohomological theme.

What happens to these two discoveries, in this text which presents itself as the standard reference book for étale and p -adic cohomology - this text due to the most gifted and the most

(*) I am setting aside here the last step of the demonstration, which I had left pending (as it should not pose a real problem), and which risked being longer.

prestigious among those who were my students?

Lefschetz-Verdier's formula, which had inspired me without my ever having to "use it", has become the scarecrow brandished aptly, to make the reader (who only asks to believe) understand ! on what tenuous and uninviting thread (and "conjectural", what's more, not to mention that the local terms "were not calculated") was suspended a certain seminar on which ("in accordance with the spirit of this volume ") we charitably refrain from ever referring (except for the sole purpose of debunking it...); while discreetly recalling here and there that if said unwelcome formula (and unusable to be honest) has nevertheless ceased to be "conjectural", it is thanks to the modest author of the brilliant volume.

As for the notion of function L with coefficients, which is the central notion of this Report which constitutes the very heart of the book, it appears without fanfare in par. 1.6 of the Report (loc. cit. p. 80), without the slightest comment which would indicate a motivation or a source. A definition is a definition after all, we don't have to justify it.

The reader who asks himself a question about the origin of this notion, a bit absurd it must be admitted (especially when it is thrown at you like that on an empty stomach...), has the choice between Artin-Weil (but he does not there were no p -adic bundles of their time yet, visibly introduced by the author in this same volume...), and (more probably) this same brilliant author, who is in the process of nimbly leading him towards a certain so-called formula "traces".

This is introduced in par. 3 (loc. cit. p. 86), which begins in these terms: "The cohomological interpretation of Grothendieck of the functions L is the following theorem: .." (follows the formula in question 3.1 - NB it is my emphasis).

Aside from the introduction to the chapter (which we will return to), this is the only occasion in the entire chapter where a certain name is pronounced (*). It is therefore this same person again, to whom he will be referred two pages later by the acronym [2] (as one who knew how to "clearly explain" some "easy reductions") who also gave this absurd "interpretation". 3.1, thrown there without warning. There was no merit elsewhere, as the reader will immediately realize (and without surprise), because the demonstration takes up barely half a page (on the same page 86) and was moreover "classic": it is a simple corollary of the famous "traces formula" which gives its name to the Report, and which is the subject of what, visibly,

(*) (April 9) There is an exception (which initially escaped my attention), with a thumbs-up reference (on p. 90) to "one of Grothendieck's essential uses of category theory derived" (to define traces in "unorthodox" cases).

is the "true theorem" (3.2). No name is put forward to indicate the paternity of the latter - ie of "1 a" Formula - always this mania for modesty, among the most brilliant people precisely 1 Two pages later (as we saw yesterday) the names of Lefschetz, de Verdier, d'Artin, de Nielsen and de Wecken are pronounced, a real riot of modesty for once - all this to avoid saying that it's him!

The thing that I would like to emphasize here, and which seems to me to go far beyond the present case and these hints of fraud, is this. Whether for the so-called (rightly) "Lefschetz-Verdier" formula, or for the "cohomological interpretation" of L functions ("with coefficients"), it is precisely this which makes their discovery acts of creation, which is also, nowadays, the object of general disesteem (when it is not casual derision), commonly expressed by epithets with pejorative connotations such as: "trivial", "childish", "obvious", "easy", "conjectural", when it is not "soft math", "dream", "bullshit", "nonsense" and other niceties, left to the improvisational gifts of each individual. It is the part of the work, on the other hand, which I have always known (and above all, it seems to me, never forgotten) that it comes "in addition" and by the force of things, like "stewardship" which follows for sure (on condition only that we struggle with it), the technical part therefore, the one which is often deemed "difficult", which is done "with the strength of the wrist", and which I have previously also described of "routine work" (without attaching any pejorative meaning to it) — it is this part of work which is valued by the consensus in force today, and highlighted to the exclusion of all others.

For me, the notion of "difficulty" is entirely relative: something seems "difficult" to me as long as I have not understood it. My job then does not consist of "overcoming" the difficulty by force of the wrist, but of entering into my incomprehension sufficiently to manage to understand something, and to make "easy" what had seemed "difficult" (*). for example, the unscrewings that I made, for the "formula of functions L" as in other circumstances, unscrewings which today pass for "trivial", were not more "easier" for me than to deal with so-called "irreducible" cases, supposedly "difficult". These were steps

(*) The reader will note that this is a description of the "yin", "feminine" approach to a difficulty — that of "the rising sea". I do not intend to say here that this is the only possible creative approach - there is also the so-called "hammer and chisel", the "manly" approach - the only one which is in honor (not to say, today, the only one that is tolerated...). See on the subject of these two possible approaches the note "The rising sea..." (n° 122), and on the subject of current attitudes towards both approaches, the notes "The muscle and gut (yang buries yin (1))" and "The providential circumstance — or the apotheosis" (n° s 106, 151), as well as "The disavowal (1) — or the reminder" (n° 152) which follows the latter.

different from work, that's all (*). It is not because one step comes after another, or because it happens to be longer, that it is more "difficult". In both stages, an idea was needed: the idea of "unscrewing" in a case (something that we had never thought of doing in this type of situation, and for good reason when it acts on formulas of fixed points for any correspondence other than that of Frobenius 1); in the other case, an idea undoubtedly more difficult to formulate, inspired by a formula of fixed points (due to Nielsen-wecken (**)) more sophisticated than the original formula of Lefschetz, and implemented by introducing a careful cutting of the bundle of coefficients, expressed in terms of suitable derived categories (***).

(*) The cases that I am thinking of, where I have made "unscrewings" to bring myself back to situations of dimension (or relative dimension) one, apart from that of the general formula of functions L "with coefficients", are especially the two base change theorems in equal cohomology (for a proper morphism, and by a smooth morphism), which constitute the two key statements which make said cohomology "livable" (as Deligne writes), and the "comparison theorem" for Rf between étale cohomology and transcendental cohomology (for finite type schemes on the field of complexes). (There is also Lefschetz's theorem (called "weak") for affine morphisms.) Psychologically speaking, it was once I managed to reduce myself to such so-called "irreducible" situations that I had the impression that it was (more or less) "won", that the expected theorem would indeed "come out", and the experience confirmed on each of these occasions that this feeling had not deceived me. Technically speaking, however, it is the unscrewing which represents the so-called "easy" step. It turns out that by a sort of "providence" which struck me a lot, the ingredients necessary to deal with the two "irreducible" cases, in both the base change theorems, had been developed by me (without suspecting anything), in SGA 1 for the first, in SGA 2 for the second, three and two years before...

(**) (April 10) It was from my mouth, at the same time as the other listeners of SGA 5, that Deligne learned this "Nielsen-wecken" formula and its transposition into equal cohomology, which exempted him from ever having to look at the three beautiful articles (in German) by these authors (published between 1941 and 1943), and served him in the rather particular way that we know (see the sub-note "The real math...", n° 1695).

(***) The language of derived categories is essential in this demonstration. After my departure, and until around the year of the publication of the volume called "SGA 4 1/2", my cohomological students established a tacit and effective boycott against the derived categories, which had constituted the key conceptual tool for developing formalism of duality ("six operations" and biduality), in the context of "coherent", then "discrete" coefficients. Despite its crucial role in the demonstration of the Lefschetz-Verdier formula, and also in that of "classical" duality formulas in the étale context, this formalism itself, as a mathematical structure and coherent conceptual whole, has been a subject of the same boycott and which lasts until today (starting with the very name "six operations", which is still anathema).

It is possible that it was the necessities of demonstrating the trace formula that prompted Deligne,

The second stage was longer, it turns out: when it came to developing it with all the generality incumbent upon it (*) (since there exist other endomorphisms of a curve than that of Frobenius), there was a whole “carpet” of non-commutative traces “à la Stallings” which finally happened to stick afterwards and which I had to carefully develop.

It was long and it was “easy” — and it was also something that had to be done, it was clear. But even finding these kinds of ideas that make a job “easy” (or simply, possible...), is for me part of “routine work”. This contributes to giving its charm to this work, which makes it something other, most often, than simple crank turning.

The creative part of the work, on the other hand, is the childish idea: the one that everyone should have seen for years, if not for centuries or millennia - and which, however, no one saw, while 'she was poking her eyes out all this time and we had to take a big detour around it, every time, to avoid hitting it!

When you come across such an idea, whether you “stumbled upon it” (that's the right thing to say...) on your own, or whether someone else explains it to you (as Verdier explained to me). explained one, one day), we feel completely stupid: it's not allowed that we haven't seen it before, when it was precisely the most natural thing of all, the most obvious, the most “con”, to drop the word... We should have come across this a long time ago, that's for sure, and then no...

It would seem that nowadays and more and more, in such a situation (and when we are in a position of strength, especially...) we compensate flexibly, when it is someone else (an illustrious stranger perhaps, or some “deceased” long buried...) who has the misfortune to be stingy (or to be one day stingy...) with an idea like that. But my poor thing, what you are telling me is trivial. 1 And to clearly prove to the unfortunate man how trivial it is (and the

in 1977, to take a first step towards lifting the boycott on derived categories, by exhuming in the pirate volume a skeletal “Zero State” of Verdier’s “thesis” (text where no mention is made). made of my name). On this subject, see the note “Le partition” (n° 170) devoted to “operation III”, and for more details on the comical affair of the “thesis”, the notes “Le compère” and “Thèse à credit and comprehensive insurance” (n° 63, 81). (*) (April 23) Generality qualified, rightly, as “superfluous” by Illusie in his Introduction to the massacre edition of SGA 5 (second paragraph), obsequiously echoing his prestigious friend Deligne, which refers (without further details) to the “useless details” that he would have “pruned”. This unraveling at the same time frees him once and for all from letting the reader suspect that there exists in dimension one an explicit formula of traces more general than the one he exposes for Frobenius, where he repeats step by step the stages of my demonstration while giving the impression that it is his own. See the following subnote “Double meanings — or the art of the scam”, n° 169

put it in its place casually...) we're going to retort that in less time than it takes to say it - you're going to see what it's like to do math! We still have something else up our sleeves than these first comers (or those left behind...)! All you have to do is pull on it a little, blow, pull again and abracadabra presto! And here's a statement at least that makes sense that I'm pulling out of the hat for you, and here's a whole theory even, and not full of worms, that's work, yes! Young man, go get dressed, you'll come back when you will be able to do the same!

I did there, without even thinking about it, the shortcut of the misadventure of my "posthumous student" Zoghman Mebkhou, modest assistant in Lille or God knows where, in the hands of my "occult student" Pierre Deligne, flagship among all of a select institution (and so on...); misadventure that occurred in the year of our Lord 1981, and which continues until today... That is "Operation IV", known as "the unknown person on duty" (or "of the Pervert Colloquy", not to name it) — the most incredible of the four operations. (See the note "The Apotheosis", n° 171 on this subject .)

But at the same time, while writing the previous paragraph, I had an impression of more or less rewrite something that I had already written on another occasion...

It didn't take me long to remember — it was in the first part of *Récoltes et Semailles*, written a year ago now, in the section "Sporting Mathematics" (the name says what it means).), n° 40 (p. 105). The difference between the episode I mention there and that of the Colloquium Pervers is that this time the role of "the stranger on duty" is played by "this young white guy who walked on my toes", and that the haughty and "sporty" big boss was not a bad ex-student of mine, but it was none other than myself. It is true that I do not believe I have gone so far as to appropriate (symbolically, in this case) an idea from others.

But I cannot in good faith swear to it, and the person concerned would have to (twenty years later, but better late than never) let me know how he remembers the episode, which is a little vague in my memory. . He had the misfortune of redoing things that I had known for a long time (among others, construction of Picard's diagram of a non-reduced diagram by "unscrewing" from the reduced case...), and it had "gone badly" — that's what stayed with me; but I wouldn't swear that his approach (in a less general framework than mine, of course) was really entirely covered by mine (*).

(*) The opportunity never presented itself for me to write clearly and publish the "relative" construction in question of Picard by "unscrewing" on nilideals, a construction planned for a later chapter of the EGA

Still, I must here once again observe a relationship, between an attitude which was mine at certain times at least, in the sixties, and that which I encounter in certain of those who were my students — They give me a disfigured image of who I was, no doubt — an image that for years I wanted to challenge. But if Harvests and Seedlings, which was above all a reflection on my past as a mathematician, had a meaning, it was also to make me understand, among other things, that even though some of those who were my students were more to disavow, it is not up to me to disavow any of them. What comes back to me through them is part of the harvest of what I helped to sow, as they themselves contributed to it. And this observation that I have been drawing up with a pen without complacency, for almost three weeks, is not an indictment against anyone, but precisely an observation, and which implicates me as much as any of them.

(1696 bi s) (April 10) (**) As everyone knows, the meaning of the word “trivial” in mathematics is very relative. Here, by “trivial” I mean: in terms of what was supposed to be “known”, namely (in this case): the formalism of the six operations, and the biduality theorem (the latter remaining conjectural in $\text{car. } p > 0$ in the flat discrete context, before Deligne found a proof...). In terms of this formalism, the principle of the demonstration is explained entirely convincingly in a few minutes (at the same time as the statement). This does not, it is true, exempt us from making a formal demonstration, which involved checking some tedious compatibilities.

The custom in such a case was that the author of a theorem, especially if it is important)

(which never saw the light of day).

In any case, when I speak of “appropriation” of an idea from others (small or large), it is not necessarily plagiarism in the common sense, when we present this idea (even under modified and perfected form) without indicating its origin - something which seems to me to become more and more common. But the appropriation can be that of casual disdain, whose breath fades the joy of a discovery, as if for the sole pleasure of frustrating it, to the tune of “oh 1 that's just that...” disillusioned. This air suggests, without us having to say it, that what we have just been told we have known it, in other words, always, and if perhaps we had not taken the trouble to to explain further, it really wasn't worth it... For these tunes (or for its ancestor), see (in the first part of R and S,) the section “The power of discouragement” (n° 31) (resumed in the note already cited “Sporting Mathematics”, n° 40); and (in the harsher atmosphere of the 70s and 80s) Funeral I, “Appropriation and Contempt” (note n° 59).

(**) This sub-note comes from a note of b. from p. to the previous subnote “... and “nonsense”” (n° 1696); see reference to page 886.

take the trouble to write a proof of it. In the case of Verdier, there is no doubt in my mind that it is the most profound and most important result in terms of its scope, of all those for which he has the honor (and rightly so in this case).) to bear the name (following the established expression of Weil). However, he did for this theorem as he did for the theory of derived categories: from the moment that the credit was acquired for him in any case, he did not consider it useful to do the work, and to make it available of all with a complete demonstration.

This is an eloquent sign of a certain state of mind, of which I have had occasion to speak here and there, and recently again at the end (dated February 28) of the note "The maneuvers" (n° 169).

I was able to see that he was schooled. While the so-called formula (with the reservation above) "of Lefschetz-Verdier" was indeed an act of creation by Verdier, at a time when he was still working with me and had a passion for his work, I see a direct relationship between the fact that he never had the respect to demonstrate "his" theorem, and the fact that his life as a mathematician no longer knew a similar act of creation. Creative moments come to us only in those moments when "we are worthy of them", that is to say: able to welcome them...

This beautiful formula, left behind by a father on the run, has also experienced strange vicissitudes. It was first the theme of one of my first presentations (exp. III) of SGA 5, in 1965. Illusie was responsible for writing it, without seeing fit for twelve years to take the trouble. She then became, in perfect collusion between him and Deligne (and I imagine, with the at least tactful agreement of Verdier, to whom Deligne will grant substantial compensation) the head of the "Trojan horse" (or "the "scarecrow", as I write below), maneuvered with skill, to make the incredible imposture called "SGA 4 1/2" credible.

This was put together from scratch in order to bury the master common to all three, that is also to say, in short, the "grandfather" of the said formula (which without my modest person and the six operations buried with me, would probably not be written again for a hundred years...). For a picture of morals, here's a picture of morals!

If my dear ex-cohomologist students, instead of wasting themselves in such shenanigans playing dwarves (which they are not) perching on the shoulders of a giant (which I am not anymore...), had during these fifteen years given free play to the creativity that is in them just as it is in me, surely the theories of crystalline coefficients, of De Rham-Mebkhout and Hodge-Deligne, with that of the "mysterious functor" 'at the key, would have long ago arrived at the "fully adult stage" of the formalism of the six operations. And even

(I have suspected it for a week or two...), the great bank of the one who was their master, this “motif” made to be melody and become (in these same hands) fief, hoard and “skeleton wave”, is would also already be embodied in a vast symphony (in no way “conjectural” but also “fully adult”), and would be the heritage of all today.

(1697) (March 19) But I must return to the “twirls” of my friend Pierre Deligne, in his presentation of the famous “Formula des traces”. Remarkably, he nowhere specifies that for the application to Weil's conjectures proper (which were undoubtedly intended in the first place, if not exclusively, from the practical point of view), there is no need for a formula and a sophisticated demonstration — the “ordinary” Lefschetz formula (standard version) is sufficient (*). And it is of course no coincidence that it is precisely the presentation on the cohomology class associated with a cycle that he chose to “borrow” from SGA 5, to incorporate it into his digest without any other form of trial — the presentation precisely which contains the key ingredient (apart from the duality of Poincaré “ordinary”, flat version) to establish the formula of Lefschetz — “ordinary” in four strokes of the spoon. We say to ourselves, therefore, that he could well have dispensed with including this “Report” neither flesh nor fish, which establishes a formula of traces for the endomorphism of Frobenius alone (while obstinately hiding from the reader that he could find elsewhere (I) much more general, and equally “explicit”), if he nevertheless took the trouble to write this “Report”, it is undoubtedly for two linked reasons. On the one hand, it was very clear from the sixties that Weil's conjectures, properly reformulated in terms of “weight”, retained meaning for singular varieties and for non-constant “coefficients”. It is true that we can therefore formulate them in entirely geometric terms, without explicit reference to the formalism of L functions. This is indeed what is done, it seems to me, in Deligne's article “The Weil Conjecture II” (where there is of course no allusion to a role that I would have played in bringing out the main statement that he proves there). But nevertheless the arithmetic interpretation (in terms of “coefficient” L functions) of geometric-cohomological operations was surely going to have a role to play, where the general L function formula, in the form in which I had developed it , would take a crucial place. From a long-term perspective, it was therefore necessary to provide a reference in the flight-

(*) (April 25) It is possible that I am mistaken here, as I have not yet really taken note of Deligne's demonstration of the last part of Weil's conjectures, concerning the absolute values of Frobenius' eigenvalues. It would seem that the use of Lefschetz's brushes led him to introduce L functions more general than the $\check{y}$ functions (ie the “ordinary” L function).

ume called “SGA 4 1/2” — At the same time, as it became evident that general trace formulas (Lefschetz-Verdier style) form an important ingredient of the cohomological panoply, this contributed to the illusion that this volume (as it announces) does present an essentially complete cohomological arsenal, for the needs of the “non-expert user” of ℓ -adic cohomology.

It remains for me to review the three remaining passages, among the four in “SGA 4 1/2” which pretend to give historical details about the trace formula. I will cite them in the order in which they follow each other in the volume. The first two are found at the very beginning of the volume (page 1 of the Introduction, and page 2 of the “Breadcrumbs”), and are obviously intended to “announce the color”. They are probably the most read too. The third is the short introduction to the “Trace Formula Report” chapter. (The fourth passage, which was discussed the day before yesterday, is part of the body of this same report, and is surely the least read of all.)

In the bibliography placed after the “Breadcrumbs for SGA 4, SGA 4 1/2, SGA 5”, the acronym SGA is explained as “algebraic geometry seminar of Bois-Marie”, without reference (is it necessary to say it) to me. I am still among the directors of SGA 4, SGA 5. This function of director must have been quite platonic: reviewing the main presentations of SGA 4 and SGA 5 (and not talking about it). more...), there is talk of presentations by Artin, Jouanolou, Houzel, Bucur, but none by me. In the reference SGA 4 and SGA 5, no indication of date - and I found no allusion in the entire volume which could make the reader not already informed doubt that SGA 5 (“to be published in Lecture Notes”) is, as its name indicates, well and truly posterior to the volume called “SGA 4 1/2” (*). When by chance an allusion is made to a presentation in SGA 5 (generally unspecified), it is clearly specified on the other hand that it is a “zero state” or the “original version” (implied : bushy and unmistakable, as you can imagine...). These references to SGA 5 (for an uninformed reader, who is recommended not to consult SGA 4 nor especially SGA 5) are therefore (in the mind of this same reader) references to a text subsequent to the one he is reading. I also suspect that these uninformed readers are by far the vast majority, and (as I have written elsewhere) the others are starting to get old and will die a beautiful death...

(*) Nor the slightest allusion that could make the reader guess what this seminar-not-to-be-read was about, of which even the title “ ℓ -adic cohomology and L functions”) remains ignored!

I quote the first page of the Introduction, paragraph 3:

“The “Report on the Trace Formula” contains a complete demonstration of the trace formula for the Frobenius endomorphism. The demonstration is that given by Grothendieck in SGA 5, pruned of any unnecessary detail. This report should allow the user to forget SGA 5f which can be considered as a series of digressions, some very interesting. Its existence will allow SGA 5 to be published as is soon.” (Emphasis mine.)

This text has two opposite meanings, served simultaneously with consummate art. For those who are informed about the history of the formula in question for Frobenius, they will perhaps be surprised by the casualness of the presentation (and all the more so, if they are well informed about the ins and outs of the SGA seminar 5 and the role he played in the formation of the brilliant and casual author); but he will think that the author at least indicated the source of his demonstration, for the uninformed reader, he learns that the demonstration of the volume which he holds in his hands, is also found in a certain later text SGA 5, text due to Grothendieck, and cluttered with useless details, which this person must have added for pleasure to the original demonstration. The passage cited remains vague as to this. As we saw the day before yesterday, reading the demonstration itself, in the “Report” in question, can leave little doubt that it is indeed the brilliant author of the volume “SGA 4 1/2” who is the father. Of course, nowhere do we deign to specify who had the idea of writing the formula for traces; after all it costs nothing to write something, as long as you don't take the trouble to demonstrate it! No allusion either to Verdier (who was the first to demonstrate the “crucial case” that I had left unresolved). It is no coincidence, surely, that it is at the precise moment when the formula for traces is in question, at the heart of “the” Conjecture, that the author attacks with “niceties” like “useless details”, “digressions” (very interesting of course, one is a good player or one is not!) which we recommend to forget (*), and finally this reminder both discreet and peremptory “its existence will allow us to publish soon SGA 5 as is”, which means that SGA 5 only “holds together” and is only publishable thanks to the “existence” of the text called “SGA 4 1/2” – which surely provided the person in question with what

(*) More precisely, he clearly suggests that this single “Report” of 34 pages contains (and better) everything that could be useful in SGA 5 (which, even in the massacre edition, still has nearly 500 pages). That's a lot of “digressions” for nothing!

he needed to present in a complicated way what is done simply in the original text here.

In the breadcrumbs, I have already pointed out (in the subnote “The Trojan horse” (n^o 1693) to the note “The maneuvers”) the seventeen lines of the two consecutive paragraphs 2 and 3 of the page 2, as “models in the art of “fishing in troubled waters”. The second concerns precisely the famous trace formula. Both paragraphs deserve to be reproduced here in full:

“There exists in flat cohomology a formalism of duality analogous to that of coherent duality. To establish it, Grothendieck used the resolution of singularities and the purity conjecture (for the statement, see [Cycle] 2–1.4), established in a relative framework in SGA 4 XVI, and — modulo the resolution — in equal characteristic in SGA 4 XIX. The key points are established by another method in [Th. finiteness], for finite type schemes on a regular scheme of dimension 0 or 1. Various developments are given in SGA 5 I. In SGA 5 III, we show how this formalism implies the very general Lefschetz-Verdier formula.

We see that in the original version of SGA 5, the Lefschetz-Verdier formula was only established conjecturally. Furthermore, local terms were not calculated there. For the application to L functions, this seminar contains another demonstration, it completes, in the particular case of the Frobenius morphism. This is the one featured in Rap-port!. Other references: for the statement and diagram of the unscrewing: the Bourbaki presentation by Grothendieck [5]”; for a brief description of the reduction (due to Grothendieck) of the crucial case to a case already treated by Weil, [2] par. 10; for an p -adic treatment of the latter case, [Cycle] par. 3.”

I have already commented on the first paragraph in the cited note (see also the note by b. de p. (**) page 872 to this one, on the unpayable “various developments are given in SGA I”). I still have to follow my friend's twists and turns (or at least some of them - there are too many!) in the second paragraph. The first two sentences, dismissing the eternal Lefschetz-Verdier formula, as if all SGA 5 (and a certain demonstration never named in plain language, which appears there, for a certain trace formula...) depended on it to death and for life, are visibly part of the “cuttlefish method”: confusing what is clear,

to fish in troubled waters (*).

The key phrase with a double meaning, on the other hand, is the one which immediately follows the drowning of the fish:

“... this seminar contains another demonstration, it completes, in the particular case of the Frobenius morphism”.

The informed but pressed reader (and what reader is not in a hurry...) is taken aback for a second by the ambiguity of the expression “this seminar” — is it SGA 5, is it “SGA 4 1/2” ? — and as he knows that in SGA 5 there was a complete demonstration, it is awarded once again: the author has indeed referred (in a somewhat vague manner, of course...) to where we expected which he refers.

I almost worked like that on the first reading, in April last year (see the note “The clean slate”, n° 67), but it didn't stick though. I knew well that the demonstration that I had given of an explicit trace formula was in no way limited to the “particular case of the Frobenius morphism”. Furthermore, what struck me was that we had just insisted heavily (with bogus “arguments”) on the very fact that a certain SGA 5 presentation (in its “original version”, little !) was not “complete”: conjectural here, terms not calculated there... With this “she completes” well framed by two commas, this categorical opposition irresistibly suggests to the uninformed reader, without him even has to wonder, that “this seminar” is obviously the volume “SGA 4 1/2” which he holds in his hands — and he is also immediately told, in the following sentence, where to find it: “ This is the one that appears

(*) It is incorrect to say that the Lefschetz-Verdier formula was “conjectural” — it was established under the hypothesis that we have a duality formalism (“six operations” and “biduality theorem”), and it was indeed proven in this form in 1964 by Verdier. This demonstration was of course given in the oral seminar, and it is complete. This is the validity of the biduality theorem because $p > 0$ which remained “conjectural”, and it is established (as we said) in the chapter “Finitude” of “SGA 4 1/2”.

As for the local terms of the Lefschetz-Verdier formula, they were “calculated” neither more nor less than in the ordinary Lefschetz formula (at isolated fixed points not necessarily “transverse”), and generalized the classic “multiplicities of intersection” which appear in the latter. Saying that these terms “were not calculated” has neither more nor less meaning than saying that the dimension of an unspecified vector space, or the roots of a polynomial with indeterminate coefficients, are “not calculated”. “Calculate”, in these cases as elsewhere, means: establishing in a specified “case” (e.g. in dimension 1, for the Lefschetz-Verdier formula) an equality between two terms, none of which is more “calculated” or known than the other (e.g. between the local terms defined by Verdier, and certain local invariants linked to the Artin conductor...)

in [Report]" — And it is certainly not the reading of the said demonstration in the cited chapter, which could subsequently arouse in this same reader the slightest doubt (*)!

The word "other" in the crucial sentence is underlined — something which is not at all my friend's habit. it is the only word underlined in the two introductory texts, and unless I am mistaken, the only one in the entire volume (apart from the titles, statements, and new terms introduced). If he is so keen to bring out this word, it must not be for nothing. (It is only now that the thing has just caught my attention.) The effect of this term "other", and even more when it is thus featured, is to underline that there is had two demonstrations of "the" Formula: one incomplete precisely, and we have just said a few words about the unappealing situation, with this "Lefschetz-Verdier" formula which is decidedly not workable! (And in the more technical text of the famous Report, viewed the day before yesterday, we duly return to the charge on this desolate subject...). As for guessing whether or not, thanks to the brilliant author's finitude results, this lame method still ended up working, well who will ever know. But after this pushback effect (the same, ultimately, as that examined the day before yesterday), the psychological reflex in the docile reader is all the more peremptory: instead of the incomplete method in a certain muddy SGA 5 seminar (so incomplete that there is no question of even giving a precise reference to it (**)), a method which we will certainly never be embarrassed about, we will be entitled, in this seminar of good and solid material, to the good demonstration, it completes, which already reaches out to us. arms in the presentation specially designed for this purpose, the "Report on the formula of traces", no mistake we will have no trouble finding it there... (***).

The "this seminar" is simply brilliant — my friend-thumb is unbeatable on this term. however, both in the paragraph cited, and in the more technical context of the "Report" extending on the method (doomed to oblivion) known as "Lefschetz-Verdier" (p. 88), it is It is still advanced again (*) to say "in clear" (or at least, in chiaroscuro) the false.

(*) See the subnote from the day before yesterday "Real maths..." (n° 1695).

(**) I found nowhere in the volume called "SGA 4 1/2" a reference to one of the presentations of SGA 5 which contains either the demonstration of a formula of fixed points, or the famous "theory cohomology of L functions". It was indeed made clear (see below) that "in accordance with the spirit of this volume, SGA 5 will not be used (***) The best thing is that in reality, the Deligne's demonstration is a faithful reproduction of that which ...
he
had learned, with the other listeners, during the SGA 5 seminar in 1966.

In both passages in fact, he underlines (it is true to say) that there would be a method (which we guess is the one unfortunately followed in SGA 5, 'God knows in which of its "busy" presentations...), for the demonstration of the trace formula for Frobenius, which would consist of using the Lefschetz-Verdier formula. However, there existed (before Alibert's thesis in 1982, giving in dimension 1 the calculation of local terms for any cohomological correspondence with isolated fixed points) only two demonstrations of the "crucial" case, that of Verdier and mine, none of which (any more than Alibert's) uses the Lefschetz-Verdier formula! It was a delicate question, moreover, and unresolved for a long time (and which seemed a little incidental), to prove that the local terms which appear in the explicit formula released in SGA 5 (for correspondences much more general than that of Frobenius) are indeed those of the Lefschetz-Verdier formula.

Illusie ended up verifying this, according to what he announces in the introduction to the massacre edition of SGA 5 (p. VI), and also in that of his presentation II IB "calculations of local terms" (p.139 (**).

If Deligne nevertheless goes to such lengths to create this false impression, it is not without reason. Indeed, by this very fact it creates the impression that SGA 5 (the "technical digressions" seminar "to which it will not be referred, in the spirit of this volume", intended to make it "forgotten") depended of this "conjectural" formula, moreover unusable as it is (local terms not calculated sic...), which was finally established only thanks to Deligne in the volume with the eloquent name "SGA 4 1/2" which the reader holds in the hands, and on which (if only for this reason) the subsequent and "confused" SGA 5 seminar depends...

As for the last sentence of the passage cited, beginning with "Other references" (sic), it is also a model of the genre, to avoid saying that the vague individual Grothendieck had given a complete demonstration eleven years before (in the seminar "later" doomed to oblivion...), and that it is faithfully reproduced in "Report". The impression that had to be created was that the individual had made some vague preliminary reductions, while the difficult case was due to Weil, and taken up brilliantly (by an "adic treatment") by the author. The reference to a prestigious book by Weil which the reader will have heard of, in addition to

(*) "Again", since he had already advanced (even more clearly) to "say the falsehood" in the previous paragraph, as we saw in the subnote "The Trojan horse" (n° 1693).

(**) For the motivation for these sudden efforts of Illusie, see the subnote "Congratulations — or the new style" (n° 1699), especially pages 916–918.

internal reference, throw your weight around - we are serious and we know our classics, or we are not 1 As by chance, no indication of date in the reference to Weil's book, nor of chapter or page - it does not seem that the brilliant author wants to encourage the reader to look elsewhere than in the brilliant volume itself, where the reference suddenly becomes everything that is precise (chapter, paragraph).

The famous “result already treated by Weil” is nothing other than the ordinary Lefschetz formula in the case of an algebraic curve (smooth projective connected on a closed alg. body), which Weil managed to formulate and prove by the means at hand in the forties, without yet having the cohomological tool (but using the Jacobian to define the missing H -adic). Deriving this formula in the case of “abstract” algebraic geometry was then an important new idea, which must have also put Weil on the path to his famous conjectures. Once we have the cohomological formalism, the Lefschetz formula in question becomes essentially trivial. But if we had said clearly that the reduction of the quidam was a reduction to the ordinary Lefschetz formula (for which we proudly refer, without naming it, to the “Cycle” chapter of the brilliant volume – the chapter pirated from SGA 5 precisely.. .) — it could have given the impression that said “reduction” was even a demonstration of the sacrosanct Formula. You wouldn't want to! (*)

I can't wait to finish it! There remains this introduction to the chapter “Report on the trace formula”, loc. cit. p. 76, here (amputated of these last two lines, referring to an exhibition article by the author of the volume):

“In this text, I have tried to present as directly as possible Grothendieck's cohomological theory of L functions. I follow very closely some of the talks given by Grothendieck at IHES in the spring of 1966. In the spirit of this volume, there will be no recourse to SGA 5 - except two references to passages from presentation XV, independent of the rest of this seminar.

At first glance, one has the impression that the author indicates his sources without secrecy,

(*) (May 11) So, all art-“thumb!” here was to refer in two places distant from each other (p. 2 and p. 88) to two “reductions” (!) (easy, of course) made by this person (named once, and not the second...), without a candid reader ever being able to suspect that this same person has found and proven a formula for the traces; and that his demonstration (doomed to oblivion) is faithfully reproduced in the brilliant “Report”...

lant of “Grothendieck’s cohomological theory of L functions”, and even adding that he “follows very closely” some of my presentations. In a normal volume, there would be nothing to say.

But it is also true that context is part of the meaning of any text. The context of the unusual volume called “SGA 4 1/2” profoundly modifies the meaning of this passage, for a naive reader already warned by what he has read before, and who will also be edified a little more, in course reading the “Report” itself. Afterwards, he will have the impression that it is really a kindness of the generous author towards the confused person named Grothendieck, to credit him with a “cohomological theory of L functions”, which ultimately seems to be reduced to a somewhat absurd cohomological “interpretation”, but after all trivial. It is demonstrated in barely half a page, as an immediate corollary of a “formula of traces”, which itself is not full of worms, and is due of course to none other than the too modest author of the volume.

It is said, it is true, that in his “report”, the author “follows very closely” some of the presentations given by this individual at the IHES, in the spring of 1966. Nothing more is said about these presentations certainly bushy, which must have been lost body and well, except what the author of the volume was kind enough to retain for his report. Is it sorites on the subject of Frobenius (for which we will also generously refer to SGA 5 “directed” by this same person), or generalities on the p -adic fascicles, or certain “easy reductions” which will be discussed moreover — we are completely in the dark. In any case, these must have been mostly “useless details”, which reading the Report will spare us. Praise God — we ask no more. So let’s put a modest veil on everyone, and let’s get down to real work!

While my friend likes to remain vague for references that concern a certain person (when he doesn’t pass it over in silence), this time we have the impression that we cannot blame him for not being precise: presentations given at IHES, spring 1966. If he had been just a bit more precise, he would have added: presentations at the SGA 5 seminar.

SGA 5? Isn’t this precisely the seminar which appears (without date) in the bibliography in the “Ariane’s Thread”, with the mention “to be published in Lecture Notes”? The seminar therefore consisted (that’s what we thought we understood) of adding “digressions” (some of which were very interesting, granted) and “useless details” to the SGA 4 1/2 seminar (really impeccable, him) who preceded him? Don’t joke, SGA 5 wasn’t in the spring of 1966, you want to laugh J And the best proof, there it is before your eyes, black and white in the introduction just cited to the “Report on the trace formula” (by Pierre Deligne):

"In the spirit of this volume, SGA 5 will not be used."

So it's clear, right? !

(1698) (March 20) I am starting to get a little tired, not to say exhausted, by this work that I have been pursuing for more than three weeks and especially (in detail) in recent days, to patiently "dismantle", in these "little things" that make everything, the brilliant montage-scam of my most brilliant student, confusing in the public square those who only ask to be confused (and they are legion, one must believe...). I can't wait to finish it, yes, and yet I don't regret the time I spent there, as I turn fifty-seven and more interesting things (or more "pleasant", of course) less) not missing. It's a bit like in math the work that I called (it must have been three days ago) "routine work" — we're champing at the bit while doing it, we know very well that all that is what it's all about. stewardship, and yet we also know very well that we must do it 1 Not out of some austere "obligation" or duty that we impose on ourselves, but because we cannot (or at least, I cannot) to avoid it, if I want to establish an intimate contact with the thing probed, to "penetrate" it. It is through this work, by "facing" the things we want to know, over the course of days, weeks or even years, that we actually "know" them — and it is from this knowledge only, the fruit of often arduous work which does not look like much, that sometimes something else springs forth, this "spark" of which I spoke the day before yesterday, which suddenly renews our apprehension of things and this very work which makes us there enter.

It is through this fatigue (which is not yet weariness), a sign of an energy that has been spent, that I can also fully measure the prodigious energy that my friend Pierre must have expended, in this delicate editing-staging that is this operation "SGA 4 1/2", or "SGA 4 1/2 — SGA 5". I cannot say to what extent this artistic work, oh so much more subtle than that of a mathematician and bringing into play faculties of a completely different order, is conscious, or the work of entirely unconscious forces. And it is, moreover, an incidental point, which concerns only him. In any case, the diversion of energy, and the intensity of investment in a task at odds with the impulse of discovery - the task of gravedigger-conjuror - must have been enormous, and (there is no doubt for me) is still today (*) The reflexes of appropriation-shirking, in its relation to my work at least and to any other work which openly bears its mark, have ended

(*) This obsession with appropriation which has focused on "the formula" is truly crazy, simply put.

(during the long “escalation” that was the Burial of the late Master) by acquiring such an empire over his being, that they became like a second nature, which would have invaded and re-

rational terms. On the one hand, this appropriation, by force of circumstances, must remain to a large extent, if not completely, symbolic: a satisfaction that we grant to ourselves, by playing as if we were indeed “the father”, or as if we could indeed have made the whole world believe it. The fictional, symbolic character is already evident, if we remember that Deligne himself, in the article “The Weil Conjecture I”, published four years before the montage “SGA 4 1/2— SGA 5”, writes (p. 278) “Grothendieck demonstrated the formula of Lefschetz” (for the correspondence of Frobenius). It is true that barely a few months later, in the Bourbaki presentation (n° 446) of February 1974 where Serre presents this article by Deligne, the author is surprised (with good reason) at the absence of any demonstration published Lefschetz’s formula (“we have been waiting since 1966 for the definitive version of SGA 5, which should be more convincing than the existing mimeographed presentations”), and he takes this opportunity to ironize about the 1583 pages of SGA 4 which expose (“with all the necessary details, as well as many others”) the formalism of flat cohomology, surely Serre did not suspect that these sarcasms aimed at an absentee were not going to fall on deaf ears. I am convinced that they must have played their role to bring about the brilliant idea of “making people forget” this “gang of nonsense” etc. SGA 4 and SGA 5, as the public voice seemed to demand through the very mouth of Tigh. .. But apart from even Weil I, in terms of the published texts (including the massacre edition of SGA 5, which remains a convincing testimony although mutilated...) the sleight of hand of authorship simply does not hold up, in terms of the most basic mathematical common sense.

Added to this, as I have already pointed out, the development of the famous formula is purely routine work, once you know what you want to obtain. It took me a few days to bring out the essential features - this led me to precise questions of divisibility linked to the Artin conductor, for which Serre had the answers ready, to be expressed elegantly in terms of the Serre module -Swan. The somewhat long (but also routine) work was the careful development of the non-commutative trace formalism inspired by the work of Stallings (which, as luck would have it, had just reached me). All this is the sort of thing that someone with the slaughter of a Deligne (or even the more modest slaughter of mine) deals with by the dozen in the course of a single year!

It is true that under the pen of Deligne, “formula of traces” means formula of traces in any dimension for the Frobenius correspondence, a formula that he takes care (in “SGA 4”) to distinguish from what he calls “the cohomological interpretation” (“from Grothendieck”, thank you!) of L functions. He presents this as a simple corollary of the trace formula. (In fact, in the spirit of my presentation at the Bourbaki seminar in 1964, the two formulas were for me synonymous, like equivalent expressions, one additive the other multiplicative, of the same relationship between “arithmetic” and “the geometric”.)

So the real motivation (still superficial, of course) behind this obsession with “the formula” is not at all in the cohomological arsenal, but rather that of minimizing as much as possible, if not entirely erasing, the fact that my person played a role in the proof of “1a” Conjecture. It is ultimately She, who appears to me (until the time of the Pervers Colloquium in June 1981) as the main focal point of the conflict which arose in my ex-pupil around the disowned master...

covered his original nature, that of the "child" within him, setting out to discover the world...

More than once I have been able to see up close, in seemingly innocuous situations (out of all proportion to the scale of an "operation" like the "Scale Cohomology" operation that I have just looked at with a close eye). a little closer), the silent efficiency of these reflexes, working with perfect ease under this air of affable candor. Before you even realize what happened (if you ever really realize it...), he has already appropriated what was created by you in joy, by withering it first of all by the breath of a discreet and insidious disdain. (It is also true that he is not the only one, far from it, in whom I have perceived this breath, which today seems to be part of the spirit of the times...)

But this breath which fades the beauty of what another has created and which fades his joy, also fades the beauty of all things and this very creative power which is in him as in each of us, to commune with the thing and to know her deeply. Of course, that doesn't stop you from doing "difficult" things and being admired, envied and feared. But the work he carried within him, the warning signs of which I recently saw, is still waiting to be born. It will be born on the day (if it dawns) when something has collapsed, and when the perched master-slave will have become, like his disowned master, a servant.

That's around sixty pages now (not counting a proud pile of footnotes!), and almost three weeks of work, which I have just devoted to the "Scale Cohomology" operation alone. It is the most voluminous of all it is true, if not the "biggest" (this one will be reviewed at the end of last year, in the note with the well-deserved name "The Apotheosis"...) - I realize that with all of this, I haven't even completely finished going around it. One thing led to another, this planned "putting in order", of the "updated facts" in a certain "investigation", restarted the investigation, making me look a little more closely at the unusual volume called "SGA 4 1/2", which I had previously only watched while running.

This was also an opportunity to review again, and with a more informed eye, the Illusie edition of SGA 5, of sad memory. I now realize a careful agreement between the two thieves, Illusie putting himself at Deligne's entire disposal to present an edition of SGA 5 entirely in accordance with the desires of his prestigious protector and friend.

This presentation of SGA 5 comes as a muted echo to the spirit of debunking and contempt which is displayed in the cutting text, and provides discreet and effective support for the imposture set up in it. this.

The introduction to the massacre edition is written from start to finish in such a way as to create

uninformed reader the impression of the volume of “technical digressions”, on the text “SGA 4 1/2” which presents itself as central and anterior (M. This impression is further reinforced, in the presentations written by Illusie, by the abundance of references to the pirate text, to which he generously refers each time he uses a result that his friend had seen fit to include in his digest, even when there are “tailor-made” references in the same SGA 5 volume, or even already in SGA 4 (*).

I discovered the reality of a full-blown massacre during the reflection in the note of the same name (n^o 87), dated May 12 of last year, and in the subnotes to it. In this set of notes, I finally provide a detailed (if not yet exhaustive) description of the dismantling that had gradually become apparent to me over the past two weeks. Failing to have dismantled in detail, as I have just done for almost three weeks, the meticulous scam mounted in the so-called “SGA 4 1/2” around “the Formula”, I did not capture this aspect of careful consultation again last year, in the overall presentation of the Illusie edition of SGA 5. To finish with the “Equal cohomology” aka “SGA 1/2 — SGA 5” operation, It remains for me to give some details on how this consultation was manifested, in the presentation of “the formula” (fixed points) in the Illusie edition.

I have already noted previously (in the subnote “The Good Samaritans”, n^o 1692) how Illusie echoes his friend, in his introduction, to give the impression that the publication of SGA 5 was suspended until the demonstration of the eternal Lefschetz-Verdier formula. (This demonstration had been available since 1964, and I had of course developed it in the oral seminar, without Illusie, who was responsible for writing it in 1965, judging it useful for twelve years to keep his commitment...) .

I also recall that already last year (in the note cited “The massacre”, n^o 87) I had discovered certain vicissitudes of presentation XI of the original seminar. This presentation, inseparable from the following presentation XII which developed my version (the best known until 1981) of the Lefschetz formula in dimension 1, had completely disappeared from the Illusie edition. A in

(*) Thus, the Künneth formula with proper supports (above any basic scheme) is an immediate corollary of the change of base theorem for a proper morphism (derived categories version), which was the first great “break through” (“breakthrough”) in flat cohomology, in February 1963. It appears as such in the “gangue of nonsense” of SGA 4 — we would not want Illusie to refer to it, when there is the text central (intended to obscure, precisely, these confused predecessors) which extends its arms to him...

to believe the introduction to Illusie, this presentation would have consisted of “Grothendieck’s theory of commutative traces” (providential lapse for “non-commutative”!) “generalizing that of Stallings” (non-commutative traces), and would have disappeared (from equally providential way) in a move (!!). In reality, this presentation developed the algebraic preliminaries essential for the description of local terms in the following presentation, where I develop a general method of calculation (or better, of definition) of local terms (via a formula of the type “Nielsen- wecken” (*)) and its explicit application in dimension one (using Serre-Swan modules, if I remember correctly). Still, Illusie “replaces” the “disappeared” original presentation the title of the presentation hidden!), of which he presents himself as the author. So, he kills two birds with one stone. On the one hand, this is an act of mutilation, which may seem gratuitous at first glance, wreaking havoc (**) with this brutal cut, tearing a presentation out of its natural context, leaving a gaping hole in its place, for the pleasure of going and stuffing it elsewhere. This is perhaps the one, among all the mutilations that the delicate and meticulous Illusie inflicted on what was a splendid seminar (of which he suddenly saw himself becoming absolute master...), the one which in retrospect seems to me the most violent, the most brutally ostentatious: I can massacre for free, and I massacre — with all the delicacy that befits my good education. Congratulations, Illusie, for this kind of work, which you did not learn with me, but with another, which you gave yourself as a model and as a master...

And a. And as a second blow from the same stone, struck with mastery, Illusie manages to evade the authorship of this formula of fixed points that I had identified in 1965, at the same time (and above all) that he succeeded in evading this formula herself. Since 1965/66 this has been “the” good formula for fixed points in dimension one, much more general than that

(*) This formula was appropriated by Deligne (without mention of my person), with the method of passing from the Nielsen-wecken formula with constant coefficients (therefore “ordinary”), to a formula of fixed points with any constructible coefficients. On this subject, see the subnote “Real maths...” (n° 1695, page 883–884). As a result (noblesse oblige...) this same Deligne carefully refrains from any mention of presentation XII of the “later” seminar SGA 5, where the name “Nielsen-wecken” appears in the title of the presentation (“Nielsen-wecken and Lefschetz formulas in algebraic geometry”).

(**) This mutilation and this chaos, among many others sown by the care of my ex-pupil Illusie at the orders of my ex-pupil Deligne, allows the latter to express himself with condescension on “the confused state” (“albeit rigorous”, because we are good players...) of SGA 5, to which “SGA 4 1/2” (although it is earlier) is supposed to ‘remedy’... All this under the eye touched by the Congregation of the faithful. Congratulations !

developed by Verdier at Woodshole the previous year (otherwise there was no point in tiring me) and a fortiori, that of the famous "Report" of Deligne (which is limited to the correspondence of Frobenius alone, while not following not the demonstration that I had produced in the general case). It was improved only a few years ago (nearly twenty years later) in Alibert's thesis (*), treating for the first time the case of any cohomological correspondence. Illusie managed to present the text in such a way that the formula in question was practically impossible to find: in the technical magma of the presentations (torn from each other) II IB (sic) and XII, nothing (in the introductions of one or the other, nor elsewhere) which draws the reader's attention to this central result of all of these two presentations, and one of the most important of the entire seminar (**)! I even admit that I was unable to ensure with absolute certainty whether this formula is there, in SGA 5. Given the state of deliberate confusion of the text, and my distance from the subject, I would need hours or even days of work to find my way there. It is the absence of any allusion to the Serre-Swan modules which poses a problem to me, which (if I remember correctly) gave the formula that I had identified its elegance and conceptual simplicity (***).

It is precisely for the needs of this formula that Serre had made some fine presentations on the Galois modules associated with the Artin conductor, presentations which were of course to appear in the published seminar, and which ended up passing to the profits and losses (with five or six other packages of presentations from the original seminar - never mind Illusie, Deligne and others...). It is possible that the fixed point formula in question is formula (6.3.1) in Lecture XII (p. 431). Nothing at a glance distinguishes it from the dozens of other copiously numbered formulas, among which this one is buried. Obviously the

(*) This thesis was prepared under the direction of Verdier (no error, always the same Verdier), passed in Montpellier in 1981 or 1982 (I do not have the reference at hand). It represents the culmination of ten years of work, visibly gloomy...

(**) Technically, it is 1 a crucial formula ("irreducible case") which makes it possible to prove the famous "function formula L", equivalent to the trace formula (in any dimension) for the Frobenius correspondence. The crucial role of this formula is already attested by the very name of the SGA 5 seminar (a name which is never mentioned in the "previous" text "SGA 4 1/2"): "Adic-cohomology and L functions".

(***) It is possible that here, and in the following sentence, I am confusing the structure of the Euler-Poincaré formula (appearing in lecture x) and that of Lefschetz (from lecture XII). In the Euler-Poincaré formula, in the form in which it appears in 1. Bucur's presentation (taking up my oral presentation), Serre-Swan's modules do intervene explicitly.

editor (Bucur) was overwhelmed by the task - and it is not the brilliant editor-sic Illusie, experienced for fifteen years in clear and impeccable editorial tasks, who would have lifted a finger to repair the blunders of his friend Bucur (*) which arranged it wonderfully.

On the contrary, he manages to increase the confusion, by making the key formula, already impossible to find, indistinguishable from that of Lefschetz-Verdier, or from his particular case in "Rapport". We read in the introduction to the famous lecture II IB — sic, by the improvised "father" Illusie:

"The second part of this presentation II IB , of a much more technical nature [so don't go reading it!], is inspired by the method [!] used by Grothendieck to establish the Lefschetz formula for certain correspondences cohomological curves [] let's not look for which ones!] (see XII [but who knows where to find "the" formula!] and (SGA 4 1/2 Report) [where the reader will have no difficult to find the formula, and to be informed about the identity of the real father of it...]." (Emphasis mine.)

Further on in the same introduction, it is said that we (ie Illusie, it goes without saying) apply the techniques of n° 5 (**)

"to define, in n° 6, local Lefschetz-Verdier terms for cohomological correspondences between complexes of modules on rings not necessarily commutative."

The name given surreptitiously to these "local terms" which I had introduced in 1965 for the purpose of writing the explicit Lefschetz-Grothendieck formula), without having, precisely, to refer to the local terms of the general Lefschetz-Verdier formula — this name is obviously chosen to maintain the confusion desired and maintained by Deligne - as if

(*) The last lines of the introduction (by Illusie) to the massacre edition of SGA 5, pretend to "pay homage to the memory of I. Bucur, who died of cancer in 1976" — a year before the massacre edition. I don't know if there is a cause and effect relationship - I have no doubt about the fundamental honesty and loyalty of Bucur, who would not have let an enormity like this edition pass by, without at least me make aware. Still, the spirit of the operation in which the posthumous tribute is part gives it a suspicious flavor. This was paying lip service, when there was a way, more consistent with the good will and uprightness of Ionel Bucur, to honor his memory, by attenuating his blunders, instead of shamelessly exploiting them. .

(**) On the traces, this time, non-commutative - the slips of the tongue are strictly reserved for the deceased, at least as long as he is not there to give the reply...

the explicit formula in question would technically depend on that of Lefschetz-Verdier. A few lines later, we learn, to heighten the joy, that “the local terms defined by Grothendieck in the Lefschetz formula of (XII 4.5)” (*) (of which we do not say above all that this are the very ones that we have just generously baptized “local Lefschetz-Verdier terms”) “are indeed the local Lefschetz-Verdier terms” (but this time in another sense, of course: those of the general formula, “non-explicit”, called Lefschetz-Verdier).

For the art of fishing in muddy water, following a style that I recognize only too well, that's it! Same technique of confusion in the introduction to the volume, where we read (page VI, line 5):

“Applications to Lefschetz formulas are given in Lectures XII and II IB .”
(emphasis mine),

above all, the reader gets lost without hope and has no chance of finding, or even trying to find, the only explicit Lefschetz formula known in dimension 1 (until 1981 at least), due (not to Illusie, nor even to his boss Deligne, but) to the late ex-“director” (sic), not named correctly (**), of the seminar gaily massacred by his “editor”-gravedigger Illusie.

In the original seminar, lecture -Poincaré and Lefschetz, treated in the same spirit, following common methods that I had identified during the seminar. There was in this part of the seminar, as in the others, a unity of purpose and vision.

(*) (May 12) Taken aback by this unusual precision (XII 4.5) concerning “my” formula, I just looked at the reference cited. I find “Conjecture 4.5” (p. 415), which seems to concern the possibility of defining local terms. We suspected that this priceless person was going to give us yet another conjecture, instead of a real definition...

(**) While all the essential results of the SGA 5 seminar, with the exception of the Lefschetz-Verdier formula and the theory of Serre-Swan modules (which does not appear in the massacre edition), I am due, Illusie presents the texts in such a way that for none of these results (not only the so-called “Lefschetz” formula lost somewhere in a presentation XII...) it appears that my modest person has anything to do with it. As a result, he played a leading role in the operation to evict me from the SGA, prepared for a long time by his friend Deligne, an eviction which finds its epilogue in the note “Les Pompes Funèbres — “im Dienst der wissenschaft”” (n° 175). (See also the subnote “Eviction (2)”, n° 1691.)

obvious. This was meticulously massacred by the care of my ex-student, taking advantage of his role as “editor”-sic of a seminar wrecked by his care and those of my other cohomologist students (as posthumous thanks to the one who was their master). With a regularity worthy of the meticulous Illusie, one out of two of the six presentations, namely ex-positions IX, XI, XIII, disappeared from the massacre edition. Lecture IX was due to Serre and presented the theory of Serre-Swan modules — seeing the twist. as events took place, Serre preferred to withdraw his marbles and ensure for himself that his beautiful presentation was made available to all. Presentation XIII was, the “editor” explains in the introduction to volume-ume, in excess – apparently the unnamed “director” did not know how to count to thirteen – it was sold for trap 1 L As we have seen , presentation .), which was initially called “Lefschetz-Verdier Formula” and which was renamed, for the sake of confusion, simply “Lefschetz Formula”. Still, this “move” did not happen at random — it always goes in the same direction, that of the confusion tirelessly maintained by the perfect Deligne-Illusie tandem between the Lefschetz-Verdier formula (the one which is “conjectural”, “local terms not calculated”, but ultimately proven nevertheless by the combined efforts of Deligne and Illusie...), and another formula, explicit, which must remain rigorously occult, carefully drowned in a magma of formulas numbered with four decimal places, of insinuations that never said anything, of carefully calculated ambiguities. Congratulations again, dear ex-student I As a result, presentation Great work, you didn't waste your time...

(1699) (March 22 and April 29) I would like to return again to the confusion maintained between the Lefschetz-Verdier formula and the occult formula, the untraceable. I have just discovered a fairly copious “terminological index” in SGA 5 — we are careful, or we are not! Out of curiosity, I looked under “Lefschetz”, sometimes “my” formula would be there... The only reference is to a “Lefschetz-Verdier formula (talk III)” — which talk has been renamed (as we have seen) “Lefschetz formula”. So the reader is well informed

(*) In the absence of any mention to the contrary, the reader will guess that this famous so-called “Euler-Poincaré” formula is due to the two illustrious geometers whose name it bears. Compare with the previous note of b. from p.

that there does not exist (at least not in this volume) any other “Lefschetz” formula than the one called “Lefschetz-Verdier” (the very one which he learned elsewhere was conjectural etc., that SGA 5 depended on it to death and for life, and that “SGA 4 1/2” as its name suggests saves the day here...) Great work, yes!

I continue to tour the prowess of my ex-student Illusie, under the guidance of my other ex-student Deligne. I take up the rest of the quote from the introduction to the massacre volume (*), where “the” formula of Lefschetz-Verdier, always the same, had suddenly multiplied (by virtue of the art of conjuring mathematical) into “Lefschetz formulas” but no one has ever been able to say which ones. He continues (page VI, line 6):

“The formula of the traces of Exposition XII [which we hope that no reader will ever have the idea of going to unearth...] is demonstrated independently of the general formula of Exposition III, but we shows in (III B 6) that the local terms which appear there are indeed those of the general formula, and that the latter implies it. (Emphasis mine.)

Nothing in his hands, nothing in his pockets - unblockable Illusie, just as unblockable as his brilliant chief conjuror! After having followed, one after the other, a whole cloud of misleading ambiguities which all went in the same direction, I have only just noted that here, in an innocuous twist of phrase which had me escaped until now (as it will have escaped any other reader of this introduction of more than four pages (**)), it is said in chiaroscuro that a certain formula from the traces of presentation XII (that the reader

(*) See the beginning of the quote in the previous subnote “The conjurers — or the soaring formula” (n^y 1698), page.

(**) Zoghman Mebkhout, who is an attentive reader but who arrived a little late, tells me that he himself was deceived, convinced that the formula of fixed points explains (for Frobenius in any dimension, or for general correspondences in dimension one) did indeed depend on the general (not explicit) formula of Lefschetz-Verdier. So Illusie’s thumbs-up statement had escaped his attention as well as mine - which was indeed the desired effect...

The confusion is reinforced by the fact that my Bourbaki presentation in 1974, presenting the formula for “coefficient” L functions in a constructible sheaf (or what amounts to the same thing, the explicit formula for fixed points for the Frobenius correspondence in such a sheaf) had been written before we had explained an explicit formula in dimension one. At that time I assumed that the demonstration of the explicit formula for Frobenius, in dimension one, would appear as a corollary of the general Lefschetz-Verdier formula — that “all that remained was to make the local terms explicit”. Also, anticipating work that remained to be done, by Verdier in

manages as best he can to find which M is demonstrated independently of “the general formula of presentation III” (which, for the circumstance, does not have the right to a name either, in accordance with the so-called “du vague deliberate”...) — to follow up in the same breath and in the same sentence (as if to “catch up” in some way with an affirmation-thumb conforming to the rules of prudence...) with a “but we show. ..”. This “but” refers to this “platonic” complement that no one, starting with Illusie and Verdier, had cared about for twelve years, namely that “my” local terms — sorry, I meant “those who appear there” (in this formula traces of presentation XII, formula whose author will never be named clearly (*)) - that these terms are those of the eternal “general formula” - and the vagueness about the names given to the formulas and the places where to find them, suddenly gives way to exemplary precision, worthy of the meticulous Illusie: this demonstration of a “rabiote” is found in III B 6 — if a reader wants to be sure that it is there is indeed,

occurrence, in this presentation Bourbaki baptized this explicit formula “Lefschetz-Verdier theorem”. In the following, both Verdier’s “woodshole” demonstration, as well as mine covering a much more general case, do not use the general Lefschetz-Verdier formula. The situation was perfectly clear to all SGA 5 listeners, at least. But for those who only knew my Bourbaki presentation to the exclusion of SGA 5 (remaining sequestered until 1977), there was a misunderstanding, which was thoroughly exploited by mutual agreement by Deligne and Illusie, for the assembly of the deception (sewn with thick white thread) “SGA 4 1/2 — SGA 5”.

From the point of view of the imposture of the “logical dependence” of SGA 5 in relation to the pirate text with the misleading name, this does not hold up in any case, even if the explicit formula did indeed depend on the formula “conjectural” of Lefschetz-Verdier. Indeed, as Deligne himself notes in passing in the famous “Method A” (for a reader who begs for mercy — see “The real maths...” n° 1695 page 884), the “easy reductions” of ordinary people unnamed brought back to the case of dimension one, where “the ingredients of the demonstration were all available”.

All these tricks work, as long as they are served to a reader who is either asleep, in a hurry, or who wants nothing better than to be confused. To an attentive and critical reader, the whole clever setup appears for what it is: a shameless fraud. But it seems that I am the first attentive and critical reader in the eight years since this scam appeared on the mathematical market...

(**) For the reader of SGA 5, it is Illusie, author of the brilliant presentation II IB on “local terms”, who must appear as the modest father of the never-named formula. For a reader of the volume called “SGA 4 1/2”, who has therefore not heard of any other formula than that of “Report”, the father is visibly the brilliant author of the volume, for a reader of two (if there are any), he will only have to play a coin, or give his tongue to the cat...

he will have no trouble finding that one!

And why this sudden interest in this identity, when the fate of the SGA 5 seminar in its entirety had left Illusie (just like my other cohomologist students) perfectly indifferent for eleven years? It is in order to be able to continue brilliantly, in the same sentence again (it's from the envoy or I don't know anything about it 1) that "the general formula" (of Lefschetz-Verdier, not to name it) implies "that of presentation XII" (of an equally unnamed deceased).

This is a truly brilliant sleight of hand! My brilliant student sweated blood and water, including work on mathematical pieces, but yes, to arrive at this brilliant result of this seemingly innocuous end of a sentence - and which yet, in the eyes of Deligne and those of his servant, is crucial: the formula of Lefschetz-Verdier "implies" that "of presentation XII" (which we have just said was demonstrated independently, but that does not matter for the all symbolic satisfactions of the unconscious!).

This "implies" is of a very particular nature, mathematically speaking — and I bet that I am the only mathematician in the world, apart from the brilliant inventor of the gag (and perhaps his master Deligne), who knew how to appreciate its flavor, for To understand it, however, there is no need to be a specialist, or even a mathematician. The two formulas, the "general" (aka Lefschetz-Verdier) and "that of presentation XII" (aka the unnamed deceased) are expressed respectively in the form

$$T = L, T = L$$

where the term T (alternating sum of traces) is the same in both formulas, while the terms L, L (sums of local terms) have been defined ad-hoc (one by Verdier in the spirit of Lefschetz, the other by the deceased in the spirit of Nielsen-wecken-Grothendieck). Eleven years later, Illusie (whose editorial zeal was suddenly awakened by a signal from the boss) made a sudden effort, worthy of a better cause, to directly prove (?)

$$L = L \text{ (and itou for local terms one by one),}$$

just to be able to say that the formula $T = L$ "implies" $T = L$ (and thereby, implicitly, that the formula $T = L$ of the seminar to be massacred, crucial for the theory of functions L , "depends" on the formula $T = L$, which remained "conjectural" before the appearance of Deligne and his providential "SGA 4 1/2" — sic...). The situation becomes even more grotesque for someone a little in the know, who realizes that no one in the world would have had the idea

of the absurd definition of the local terms which enter into L (those of the unnamed deceased), if this definition was not directly "blown" by the very approach of the demonstration of the formula $T = L$

To tell the truth, I can say that I found a "demonstration" of the formula $T = L$ even before having defined the second member L and its local terms: the last ones "came out" of the demonstration, neither more nor less (*).

Congratulations, a third time, Illusie, and to you just as much, Deligne, who served as a model for him. Together, you have pioneered a new style in mathematics.

A style that has already established itself. It has already become the "1980 style", visibly promised a brighter future (**). It is the conjuring style, alias "the gravedigger's style", where the whole art consists of constantly deceiving the reader; deceive him, not only on the authorship of the main ideas, but also (at the same time) on their filiations and mutual relationships, on the scope of each, on what is the essential and what is the accessory - and this to the laudable purposes of magnifying the one who must be magnified, of cleaning up or burying with a nonchalant gesture and at the turn of an innocuous sentence... the one who must be cleaning up (or buried...); and above all, to have the titillating sensation of power: to lead the reader as he pleases and by the nose, to make and undo the history of his science as he pleases, and to decide what things "are" mathematics that we claim to expose, and what they are not. It is the art of always "reigns

(*) I specify, something which goes without saying, that in all imaginable applications (not only to the formula of functions L , concerning the Frobenius correspondence alone), it is indeed the explicit formula $T = L$ which is the relevant formula. From the practical point of view, and with regard to phenomena in dimension one, the Lefschetz-Verdier formula $T = L$ has only historical (or heuristic) interest, and the same is true a fortiori (until at least for further notice) of the result of Illusie $L = L$ (or, more precisely, that the two types of local terms, those appearing in L and those appearing in L' , are the same).

These are very obvious things, which the two friends nevertheless strive (and succeed, given the times) to confuse. This leaves us thinking about the meaning that the frenzied scientific production that we are witnessing can have, while such gross departures from simple mathematical common sense and this on questions which closely touch on crucial progress made over the past twenty-five years. years in our knowledge of the relationships between geometry and arithmetic) go unnoticed by each and everyone...

(**) See, for eloquent examples in this sense, the few samples of the "1980" style which appear in the note "La mafia" (n° 1712), under the pen of our great authors Brylinski, Kashiwara, Beilinson, Bernstein. clearly, all hopes are allowed!

(May 12) As other occasional followers of the "new style", who distinguished themselves in the wake of the work of an obscure posthumous student never named, I can now add Malgrange, Laumon, Katz. (See the note "Carte blanche for pillaging", n° 1714)

r" by delicately pulling invisible (?) threads, without ever, ever stooping to serving. And all this, in such a way as to always and totally be "thumb 1": that if, by extraordinary means, a reader smarter than another would go and look at it for himself, that he would have the unusual idea of making use of (you never know...) of his own lights and faculties (it's rare, but after all it could happen...), that he can never catch you in the act of saying something which, taken at face value literally and without any escape from ambiguity or double meaning, is indeed and irremediably false.

The art of art is in this style clause, which may seem like a challenge, and yet...
With the perverse Colloquium of strange memory, barely four years after the deployments of conjuring virtuosity of the miraculous operation "SGA 4 1/2 — SGA 5", we were able to see how far this new and innocent technique can go, in the concealment of an innovative work, and in the shameless spoliation of the one who had carried this work for a long time and had matured it in solitude...

Hats off to the master and the student, to Deligne and Illusie! Artistic work! you have good both deserved the unanimous recognition of the entire Congregation.

(170(i)) (February 28) I arrive at the third of the "four operations" around my mathematical work (while waiting for the fourth in the following note, ignoring the work of Zogh-man Mebkhout).

III The "Duality — Crystals" operation (or: "The Beautiful Remains...").

As I see things now, it is roughly a sharing of the part of my work concerning cohomology which had not yet been appropriated (de facto, or symbolically) by P. Deligne (*). This one has obviously reserved the lion's share for itself, with the patterns and the stale cohomology, and more specifically, the -adic cohomological tool.

The remainder (*) is shared between two other of my cohomologist students, JL Verdier and P. Berthelot (*). The consensus that was established, I cannot say when or how, seems

(*) (May 1) it is nevertheless appropriate to set aside the formalism of duality in the coherent context, which (contrary to a hasty impression) has apparently not yet been appropriated by any of my cohomologist students, nor by anyone else to my knowledge, it is true that the only reference text, exposing the majority of my ideas and results on this theme, is "Residues and Duality" by R. Hartshorne, which allows us to refer to it without having to pronounce an unwanted name at any time...

(*) (May 1) It has since become apparent that it is appropriate to add a "fourth thief" in the person of Neantro Saavedra Rivano, who appropriates the philosophy of the Galois motivic group, via the named categories,

be the following: to Berthelot all the crystalline cohomology, and the rest to Verdier, who annexes, essentially, everything which revolves around the yoga of duality (**), and the yoga of derived and triangulated categories which constitutes its algebraic prerequisite .

Concerning Berthelot's participation in sharing my remains, I only have one fact, a significant one it is true. I came across it by chance last year, during the reflection in the note "The co-heirs..." (n° 91), and I devoted a small sub-note n° 911 to it . This is the survey article by Berthelot that I cite there (***), presenting the main ideas for a "synthesis" (he says) of Dwork-Monsky-Washnitzer cohomology and cohomology crystalline, during the Luminy Conference in September 1982 entitled "P-adic analysis and its applications". In the introduction, part b), he gives a short history of crystalline cohomology, in a narrow spirit which in no way corresponds to the much broader vision that I had of crystalline yoga (****).

My name is absent from both the text of the article and the bibliography. I refer to the cited subnote for some comments and clarifications, which there is no point repeating here.

I would only add that once my person has been eliminated from the picture, it is none other than him alone, Berthelot, who appears as the father of crystalline cohomology, without him even having to take the trouble to say it clearly. — a certain style of appropriation has visibly caught on... It is indeed his thesis, which he prepared with me based on my initial ideas, which constitutes the first work published on the crystalline theme (apart from the very rough sketch that I myself had made of some of the initial ideas (*)). His thesis presents extensive foundational work for a first part (170 (i) bis at least of the program that I had proposed to him.

for the occasion, "tannakiennes". But he simply acts as a "straw father" on behalf of Deligne, who "recovers" paternity ten years later. For the detailed history, see the following notes "The sixth cO. to the coffin", n° s 1761 to 1767 .

(**) See footnote on previous page.

(***) Rigid geometry and cohomology of algebraic varieties with characteristic p , Pierre Berthelot, in Luminy Conference September 6–10 (CIRM) "P-adic analysis and its applications".

(****) See on this subject the sub-note "Deaf ears" (n° 170 (i) bis) which follows this note.

(*) The only published outline of these ideas, based on five talks I gave at IHES in November and December 1966, written by I. Coates and O. Jussila, is "Crystals and the De Rham Cohomology of Schemes", in Ten Lectures on the Cohomology of Schemes (North Rolland, Amsterdam 1968) pp. 306–358. All the essential starting ideas are outlined there, including the need to introduce local thickenings à la Monsky-washnitzer (pp. 355–356).

This memorable “survey” takes place in 1982, a year after the “Pervers Conference” (Luminy June 1982), which will be discussed with “Operation IV”. I did not take the trouble to go through the separate prints of Berthelot in my possession, to learn if this participation in my Funeral represents a late turning point in his relationship to me and my work, or if it is the continuation of an older attitude. In the first case, it would be a safe bet that this turning point comes in response, in some way, to the sudden and unbridled auto-escalation in the general degradation of scientific ethics, accomplished the previous year with the Colloquium. I recall in this regard that this same year 1982 is also notable for the publication of the “memorable volume” LN 900 exhuming the reasons (**), where the one who bears the costs of the operation is no longer a vague “unknown to service” (as during the brilliant Conference), but a “deceased” whose name, despite everything, still remains in the memories (even if regrettably...). The previous year’s operation had made it clear enough that there was no longer any need for restraint — and “Operation Motives” did indeed pass, as did “Operation Crystals” and all those that had come before, without making the slightest wrinkle...

(170(i)bi s) (February 28 and April 30) (***) I mean here by “first part” of the crystal theory (in char. p 0) that which concerns crystal cohomology, with constant coefficients (or “twisted constants”), clean and smooth diagrams on a basic car diagram. p. It is then sufficient to work with the “ordinary” or “infinitesimal” crystalline site, which I had introduced (provisionally) towards the end of the sixties (****). In fact, contrary to the restricted meaning that Berthelot likes to give to the term “crystalline cohomology”, it had for me from the start a much broader meaning, which I did not hide from him or from anyone, and which my students apparently forgot — only to “reinvent” a small piece of it ten or fifteen years later...

On the one hand, my crystalline ideas, from the beginning, were in no way limited to the case of diagrams of a given characteristic $p > 0$. My first crystalline reflections, before the new idea came to me to introduce “divided power thickenings”, were placed on diagrams of zero characteristic, where the divided powers are present automatically (and for this reason, tend to go unnoticed...). The natural outcome of this direction of research, renewed thanks to the ideas of Zoghman Mebkhout, will be formalism

(**) See “Silence” (n° 168), notably “... and exhumation” (n° 168 (iii)).

(***) This subnote comes from a footnote to the previous note “The share of the last”. (****) (May 12) In fact, it's already 1966, see b's note. from p. (*) above.

of the six operations for the “crystalline coefficients of De Rham-Mebkhout” on the schemes of zero characteristic (to begin with), a formalism to which I already alluded in the note “The melody at the tomb — or sufficiency” (n^o 167). From the sixties, I glimpsed a crystalline cohomology without characteristic distinctions, in the form of a crystalline formalism of “six operations” in the context of (for example) finite type schemes on the absolute basis Z . It had to encompass the “Ordinary” crystal theory (which is still being sought — and which is still being sought) for finite type schemes on the body Z_p with p elements. I am convinced that it is having forgotten and buried this vision of the late master (yet simple and inspiring as possible), which is the cause of the desolate stagnation of the crystal theory, almost twenty years after the vigorous growth of its beginnings.

On the other hand and to return to the approach of Monsky-Washnitzer, which had contributed to “triggering” me on crystal cohomology, I had from the beginning present in mind the need to introduce (for the needs of a theory which would not only apply to clean and smooth diagrams) a crystalline site larger than the “infinitesimal” site, where the “thickenings” envisaged would be spectra of topological algebras (with ideal at powers divided) suitable, perhaps those used by Monsky-Washnitzer (free of unnecessary assumptions such as smoothness) (*). Identifying “the right site” and “the right coefficients” is part of the program

(*) As I specified in a previous note by b. from p. (see page 922), such Monsky-Washnitzer thickenings are discussed in my first and only published presentation on crystalline yoga, from the end of 1966. From that moment, it was clear to me that the crystalline cohomology of characteristic $p = 0$ was going to be played out mainly on rigid-analytic spaces of zero characteristic. Of course, I did not fail to make it known to everyone it might concern, and first and foremost certainly to my student Berthelot, once he had chosen to get involved in the crystalline theme. In the article cited, following a style that I recognize well and that Berthelot did not invent, one would say that he has just discovered (fifteen years later) the unsuspected link with rigid-analytic geometry. He asks the brilliant inventor of a “common generalization” (of the Monsky-Washnitzer theory and the crystalline theory), which he pompously calls “rigid cohomology” (and which will soon be called, as it should be, “Berthelot cohomology”). I also point out that this work by Berthelot is “the extension of a reflection carried out with Ogus” — the same Ogus who distinguished himself the same year (1982) by his participation in the “Motifs” scam, as co-author of volume LN 900.

The systematic burial continues in a subsequent article by Berthelot (of which I have a preprint) “Rigid cohomology and Dwork theory: the case of exponential sums” (undated). No reference to the deceased for the crucial notion of F -crystal, or that of cohomology with proper support (which I have the honor of introducing into algebraic geometry in February 1963, twenty years before...). These notions are so natural that there is really no need to worry about the bit... The notion of generic fiber of a formal diagram (in

that I had bequeathed (in vain, it now appears) to my cohomologist students, starting with Berthelot. Having thought about the matter recently “in passing” (during the writing of *Récoltes et Semailles*), and remembering the imperative of a crystalline theory encompassing all the characteristics at once, I came to moreover to ask myself if these topological algebras (à la Monsky-washnitzer, or any other reasonable variant) are not also too “coarse” (in the same way as restricted formal series), because too “far from algebraic”, and if there is no reason to replace them by “thickenings” which are (in a suitable sense) “flat neighborhoods”. I think I will return to these questions in the part of the *Reflections* following *Récoltes et Semailles* (volume 3, I presume), with the presentation of the yoga of six operations and the “problematics of coefficients”, and in particular the crystalline coefficients of the type “From Rham-Mebkhout”.

Mebkhout had also sensed that his philosophy of $\mathcal{D}$ -modules would provide a new point of view for crystal theory. But his suggestions in this direction, to Berthelot in particular in 1978, coming from a vague unknown and unrepentant Grothendieckian, fell on deaf ears (*).

(170(ii)) (February 28) (*) To situate “Operation Duality”, for the dubious benefit of JL

above a ring of discrete valuation), as a rigid-analytic space, is generously attributed to my ex-student Raynaud. This notion was known to me before neither Berthelot, nor Raynaud nor indeed anyone else had yet heard the word “rigid-analytical space”, given that it is the need to be able to define such a generic fiber which was one of my two motivations for predicting the existence of a “rigid-analytic geometry”, and that it was also he who was then one of the two guiding threads for Tate, setting up a construction in the shape of such a geometry: its definition had to be such that the notion of “generic fiber” becomes tautological...

(*) Having deaf ears does not prevent this same Berthelot, in the article that I cite in the previous one $\mathcal{D}$ -modules grade b. from p., to refer nonchalantly (at the end of par. 3 A) to “an analogue of the theory of on a complex X manifold”, which “for the moment” we do not yet have in the rigidanalytic framework. Of course, there is no question of mentioning here the name of a certain vague stranger who had come to make eccentric suggestions to him four or five years before, and even less so since a certain conference the previous year (which will be discussed in the following note “The Apotheosis”, n° 171) had clearly set the tone regarding the vague unknown in question. Surely, within a few years, and with the blessing of the true father of the well-known “Riemann-Hilbert-Deligne” philosophy, Berthelot will appear as the brilliant inventor of the philosophy of $\mathcal{D}$ -modules in the context of “cohomology rigid-analytic”, also called (even if he himself refrains from calling it that) “Berthelot cohomology”. So, in these times, you don't need to have a keen ear to go far...

(*) The text of this note was reproduced clearly, and corrected on certain points, on May 1 (Lily of the Valley Day).

Verdier, it would be appropriate to first say a few words about the yoga of duality (known as “the six operations” – but the name has sunk without a trace) which I had developed from the second half of the 1950s, and that of derived categories, which is in truth inseparable from it. I expressed myself in quite detailed terms on this subject in the note “My orphans” (n^o 46, notably pages 177–178) and in the subnote n^o 46 to this one (pages 186–187), and finally (in the beginning of reflection on the role of Verdier in the burial of my point of view in homological algebra) in the note “Instinct and fashion — or the law of the strongest” (n^o 48). It seems unnecessary to return to it, and I suggest the reader refer to it if necessary, before continuing with the story of Operation “Duality” (**).

Verdier's attitude in the sharing operation appears more ambiguous than that of his two friends, due to the fact that he played, sometimes simultaneously, on two tables which may seem contradictory. I myself had difficulty, at first, recognizing myself, the situation seemed so confusing. On the one hand, after his thesis defense in 1967 and especially after my departure in 1970, he tried (for reasons that escape me) to bury and discredit the yoga of cohomological algebra and duality that he took it from me, even though he had devoted most of his energy, throughout the sixties and up to the defense of his thesis, to developing these ideas and enriching them with his own contributions. On the other hand, from at least 1976 (nine years after the defense of his thesis), and with the encouragement and effective support of Deligne, he pretended to appropriate authorship as well initial ideas (to the extent that these did not remain boycotted), as well as all the methods and results that I had developed around the theme of equal duality, methods which apply *mutatis mutandis* to all kinds of other contexts (*), such as topological spaces, or complex analytical spaces.

Concerning Verdier's attitude towards only derived categories, I tried to put my finger on the meaning of this ambiguity in the note “Thesis on credit and all-risk insurance”

(**) (May 12) See also the note “The ancestor” (n^o 171(i)) and “The tour of the sites — or tools and vision” (n^o 178), in particular the “Six operations” sites and “Coefficients” (n^o s 3, 4).

(n^y 81) (**). We will also find a certain number of material facts there, in particular concerning the strange circumstances which surrounded his thesis work (still not published today) and the defense. With the hindsight of a year, the vision of things that emerges during this reflection probably seems correct to me (with some adjustments perhaps), but nevertheless superficial.; It is very clear to me that Verdier's real motivations do not lie at the level of some trivial "calculation of returns", but that they are of a completely different nature, and essentially involve his ambivalent relationship to my person.

Even for a superficial observer, it seems to me, it is particularly blatant in his case that in believing he was burying the one who was his master, it was none other than himself and the creative force in him that he buried, day after day and until today again.

To provide an overview of the "Duality" operation, I will now do a short retrospective of the different stages that are known to me of this operation, and more generally, of Verdier's participation in the Funeral.

Stage 1 (1966–1976). It was after my departure in 1970, I can't say exactly when, that Verdier informed me that he no longer intended to publish his thesis. I remind you that this was supposed to present the new foundations of homological algebra, from the perspective of derived categories. In my eyes, the purpose of his thesis work was to be made available to everyone, to provide a reference text of a scope comparable to Cartan-Eilenberg's book, directly adapted to new needs. appeared during the fifties and sixties in the wake of my work and that of my students. With hindsight, I realize that this new cohomological language was still fully assimilated (and still, I would even say today...) only by my cohomologist students, and that Verdier's decision was therefore equivalent to draw a broad line on this new vision of homological algebra. As a result, his twenty-five page "thesis", which was limited to

(*) Of course, in the "other contexts" in question, the initial difficulty of the stalwart context, namely the need for a "breakthrough" which gives a minimum grip on the stalwart cohomology (in the absence of constructions well-known transcendents using singular simplexes, retraction methods, etc.) do not arise. My students all found situations where the major work of preliminary "breakthrough" was already accomplished by another — they only had to bring their furniture, in short, which often the "other" provided them elsewhere. above all. As soon as the opportunity came, they hastened to bury it, to take advantage of what they saw fit to appropriate, and to make fun of the rest...

(**) When writing this note, I was not yet aware of how Verdier was able to distinguish himself, with the "good reference" he provided in 1976 — see "step 2" below.

to present a convincing sketch of ideas which he himself said were not due to him, lost its meaning and became, strictly speaking, a “bogus thesis”. But at the beginning of the 1970s, upon learning (with surprise) of Verdier's decision, I was so intensely absorbed in tasks at odds with my former mathematical interests, that these questions were then infinitely distant for me. . The idea did not occur to me to ask about the thing, learned in a breeze (I can imagine) between a public discussion on the scandal of cracked barrels of atomic waste in Saclay, and a working session for editing the newsletter *Survive et Vivre!* And even less, would I have thought of reacting then. The first time where I finally “pose” on the meaning of this act of Verdier, and where its nature of deliberate sabotage begins timidly to appear, is in the note already cited “Instinct and fashion — or the law of stronger” (n° 48), taken up a few weeks later, after the discovery of the Burial “in all its splendor”, in the much more detailed and in-depth note “Thesis on credit and all-risk insurance” (n° 81).

In retrospect, it becomes clear that Verdier's division in the work he had assigned himself, and which was part of the “good faith contract” he had made with his thesis jury (see the cited note n° 81), must date back at least to 1968 or 1969; otherwise the writing and publication of his “thesis” would have been done well before my departure in 1970. I remind him that I had submitted to him the work program on his thesis in 1960, and that for a gifted and motivated researcher like him was then, this program, with a vast drafting of new foundations, should hardly represent more than three or four years of work breaking everything down, updating and everything. It is also true that a certain mentality, which consists of arranging to withdraw credit in advance for planned “work”, that one then no longer has any reason to tire out doing — such a mentality now becomes apparent to me already after 1964, with the vicissitudes of the so-called “Lefschetz-Verdier” formula, and later, with the duality (called, of course, “Verdier”) of locally compact spaces, in the spirit of the six operations (which always remain unnamed) (*). But throughout the sixties, locked as I was in my tasks and in the vision that I tirelessly pursued through them, like Ahab's elusive and omnipresent white whale, I was a thousand leagues from myself. doubt that something was “wrong” in the one who was for me like

(*) See, on the subject of this rather particular spirit, the sub-note “Heritage - or shenanigans and creation” (n° 1696 bis), and also the sub-notes of last year (n° s 812 , 813) to the note already cited “Thesis on credit and all-risk insurance”.

a close companion in tasks that I believed to be “common” — no more than I would have suspected it for any other of my cohomologist students. And with twenty years of hindsight, I am now struck by the extent to which, for ten years of my life (if not fifteen or twenty) I lived completely out of step with the reality that surrounded me, and this* not only in my family life (where I ended up realizing it a long time ago), but also in my professional life, in which I invested myself with passion...

But I come back to “step 1”. Verdier's ambiguous relationship with my person and my work appeared in any case after the completion of the SGA 5 seminar in 1966: no more than any other of my cohomologist students, he felt concerned by the writing of this seminar. (**), which remains in the hands of “volunteers”-sic overwhelmed by the task, or unconcerned about keeping their commitments. Obviously, from that moment on, the situation in all of my cohomologist students is rotten, without me noticing anything, preferring to live in a world where everything is order and beauty... It is eighteen years later that I begin to take a first and timid look at what really happened, in those times which (until a year ago) had seemed idyllic to me (***) .

After my departure in 1970, and already before he announced to me his “official” decision to scuttle his foundational work, Verdier's ambiguity in the sixties was confirmed by his collusion with various mini-scams of the believed by his friend Deligne, which he could not fail to realize: the evasion of my person in the articles Hodge I, II, III (*), then in the published version of the monodromy seminar SGA 7 II (presented under the names of Deligne and Katz, the latter unexpectedly taking the still hot place of a deceased...). The same year (1973), he could not have failed to become aware of

(**) In retrospect, I come to wonder what Verdier could have used his time for, between 1964 (where he ended up, through my contact, getting into the bath of new cohomological techniques) and 1970, when 'he does not deign to take up and complete any editorial task, not even theories of which he was going to present himself as the author, for the list of his contributions, valid but none of which are completed, see sub-section note n° 81- has the widely cited note.

(***) See in particular, in “Fattuity and Renewal”, the section “A world without conflict?” (n° 20), where only the question mark in the section name may suggest some doubt about “the idyll”.

(*) In the joke about “weight complexes” (see the note of the same name, n° 83), I thought I discerned an allusion, in a tone of defiance, to the oldest patent fraud of which I know from one of my cohomologist students, namely that of Deligne in his 1968 article on the degeneracy of spectral sequences. If I only saw fire, the example given by my most brilliant student was not lost on everyone 1

MacPherson's article, where a "Deligne-Grothendieck conjecture" is resolved, in which he knows full well that Deligne has nothing to do with it.

Until 1976, Verdier's role in the Burial seemed mainly passive, at least as far as the operations of tacit annexation were concerned, on the other hand, by refraining from publishing what was supposed to constitute his thesis (which had been granted to him "on credit" (**)), he played, even before my departure, a crucial role in burying my point of view in commutative homological algebra (which he had made his own for a time), and its use as an "everyday" technique in algebraic geometry, topology and algebra.

Like his friends Illusie and Deligne, by thus sabotaging the work of his own hands, for the pleasure of burying the one who had inspired him, he well deserved the unreserved recognition of the unanimous congregation...

This deliberate intention of burial was also clearly expressed in his discouraging attitude towards Zoghman Mebkhout, after 1975, when he pretended to be inspired by my yoga of duality, and that of categories. derivatives. On this subject again, I refer the reader to the more detailed notes already cited "My orphans", "Instinct and fashion - or the law of the strongest", "Thesis on credit and all-risk insurance" (n° 46 , 48, 81), as well as the note "The unknown person on duty and the theorem of the good Lord" (n° 48) (***).

Stage 2 (1976). In 1976, the publication of Verdier's "memorable article" in Asterisk (*) took place, which had already been discussed as "episode 3 of an escalation" with the "Etal cohomology" operation (see the note "Les maneuvers", n° 169). I remind you that this fifty-page article consists (apart from a few pages of its own) of repeating by text a certain number of notions and techniques that I had developed ten years before in SGA 5, and this without alluding to my person. nor to a seminar dealing with these things. This publication, which I discovered a year ago in the wake of the Colloque Pervers (in the note "The good reference", n° 82), shed an entirely new light on the meaning of the little The eagerness of himself and my other cohomologist students, to make the SGA 5 seminar (under this name, and with his authorship) available to the mathematical public.

(**) See the already cited note

n° 81. (***) (May 1) See also the sub-note "Blooming of a vision — or the intruder" (n° 1711) in the note "L 'Apotheosis".

(*) JL Verdier, "Homology class associated with a cycle", Asterisk n° 36 (SMP) p. 101–151 (1976).

There is no need to return here to the comments on this article, which I made in the note from yesterday already cited (n^y 169). As a funny detail, I will only add that it is the manuscript of this “work” (sic) by Verdier, which he had been kind enough to communicate to Zoghman Mebkhout the previous year (1975), which was for him the soul-Open-Yourself of the cohomology of varieties, and the basis of an unreserved admiration for the one who, from then on, appeared as a “benefactor”. This admiration was hard-boiled, and only ended up completely disintegrating, I believe, following Zoghman's misadventures during the Pervers Conference.

Deligne told me (**) that he only became aware of Verdier's article after the publication of “SGA 4 1/2” (sic) and SGA 5, the following year (1977). — which would go against my conviction that the publication of Verdier's “good reference” marked a final essential step in the “escalation” of scams, which ended up bringing down the operation of any “the following year. On reflection, I find it difficult to believe Deligne's version on another scale mathematicians I know, and who has always “SGA 4 1/2 — SGA 5. He who is one of the best informed remained in close contact with Verdier, it is hardly possible that he was not already aware of Verdier's project, that he did not receive a preprint (even before Mebkhout), and was one of the very first to be used for separate editions, in 1976. This article was satisfying (as Deligne confirmed to me itself) a gaping hole in the literature (in the absence of publication of the SGA 5 seminar after 1966), and it is hardly possible either that Deligne did not take the trouble at least to go through it - a question of a quarter of time to break everything for someone “in the know” like him (*). In any case, the fact that this obvious plagiarism did not provoke any reaction from any of the six or seven other ex-auditors of SGA 5 who were well “in the know” was reassurance. of smooth connivance between all those involved. The time was ripe for the full-blown massacre of the SGA 5 mother seminar, and to shatter the work on stale cohomology into pieces...

Stage 3 (1977). In this operation “SGA 4 1/2 — SGA 5” which took place in 1977, on

(**) See the note “Dot the i's” (ne 164), part IV 1.

(*) I can also imagine that much stronger than mathematical interest (while this article had nothing to teach Deligne, which he did not already know as an auditor of SGA 5), must have been that of being able to learn first hand and in black and white, of the flawless sleight of hand of the late master, following the tradition that he himself had inaugurated eight years ago already 1

Deligne's initiative and with the eager participation of Illusie, Verdier this time plays a supporting role, contributing to the thin booklet with the misleading name "SGA 4 1/2", a certain "State 0" of his thesis-sic (disappeared, her body and well...), exhumed especially for the occasion after a sleep of fourteen years! Nowhere in the volume, whether in the introduction where this rabiote text ("became unobtainable" – and for reason 1) is duly highlighted, nor in this text itself, is there any The allusion has a role that I would have played in the ideas developed there; nor, moreover, to the fact that this text was one day destined to become a thesis, any more than Deligne, Verdier did not consider it useful to inform me of this publication (and for good reason, again), nor to send me a copy of the trompe-oeil volume. I refer, for details, to the note "Le compère" (n° 63, written under the emotion of the discovery of this exhumation on the sly), and to the more in-depth reflection in the note already cited many times, "Thesis for credit and — . all-risk insurance" (n° 81).

Thus, ten years after his unusual thesis defense, Verdier seized the opportunity offered by Deligne to take, in short, an "option" on uncontested and undisputed authorship from the point of view of "derived categories" in homological algebra. , with the full guarantee of his prestigious friend; and this at a time when both still continued to maintain a de facto boycott on the use of this same point of view (**). This boycott, which weighed heavily on the work of Zoghman Mebkhout, condemning him to complete solitude, remained in force until the "Colloque Pervers" in 1981.

Thus, in 1977 Verdier appeared as the father-in-reserve of a yoga of cohomology which, for the moment, remained the object of tacit fashionable disdain - but one never knew... Moreover, since the previous year, with the publication of "the good reference", he was the father of part of the duality formalism developed by me (on the "discrete" homology and cohomology classes associated with cycles, the formalism of biduality, theorems of finiteness version of constructibility etc) - not to mention the duality of locally compact spaces, which also remained in an ambiguous status, a status of expectation - just like the yoga of derived categories which gives it its meaning. Step 4 Pervers conference, June 1981). This is, by far, the culmination of participation

(**) As I explain in a previous note by b. from p. (note on page), in the coffin text called "SGA 4 1/2" Deligne was unable to avoid resorting to derived categories in the demonstration of "the" formula. This is undoubtedly what suggested to him the idea of expanding his volume with "state 0" of a wrecked thesis. In fact, this did not change the boycott situation on derived categories until 1981.

tion of Verdier at the Funeral. This Conference consecrates the shameless spoliation of Zoghman Mebkhout, pioneer of the unifying and fruitful point of view of $\mathcal{D}$ -modules in the cohomology of algebraic varieties. As official organizer of the Colloquium, with B. Teissier, Verdier plays a leading role. I will come back to this in the following note with "operation IV" (known as "the Perverse Colloquium" or "the unknown person on duty"). Here, I will limit myself to the direct repercussions for Verdier, under the "sharing" of an inheritance (where the deceased who bequeaths remains carefully ignored...).

This Conference marks the triumphant "re-entry" of derived and triangulated categories into the Mathematical Arena. As the "father" of the said categories (which he had done everything for fifteen years to bury), it is Verdier, after Deligne, who appears as the main hero of the happening. This is at least the impression that emerges from the main article of the Colloquium, from the pen of Deligne, an article which alone constitutes volume I and the centerpiece of the Proceedings of the Colloquium (*). As luck would have it, it is the skeletal and providential "State 0" of a thesis (which I would never have dreamed of accepting as a doctoral thesis, and which had come to replenish at the right time the pirate text "SGA 4 1/2" a little thin around the edges) - here it has become the brilliant piece of evidence, allowing the father-on-the-rescue Verdier, in a cloud of references to "SGA 4 1/2", to modestly show off as the far-sighted precursor of great rush called "perverse bundles" (which have nothing to do with it, however) and a new and late re-departure of the cohomology of algebraic varieties (on the breaks of a vague unknown of which no one is aware to pronounce the name...)

This same article (signed Beilinson-Bernstein-Deligne) consecrates the re-entry into force, also, of the formalism of the six operations (never named, of course) in the standard context, with the now established notations that I had introduced in the years fifty. As I write elsewhere (*† "there is not a page of the cited article... which is not deeply rooted in my work and does not bear its mark, even in the notations that I had introduced, and in the names used for the notions which intervene at each step - which are the names which I had given them when I met them before they were named".

The formalism of flat duality, which I had developed eighteen years earlier, while my

(*) Proceedings published in Asterisk n° 100 (1982) — under the title "Analysis and topology on singular spaces". In fact, the Acts in question, dated 1982, were only finished printing in December 1983, and Mebkhout became aware of them in January 1984.

student Verdier was still learning the BA BA of cohomological language, is renamed “Verdier duality” in the general euphoria (**). His prestigious protector will not skimp on the little, in such days of jubilation! The name of the deceased does not appear in the article (***), nor in the introduction to the volume, signed Teissier-Verdier. Neither that of the vague unknown (Zoghman Mebkhout, not to name him), without whom the article, nor the entire brilliant Colloquium, would have seen the light of day...

For the slaughter, it was slaughter! Aside from the motives, which would soon follow (the following year), and perhaps the crystalline yoga, the uneventful sharing of the cohomological heritage of a deceased person never named was now a thing. consumed, and this with unanimous agreement and general satisfaction.

(170(iii)) (March 1) The three “operations” that I reviewed in the previous notes concern the “sharing” of the “legacy” that I left, in the form of my written and unwritten work on the cohomology of schemes. The direct “beneficiaries” of this sharing were three among my five cohomologist students, namely Pierre Deligne, Jean-Louis Verdier, and Pierre Berthelot (*). But each of these three operations (just like the one that follows) could only be done with the connivance (and sometimes active support) of a large number of colleagues more or less “connected” to the cohomology of the diagrams. , among whom appear first and foremost my five cohomologist students, including, in addition to those I have just named, Luc Illusie and Jean-Pierre Jouanolou (*).

These three operations, and the fourth which will be discussed, appear to me to be indissolubly linked, both in their deep motivations and in their most tangible adventures. The first discreet signs date back to the years 1966 to 1968, but its

(*) See the note “Iniquity” (n^o 75), p. 288.

(**) In the notation index, the dualizing functor (which I had introduced in the etal context in 1963, and which is also the subject of presentation I of the Illusie edition of SGA 5 , where he managed to survive) is called “Verdier duality”. This name reappears almost everywhere in the text (e.g. on pages 62, 103 — looking at happiness-la-chance...). I swear I'm not making this up!

(***) My name still appears in the bibliography, with the acronym EGA (which we will have to replace with an ad hoc text one of these days...). Mebkhout's name is absent from both the text and the bibliography. There is no trace of it in the entire volume.

(*) (May 2) It is in fact appropriate to add a fourth “beneficiary”, which I only discovered recently, namely Neantro Saavedra, who was discussed in a previous note by b. from p. (note (*) page 921).

The most blatant manifestations took place after my “departure” in 1970. This departure and a certain general state of morals in the “big world” of mathematics (**), created the favorable external conditions for such a large-scale operation, undoubtedly unique of its kind in the annals of our science.

This operation aimed first of all to discredit most of the major ideas that I had introduced into mathematics (***), and to bury the unifying vision in which they were inserted; then, to discredit or gloss over the role of the worker in the creation of those, among the tools that I had shaped under the dictation of these ideas and inspired by the overall vision, which served as basic tools in the work of Deligne and my other cohomologist students; and finally, in a final internship, to take ownership of the authorship of the ideas and tools which were fortunate enough to be adopted by my students, or to end up imposing themselves despite the boycott that they had imposed on them (*).

This operation ended in 1982, with the publication of the volume Lecture Notes 900, consecrating the reappearance of patterns on the mathematical public square, in a narrow form (compared to the vision which had emerged for me during the sixties) and under the authorship (implicit and obvious) of Deligne. It finally found its epilogue the following year, in “The Funeral Eulogy” in three parts served in the jubilee brochure of the IHES, published on the occasion of the twenty-fifth anniversary of its existence.

The discovery of the “mine” that constitutes these texts was made on May 12 last year (**), in the note “The Funeral Eulogy (1) — or the compliments” (n° 104). It continues near

(**) (May 2) There was surely a two-way action: a certain state of degradation of mentalities (in which I myself had participated before my departure) favored the escalation of looting and excavation of my work by a group of my former students, whose growing cynicism surely contributed in turn to creating the more or less generalized state of corruption that I see today. (***) (May 2) for details on this subject, see the note “My orphans”

(n° 45) and especially “The tour of the construction sites — or tools and vision” (n° 178). (*) (May 2) I point out, among these ideas and tools that I had

introduced, which were buried and which ended up imposing themselves despite the boycott established by Deligne and my other cohomologist students: the derived categories, the motifs (narrow version, it is true) and the yoga of Galois-Poincaré-Grothendieck categories (renamed “Tannakian” for the purposes of the Burial), the formalism of non-commutative cohomology around the notions of fields, sheaves and links (developed by Giraud according to the initial ideas introduced by me from 1955).

(**) It was the same day on which the shameless massacre of the original SGA 5 seminar had already been revealed to me, at the hands of Illusie and with the active support or eager connivance of all my cohomologist students, under

five months later in the note (n^y 105) which follows it, “The Funeral Eulogy (2) — or strength and halo (**). I will limit myself here to recalling in a few words the spirit and all the salt of this unusual “Elogium”.

The brochure presents (among other things) a “portrait gallery”^{*} made up of short topos on the various present and past professors of the institution celebrating its jubilee. In the text (from Deligne's pen) dedicated to me, a text which is supposed to evoke a work, the word “co-homology” or “motif” is not pronounced. Neither does the word “schema”, nor any other that could suggest a theory that I would have developed or a theorem that I would have demonstrated and which could perhaps have been useful. On the other hand, I am generously adorned with bogus superlatives and other^{*} high-sounding kindnesses: “gigantic work...”, “twenty volumes...”, “greatest natural generality...” (****) “great careful terminology...”, “problems... in the line he was tracing... became too difficult... the. It is the funeral with great fanfare and under the spotlight, with the well-sent “compliment”, enormous and plethoric like the deceased whose memory it is a question of “honouring”, and at the same time a finesse in the comical insinuation which was decidedly lacking in the clumsy ancestor...

In the topo dedicated to Deligne (and revised by him), there is nothing that could lead one to suspect that I have anything to do with “the” demonstration of Weil's conjectures (“proverbially difficult” — duly blown out of proportion. On the contrary, it is emphasized that “this result seemed all the more surprising” because it had to be demonstrated, so to speak, against a “series of conjectures” of my own (this Grothendieck decidedly never makes any others! I, which moreover (it is added, to leave no doubt about what there is reason to think about them) “are as unaffordable today as then ” (read: when I had the unfortunate idea of stating them...).

These two minute portraits, and a third part which completes them remarkably (in a single pithy sentence of three lines^(*)) are real gems, undoubtedly unique too

the tender eye of the “entire congregation”. ..

(**) For an unexpected broadening of the reflection on The Funeral Eulogy, see also the following note “The muscle and the guts (yang buries yin (1))” (n^y 106), which at the same time opens the long reflection “The key to yin

and yang”. (****) This French-little-negro is a truly priceless find, to evoke in a comical way (and casually...) the plethoric and gratuitous bombing of a gigantic chatterbox...

(*) I discovered this third part during the reflection in the note already cited “The Funeral Eulogy (2) - or the strength and the halo” - and it immediately appears to me more significant than the two others gathered I

in their genre, among the Eulogies served with skill in honor of a “deceased” (still not deceased in this case!). They are explored, with all the care they deserve in the three consecutive notes already cited (nos. 104–106), and, under the more penetrating light of the dynamic of the “reversal of yin and yang”, in the note (a few weeks later) “The funeral of yin (yang buries yin (4))” (nǚ 124).

(May 9, 1986) Reader Warning. The long suite of twenty-eight notes and sub-notes that I called “The Apotheosis”, dedicated to the operation of appropriation of the work of Zogh-man Mebkhout, was written in several consecutive movements, in during the months of March, April, May last year. Apart from occasional reminiscences and reflections concerning my own work, my main source of information in the following account has been the principal person concerned, namely Zoghman Mebkhout himself. Over the weeks and months since April 1984, he sent me quite impressive documentation (at least for someone like me), which I am far from having read all of, or even , assimilated even if only in the essentials. In addition to these incontrovertible written documents, most of them published elsewhere, I made free use of the explanations provided by Mebkhout, whether in letters or orally. Thus, the history that I was led to trace of the development of the theory of -Modules since 1975, as a new theory of cohomological coefficients (in the spirit of my ideas of the sixties, and in particular of my crystalline ideas), can it be considered essentially the “Mebkhout version” of the history of the -Modules. This is all the more the case, as I had taken care to gradually send Mebkhout my notes on the Apotheosis, to give him the opportunity to rectify any misunderstanding that might have crept in. . I have taken into account (most often in the form of footnotes) all the observations he may have made to me in this regard.

After distribution of the provisional print run of *Récoltes et Semailles*, from October last year, I was contacted by Pierre Schapira, then by Christian Houzel, to point out certain flagrant inaccuracies in the version of the facts presented in *Harvests and Semeshs*. The situation was considerably clarified during a correspondence with both of them which continued between last January and March. It now appears to me that in the “Mebkhout version” (which did not lack internal consistency) the

It was he who inspired the name “The force and the halo” given to this note.

true, the tendentious and the downright false mix inextricably(*).

These distortions are most blatant at the level of [?] Mebkhout with the Japanese school, and especially with Kashiwara to whom [?] devoted a violent hatred, almost bordering on obsession. There has been an “exchange of bad behavior” between him and Kashiwara, since 1976 it seems, the origin of which escapes me. My text from last year, as is right, only mentions Kashiwara's “bad practices”, while almost completely ignoring the influence of Kashiwara's ideas in Mebkhout's work. Mebkhout goes so far as to attribute to himself (“with the best faith in the world”, that's one thing understood the authorship of important ideas due to Kashiwara. It would seem that Kashiwara (in retaliation perhaps) does not is not done for lack of giving him his due, by attributing to himself (without mentioning it) crucial results due to Mebkhout without any possibility of doubt).

I have endeavored to rectify the most flagrant errors by footnotes(*), dated May 6, 7 and 8, 1986. This is clearly insufficient, to rectify an overall “illumination” which , at present, appears to me to be unrealistic: the one which presents the new theory of coefficients as being, more or less, the solitary work of Zoghman Mebkhout alone. This is why it seemed necessary to me to add, in addition, a few pages of critical retrospective, at the end of the Apotheosis. These will also complement the comments along the same lines that I make in the “Postscript Epilogue” (ReS 0, Letter, section 16 “Honorable Amendment — or the Spirit of the Times (2)”), and the public apologies that I present to Kashiwara, for a tendentious presentation of the facts, of which I had endorsed without reservation.

It is quite clear to me that this violent hatred, dedicated by my friend Zoghman Mebkhout to a distant Kashiwara, was for him a welcome diversion, to avoid confronting a reality much closer and much more painful. Because the burial of Mebkhout, the unrepentant successor of Grothendieck, was not the work of a distant Japanese school (if not very incidentally). This burial, culminating in the “hap-

(*) In a way that is all the more inextricable, of course, because my friend Zoghman will not budge on anything, just as sincerely convinced of his own distortions as the first of my students to come...

(*) Exceptionally, I also made some small text corrections here and there (compared to the provisional edition of last October), each time I found that it was simpler than adding corrective footnotes, and that this did not drastically modify the meaning and spirit of the initial text. I finally deleted a passage of a page and a half in the sub-note “First troubles - or the bosses from across the Pacific” (in “La mafia” n° 1712 , (b)), replacing them with a short retrospective comment.

pening” incredible of a “Colloque Pervers”, was done right here. It was orchestrated by the students of this “ancestor” from whom Mebkhouit publicly drew inspiration — by the very people he considered “his own”. Mebkhouit was betrayed by the very people he admired without reservation, and in whom he had complete confidence.

It is fortunate that I did not follow Mebkhouit in giving his dispute with Kashi-wara a place that did not belong to it, in my account of the unprecedented collective mystification which took place around his work. Also I think that the pages which follow, despite the incorrect or tendentious passages (pointed out in their place) concerning the role and the merits of Mebkhouit, are nevertheless a detailed and faithful reflection of a certain “spirit of the times” such as he now reigns (among others, surely) in certain mathematical circles, including among the most exclusive. And these very distortions which I had echoed and endorsed, also appear to me as an eloquent sign of these minds, of which my friend Zoghman Mebkhouit (I eventually realized) is also, in some of its reflexes and behaviors, a product.

(171(i)) (March 1 and May 2–8 (**)) In each of these “four partial operations” that I distinguished in my anticipated burial, it is Deligne who visibly plays the role of head of orchestra (or rather, Grand Officiant at the Funeral), with the more or less active participation of my other four cohomologist students, and with the connivance of a considerably larger group of mathematicians, all well aware of the situation (lacquer -it is obviously not made to displease them...). This “collusion group” takes on impressive and almost incredible proportions in the fourth of the partial operations, which I am now preparing to review.

IV Operation “The Unknown on Duty” (or “Perverse Colloquium”).

(**) (May 13) This note and the following four initially formed a single note, “The Apotheosis” (n^o 171), of March 1. It also included the previous note “The Jewels” (n^o 170(iii)). It was taken up and considerably expanded between May 2 and 8, especially with regard to the mathematical part, and split into the four separate notes “The ancestor”, “The work...”, “and the windfall”, “The day of glory” (n^o s 171 (i) to (iv)), in addition to the note “The jewels” already mentioned. There are added the eight sub-notes (n^o 171 (v) a (xii)) relating to the four notes in question, and the four sub-notes (n^o 1711 to 1714) of the month of April, recounting the strange misadventures of my friend Zoghman struggling with the “law of the middle?”, according to what he told me about it himself. It is all of these sixteen notes (nos. 171 (i) to (xii) and 1711 to 1714) which now constitute the part “The Apotheosis” in “The Four — Operations” (of which the said Apotheosis constitutes the fourth and — until further notice — last...).

It is the operation of appropriation of the work of Zoghman Mebkhout — the only mathematician (to my knowledge) who assumed the risk, after my departure from the mathematical scene, of appearing as a “continuer of Grothendieck” .

This operation continued over ten years, from 1975 to today. At the risk of repeating myself, I will first recall the historical context.

In the second half of the 1950s, I developed a formalism of “coherent duality” in the context of diagrams. These reflections, motivated by the desire to understand the meaning and the exact scope of Serre's duality theorem in analytical geometry and especially in algebraic geometry (*), had been pursued in almost complete solitude, although not having the good fortune to interest anyone other than me (**). It is these reflections which led me to gradually identify the notion of derived category, whose objects presented themselves as natural “coefficients” in the homological and cohomological formalism of spaces and varieties of all kinds, fitting into a first embryo of a formalism of “six operations” on ringed spaces (while waiting for ringed topos). Four of these operations were already more or less familiar to me since my 1955 work “On

(*) My first reflections on duality were placed within the framework of analytical spaces, and predate those of Serre. Using “Evetesque” duality techniques and the Poincaré-Grothendieck lemma on the operation $\tilde{y}$ (which I had just demonstrated), I had proven that if X is a Stein variety, the $H_i(X, \text{resp. } H$

$\tilde{y}_i(X, \text{---})$ I did not then think of applying the same method to the case of vector $\tilde{y}_i(X, \tilde{y}X)$ (resp. fibers (not having noticed this very simple algebraic fact, that the operator $\tilde{y}$ is differentiable with values in a holomorphic vector fiber), nor to varieties complexes other than $\overline{OX}$ -linear, extends to different forms—those of Stein (the only ones then which are familiar to me). Serre's demonstration of his theorem of analytical duality in the general case is practically the same as that which I found in a particular case.

(**) Of course, the mathematician of all from whom I would have expected to have an interest in my reflections on coherent duality, was Serre. He was interested, I seem to remember, in the generalization of his duality result to a coherent sheaf F (not necessarily locally free) over X projective and smooth over a body k , identifying the dual of $H_i(X, F) \text{ Ext}_{\tilde{y}^1}(X; F, \tilde{y}X)$. This gave an intrinsic geometric meaning to a “calculatory” result of FAC (which had of course intrigued and inspired me), in the case where X is the projective space. But apart from this result, one of the first in my journey to discover duality, and still close to what was familiar to him. Serre always refused to listen when I wanted to talk to him about duality. I think I hardly tried to talk to anyone else about it, apart from (much later) Hartshorne, who gave a very fine seminar on my ideas at Harvard, published in 1966 (“Residues and duality” by R. Hartshorne, Lecture Notes in Mathematics, n° 20, Springer Verlag).

some points of homological algebra" (*), except for the language of derived categories: with the notations which emerged over the following years (at the same time as the point of view of derived categories), these are the "internal" operations $\otimes^L$ and $R\mathrm{Hom}$ ("total derivative functor" version of the formalism of the Tori and Exti sheaves introduced in "Tohoku"), and "external"

Lf^* and Rf_* (inverse and direct images "à la Leray"), forming two pairs of adjoint functors (or bifunctors). In the case where f is an "immersion" morphism $i: X \hookrightarrow Y$, there

further adds the pair of adjoint functors Ri_* , $Ri^!$. are respectively embodied the operations of "extension by zero" and "local cohomology with supports in X ". The common thread in my reflections is to arrive at a duality theorem (global, at a time when there was no question of a local version yet...), generalizing that proven by Serre for a locally free coherent beam on a smooth projective variety on a body. It was a question of giving a formulation which would apply to any coherent beam (or complex of such), or even a quasi-coherent beam, without any assumption of smoothness or projectivity on X (only keeping cleanliness, which then seemed essential (**)).

Moreover, in analogy with my reflections on the Riemann-Roch theorem, I felt that the correct statement had to concern, not a variety on a field, but a proper morphism $f: X \rightarrow Y$ of schemas, otherwise arbitrary. It is through successive approximations, over the course of several years of work (*), that the theorem of global duality is gradually separated from its superfluous hypotheses, at the same time as the notion of derived category also leaves the limbo of anticipation to take concrete form, and give the formalism and the statements an intrinsic meaning, without which I would have felt incapable of working! It is first of all to arrive at a statement of global duality which fully satisfies me, that I introduce the formalism of dualizing complexes and identify the theorem of biduality, and that I discover (under suitable Noetherian hypotheses) the existence of a dual-complex

(*) In Tohoku Mathematical Journal, 9 (1957), p. 119–221.

(**) See note b on this subject. from p. (*) page 940, below

(*) It goes without saying that during these "several years of work", I had many other irons in the fire than just questions of coherent duality! I then became familiar with the then-known foundations of algebraic geometry (with the point of view of FAC de Serre as the main reference), with the problem of Weil's conjectures, and with the formalism of intersection multiplicities learned in a course by Serre, where he developed his idea of "alternating sums of tors". This would trigger me in 1957 on the formalism of K-theory and the Riemann-Roch-Grothendieck theorem, very close (in its spirit) to my reflections on duality.

injective, essentially canonical isomorphism that I call the "residual complex", and a variance theory for it. A first formulation of the global duality theorem, which at one time seemed to me to be "the right one", was that the functor Rf_* commuted to dualizing functors on X and on Y (for two dualizing complexes which "correspond"). It was only subsequently that I discovered that the variance theory for dualizing complexes alone (via residual complexes) is generalized by an entirely natural functor $!$ where "unusual inverse image", of local nature on X new, the functor Rf_* . From then on, the definitive formulation of the duality theorem for the proper morphism f also appears: this is a sequence of three adjoint functors, the first of which is adjoint to the right of Rf_* , therefore inserting itself into

$$L f^* \dashv R f_* \dashv R f^!$$

To have a fully completed formalism, all that was missing was the description of a functor $Rf^!$, "direct image with proper supports", for a (separate) morphism of any finite type, generalizing the functor already known when f is an immersion, reducing to Rf_* for proper f , and forming with Rf_* a pair of adjoint functors $Rf^!, Rf_*$ not to be distressed in the fifties of this imperfection of a formalism whose generalization to a pair of adjoint functors $Rf^!, Rf_*$. Don't rap me- scope, beyond the coherent schematic or analytical duality, still escaped me (*).

(*) Of course, I realized that already in the case of an open immersion $f: X \hookrightarrow Y$, where the $!$ therefore coincides with the functor $L f^*$ of "restriction to X ", the usual left adjoint Rf^* ("extension by zero outside of X ") does not preserve quasi-consistency. On the other hand, I had also verified that apart from hypotheses of quasi-consistency and even for a proper morphism based on a point, there is no "duality theorem".

Thus, the impossibility of defining an $Rf^!$ under general hypotheses seemed acquired to me and in the nature of things.

It was Deligne who realized in 1965 or 66 (barely arriving!) that we could give meaning to $Rf^!$ by recovering the coherent duality theorem for a separate morphism of non-proper finite type, on condition of working with coefficients which are (complexes of) quasi-coherent pro-sheaves. This beautiful idea, however, did not have the success that one might have expected - nor did the initial formalism of coherent duality, which it made it possible to perfect.

Deligne took up this idea successfully in his attempt to construct "De Rham coefficients" on algebraic schemes with zero characteristics, a promising attempt which he nevertheless abandoned for profit and loss after my departure in 1970. It was at Mebkhout, six years later, that it was reserved to identify "the" good category of "De Rham coefficients" (crystalline) that I had been anticipating for ten years then

This gap only became fully apparent to me in 1963, when I discovered that in the context of equal cohomology (with “discrete” coefficients) which had just been born, there existed a formalism in all respects analogous to the coherent formalism, with in addition, precisely, a functor Rf_* (from direct image to proper supports) defined for any separate morphism of finite type. It is moreover by guiding myself step by step on the work that I had done in the coherent case years before (without interesting anyone other than myself), that I arrive then (in the space of a week or two, breaking everything), from the two key theorems of change of base, to establish the complete formalism known as “the six operations”. This is a formalism of duality incomparably more perfected and more powerful than that previously available in the transcendent context, for topological varieties alone (and local systems on them), and even more satisfactory than the formalism to which I had arrived at coherently.

My work on coherent duality is presented in the well-known seminar of R. Hartshorne “Residues and Duality” (published only in 1966) (**), those on equal duality in one or two chapters of SGA 4, and especially in the SGA 5 seminar, which was entirely devoted to it. And it is only at the moment of writing these lines that I suddenly realize that apart from a few sporadic precursor texts (in the Cartan and Bourbaki seminars of the 1950s), there is no systematic text published ; and from my pen, exposing formalism and the yoga of duality, whether in the coherent context, or in the

(**) The seminar in question (published in Lecture Notes in Mathematics, n° 20, Springer Verlag) sets out the essentials of my ideas on the formalism of coherent duality, centered on the formalism of six operations, biduality, and a theory of “residual complexes” (which are canonical injective representatives of dualizing complexes). These ideas were taken up in the analytical framework by Verdier and especially by Ramis and Ruguet. The Hartshorne seminar does not contain, on the other hand, various finer developments, intimately linked to this formalism: a theory of residues (for finite and flat schemas on any basis), and a cohomological theory of the different, which I have never been published (to my knowledge). In the 1950s I had also developed the formalism of the “determining module” of perfect complexes, which was ultimately to be included in SGA 7 and whose editor (following the example already well established by certain “editors” of SGA 5) declared forfeited after two years.

Finally, I point out that in the wake of my reflections on coherent duality in the 1950s, I was led to introduce and develop somewhat the purely algebraic version of Hodge's cohomology and that of Deligne-Riemann, and in particular the formalism of cohomology classes associated with an algebraic cycle (supposed to be smooth initially), and a theory of Chern classes, based on the model of that which I had developed in Chow theory.

flat context. The SGA 4 presentations devoted to this theme, centered around the single “global duality theorem” for a separate morphism of finite type (by establishing that $Rf_! \dashv Rf^*$ adjoints), were written by Deligne two or three years after the seminar, according to my handwritten notes (*). As for the SGA 5 seminar, it was practically sequestered for eleven years by my cohomologist students, to be finally published (after Deligne's coup-de-saw text in 1977), copiously pillaged and unrecognizable, trashed by the care of the “editor” - sic Illusie, to the entire devotion of his prestigious friend (**). It is there, in this ruin of what was one of the most beautiful seminars that I have developed and, with SGA 4, the most crucial of all in my work as a surveyor - this is the only written trace of my hand, or at least according to notes in my hand, which evoke somewhat the formalism and the yoga of flat duality, and, beyond this still partial yoga, and irresistibly suggested by it, that of the six operations.

My students took care to erase all traces of this last yoga (*), which had a suggestive force

(*) This writing by Deligne takes place after the SGA 5 seminar. Moreover, Deligne did not follow my notes to the letter, but a variant of my method, which Verdier had introduced in the context of locally compact spaces in 1965 (essentially taking up the spread model). At that moment there was no ambiguity in anyone's mind about the authorship of all the main ideas in duality, and a fortiori, about the authorship of étale duality; it would not have occurred to anyone (not even Deligne surely!) that the fact of following a variation of my initial method, could over the following two decades be used to fish in troubled waters, and attribute to Verdier the flat duality (while Deligne pockets the rest of the flat cohomology “package...”), (**) See on this subject

the note “The four maneuvers” (n° 169 (ii)), and the sub-notes which follow her. (*) (May 8) I have just gone through my handwritten notes for the first three presentations of SGA 5, notes that Illusie kindly returned to me last year at my request. (He is the only one of the ex-editors who took the trouble to return the notes that I had entrusted to them) The first presentation consisted of a vast “overview” of what had been accomplished in the previous SGA 4 seminar, with regard to the stale cohomological formalism and its relations to various other contexts. The second presentation develops at length the “abstract” formalism of the six functors. There is an essentially complete form, but still without effort to identify the compatibilities between canonical isomorphisms. (This was a task of a more technical nature, useless at a time when I wanted above all to “transmit” this yoga of duality, the strength of which I clearly felt.)

Needless to say, there is no trace in the Illusie edition of either presentation. I ended up believing that (absorbed by more technical aspects of the seminar) I had probably neglected to present the unifying vision. In retrospect, and a year almost to the day after the discovery of the “massacre” of the SGA 5 seminar, it seems to me to have put my finger today on what constituted the very nerve of this massacre operation. It is not the disappearance of such or such presentations, annexed by a Deligne, pillaged by a Verdier, saved from disaster by Serre or torn from a harmonious “whole”, for the sole pleasure one would say, by a Illusion. But it is the very soul and nerve of this seminar, the constant and omnipresent common thread throughout this vast

exceptional, which had inspired my work on cohomology throughout the sixties. This was truly the “nerve” in the main idea of “types of coefficients” (**), of which the yoga of patterns is the soul...

Such an aberrant situation, where significant progress in a science, embodied in a new vision, is eradicated by the efforts of the very people who had been its first beneficiaries and custodians, could not have been established without this another situation, also highly exceptional, created by my sudden departure and by the conditions which surrounded it. Moreover, the turn that events were going to take had been prepared before my departure and throughout the sixties by the situation of division in which I found myself, monopolized on the one hand by endless foundational tasks that I was the only one able or willing to assume (*), and on the other hand constantly asked questions on themes often far removed from the primary bases which absorbed me in the moment, and by this very often, more intensely and more directly fascinating (**). Rarely, among the very themes that I had allowed myself the leisure to deepen and develop (such as that of

work done by only one — it is him that Illusie endeavored to eradicate from SGA 5 without leaving (almost) no trace. The very name “six operations” is absent from this seminar, as it is absent from the work of my students, who had to make a tacit pact to only pronounce these words on the very rare occasions when one or the other still finds himself confronted with the worker declared deceased, to whom (even if he is deceased) it is nevertheless appropriate to give the lie...

(**) This key idea, too, was eradicated, then forgotten, by my cohomologist students. It is one of the very first that imposed itself on me again, from the first retrospective made “fifteen years later” on my work and its vicissitudes, in the note “My orphans” (n^o 45). This note, whose name touches more accurately and more profoundly than I would have dreamed of, was nevertheless written before the discovery of the “Burial” (in the literal and strong sense of the term).

The same main idea of the six operations and the “cohomological coefficients” recurs almost everywhere, almost like a Leitmotif, when the reflection in *Récoltes et semailles* puts me back in contact with the fate of my work by those who were my students. See in particular the notes “The melody at the tomb - or sufficiency” (developing somewhat the “melody” or the theme with variations, types of coefficients), and “The tour of the construction sites — or tools and vision” (notes n^os 167, 178).

(*) I remind you that this work of foundations of vast dimensions ended abruptly and even today, from the very day of my departure. This is an eloquent sign of this “misunderstanding” of which I speak in the note “The hoard” (n^o 169 (v)). Everyone was ready to bring their furniture and settle down permanently in such houses that I had built - but to move around and use trowel and plumb line to build again and arrange, and even if only under pressure peremptory needs, there was no longer no one...,

(**) If I had listened to myself, how many times would I have planted there the endless stains of foundations that I

duality), I also found the leisure to write in a form suitable for publication the results of my work, (in accordance with the demanding criteria which are mine). This is how I was often led to leave the task of writing to others (whom I trusted completely, of course) (as was the case for the "duality" theme, both in the coherent framework that the discrete framework spreads), or to develop such initial ideas that I knew were fruitful? (like that of derived category, or crystalline cohomology, to name only those among a large number). In a "normal" situation, that of good faith responding to the trust I had in addressing motivated students, learning from me their profession and the major bases for their future work, everything was for best, and for the greater good of all concerned, including the scientific community. But it is true that this unusual situation placed considerable power in their hands (without the idea having ever occurred to me before last year...), and especially after my departure.

Right after my departure (or even mime, even before...) some among them hastened to abuse this power, to steal away the work and the vision, to undermine the worker, and to take advantage of such fashioned tools by him which they thought they had use of.

My work on coherent duality has never enjoyed great popularity, it seems to me (*). On the other hand, those of flat duality attract immediate attention. But it would be more accurate to say, I believe, that what attracts attention is that someone has "managed", no matter how, to demonstrate in the flat context the analog of the duality of Poincaré, the one who was well known to everyone for almost a hundred years I imagine, in the familiar context of oriented topological varieties. This was therefore "a good point" for flat cohomology (there was little doubt that it was "the right one" for Weil's conjectures ("proverbially difficult"...)). This means that the mathematical public on the lookout for the famous

coltinais at the service of all, to launch myself into the unknown adventure which constantly called me, the true one - instead of leaving to others the pleasure of surveying the new lands that I had discovered. Today I see that these lands still remain virgin, or almost, and that those in whom I thought I saw pioneers, had already chosen to be comfortable rentiers even before my departure...

(*) As I point out in a previous note by b. from p., these works inspired those of Verdier, Ramis, Ruguet in coherent theory of analytical spaces. It has been clear "always" (for me at least) that the same formalism can only be found in the rigid-analytical context (which, too, is still in its infancy stage, from the echoes that come back to me). On the other hand, Mebkhout tells me that the Japanese school of analysis was quite inspired by "Residues and Duality", while refraining from ever naming the worker. In these times, the opposite would have been surprising...

conjectures, reacted as a “consumer”, who is reluctant to recognize a new and profound vision of things and to assimilate it, and only retains a “result” with a familiar appearance. More than twenty years later, I note that this powerful vision of the six operations and the types of coefficients, expressed in a disconcertingly simple formalism, remains ignored by everyone (with the sole exception of the solitary worker), when it is not the object (when someone decides to make some allusion to it) of jokey or ironic comments (**). Such scattered ingredients of my panoply are used here and there without allusion to my person (and with ready-made replacement fathers), and very particularly the formalism of biduality, since the great rush on intersection cohomology, after the memorable Colloquium (in 1981) which will be discussed. But the vision, of childish simplicity and perfect elegance, which nevertheless gave eloquent proof of its power (*), remains ignored, the object of disdain of those who prefer to disdain (and pillage...), rather what to understand.

If what I did with my hands and with my heart was ahead of its time by twenty years or perhaps fifty, it is not through the immaturity of the mathematics that I found by putting my hand to the dough, thirty years ago. It is due to the immaturity of men (**). And it is this same immaturity that my posthumous student and sole continuator, Zoghman Mebkhout, was confronted with. I had the great luck, before my departure in 1970, to be confronted with it only in the form of incomprehension, which never departed from dispositions which remained friendly, Zoghman Mebkhout, arrived on the mathematical place in other times than the one whose work he recklessly continued, he was entitled, after incomprehension and disdain, and when the tool value of one of his results was finally recognized, to the malevolence of his elders and all the weight of the inequity of an era. But I anticipate...

One of the most important discoveries that I made in mathematics, and which remains practically unknown to everyone, was that of the ubiquity of the duality formalism that I had begun to develop in the 1950s: the “formalism of six variances and biduality” applies both to the “continuous” coefficients initially considered (theoretical

(**) for details and comments, see the sub-note “Useless details”, n° 171 (v): in particular part (a), “Packets of a thousand pages...”.

(*) For details about these “clear proofs”, see the subnote “Useless details” (n° 171 (v), part (b) “Machines to do nothing...”.

(**) For a start for reflection on this subject, see the sub-note “Freedom...”

rie “consistent”), and to “discrete” coefficients. This ubiquity appeared, like a barely believable surprise, in the spring of 1963 - it is thanks to it, and to nothing else, that I was able to develop a formalism of flat duality and achieve what I call the “mastery” of equal cohomology. And from that time on, I was intrigued, without dwelling on it too much it is true, by the question of a theory that would be “common”, whether in the schematic, or complex analytical, or even topological framework — a theory which would “cover” the two types of coefficients. The cohomology of De Rham (an old friend of mine...) gave a first indication in this direction, suggesting to look for a “common principle” in the direction of “modules with integrable connection” (or “stratified modules”, maybe...). These give rise to P. a “De Rham cohomology” (with discrete coefficients, morally), which is thus put in relation to the coherent cohomology. This approach later suggested to me the idea of “crystal” and “crystal cohomology”, without however still being sufficient (it seemed) to provide the key to the description of a complete formalism of the six variances for types of “coefficients” which, in a suitable sense, would encompass both discrete (“constructible”) coefficients, and continuous coefficients (*).

It does not seem that any of my students were able to sense this problem (**), with the sole exception

(*) While writing these lines, my memory on this subject was still vague. It revived later, and I come back in more detail in the sub-note “The absurd questions” (n^o 171 (vi)),

(**) I spoke about this problem to Verdier, after he had developed (as I suggested to him) the theory of duality of topological spaces (or at least, an embryonic theory), on the model of the one that I had developed in the open context (see on this subject the subnotes n^o s 811 , 812). It must have been around the mid-sixties. Obviously it didn't “tilt” then - the very meaning of the question (a little vague perhaps, it's true) seems to have escaped him. However, surely I had to mention De Rham's cohomology, both differentiable and analytically complex, which relates Serre duality and Poincaré duality, concerning both types of coefficients.

(May 14) Moreover, since the 1950s I knew that we can generalize Serre's duality theorem to the case of a complex of differential operators between locally free sheaves on a clean and smooth relative diagram, so as to also encompass the cohomology of De Rham (therefore, morally, a cohomology with discrete coefficients), this is therefore a duality result very close to that of Mebkhout in the analytical framework, which will be discussed in the following note. I did not then pursue this path, mainly, I believe, because I did not see how to make a suitable “derived category” with the complexes of differential operators, in the absence of a good notion of “quasi-isomorphism”. It is also true that the isolation in which I worked, on questions (coherent cohomology) which obviously interested no one in the world other than me, was hardly stimulating for piling on an additional generalization (with the differential operators replacing linear morphisms) on top of those that I had already identified in my

by Deligne. He devoted a whole year's seminar (at IHES, in 1969/70 I seem to remember) to developing a formalism, which at least allows him, for a schema X , to describe cohomology spaces (called "De Rham") which, in the case where $k = \mathbb{C}$, restore the ordinary complex "Betti cohomology" (defined by transcendental means). The coefficients he worked with were "stratified promodules" and complexes of such promodules. It was not clear, however, whether these coefficients would be included in a formalism of the six operations (*), and Deligne decided not to pursue this path. If I remember correctly, what was especially missing (*) to give confidence, was a description in purely algebraic terms (using coherent or pro-consistent modules and stratifications), therefore valid on any basic body with zero characteristics, of the category of sheaves of $\mathbb{C}$ -vectors "algebraically constructible" on X (**), which is defined by transcendent way when the basic body is

in previous years. However, I was quite ready for Mebkhout's point of view, where the passage to the corresponding D -Modules (to the components of a complex of differential operators) gives a key of perfect simplicity, to construct the derived category that is necessary. As early as 1966 (but without realizing it clearly at the time) I had in hand a dual point of view, which would have allowed me to make a derived category using "stratified pro-modules" (idea subsequently developed by Deligne, in his outline of a theory of De Rham coefficients, which will be discussed). Indeed, by associating with any coherent Module the pro-Module of its main parts of infinite order, which is provided with a canonical stratification, or associated with a complex of differential operators a complex of such stratified promodules, of which the Crystal hypercohomology is identified with the Zariskian hypercohomology of the complex of differential operators considered. (See my lectures "Crystals and the De Rham Cohomology of schemas" (notes by I. Coates and O. Jussila, in Ten lectures on the cohomology of schemas (p. 306-358), North Holland — especially par. 6.) We can then define the notion of "quasi-isomorphism" for a (differential) morphism between complexes of differential operators, in the usual way, in terms of the complexes of associated stratified promodules.

(*) Here again, my memory was vague, and there is an error - it was clear a priori here, for heuristic reasons of a transcendent nature, that there must be a formalism of the six operations. (See, for details, the subnote "... and hindrance", n° 171 (viii).) My error is visibly due to a deliberate intention (from the flower of conscience) to rationalize, to make something intelligible which could seem inexplicable, namely Deligne's abandonment of a "sure" research direction rich in promise. The reason is in no way mathematical in nature!

(**) I recall that this notion of constructibility had been introduced by me, among numerous variants (algebraic, real analytical, etc.) in the 1950s, at a time when I was strictly alone in interested in these questions. (See my comments from last year, in subnote # 463.)

(May 6, 1986) On the other hand, the derived categories were used systematically by the Japanese school from at least 1973, and it is undoubtedly by this route that Mebkhout was led to use them himself

the C body of the complexes.

171 (ii)) Mebkhout's work, which began in 1972, was placed in the (transcendent (and technically more difficult) context of analytical spaces. It was in practically complete isolation that he became familiar over the years which follow with my work on cohomology and with the formalism of derived categories (***), left behind by those who were my students

A common thread, which gradually takes a prominent place in his reflections, is the striking parallelism between continuous duality and discrete duality. The latter had in the meantime taken the name of "Poincaré-Verdier duality", without anyone in the great world (and especially not the new "father" Verdier) pretending to wonder about a deep reason for this parallelism. . It is the reign of the "utilitarian" and short-sighted point of view, content to use the ready-made tools that I had created, without asking any questions — and especially not such vague questions, so as not to not to say absurd! The question is not mentioned in any published text, not even (and I realize that I am to blame here...) in those of my pen (*).

commonly, despite the wind of fashion as it blew in Paris

(***) (May 14) Mebkhout has since clarified to me that these first readings of mathematical literature, around 1972, were the works of Japanese authors from the Sato school. He had a lot of trouble, he told me, finding his way there, it seemed terribly complicated to him. It was there that he found a reference to Hartshorne's book "Residues and Duality", reading which was a real relaxation for him. It is true that this book is superbly written 1 The few introductory words that I wrote for this book, evoking the ubiquity of the formalism developed there, greatly inspired it. It was from there that he began to become familiar with my work, which subsequently became his main source of inspiration. In all these works and presentations, he takes care to clearly indicate this source.

(May 6, 1986) According to the information and documents kindly communicated to me by Pierre Schapira (letter dated January 16, 1986), the launch of the theory of D -modules, at the same time as the reintroduction of categories derivatives, is done in the article by M. Sato, T. Kawai and M. Kashiwara from 1973 (Microfunctions and pseudodifferential operators, Lecture Notes in Math. n° 287, pp. 265-529), already cited in ReS II (note by b. de p. (*) p. 322). I admit that I had the most vague ideas about the beginnings of the theory of D -modules, which I would also have placed at the beginning of the sixties, and I was entirely unaware of the leading role that Kashiwara had

played in it. . (*) (May 14) However, I remember that during the SGA, 5 seminar, I was constantly mindful of the ubiquity of the formalism that I was developing, and I did not miss an opportunity to point out the variants possible in such other contexts, for the ideas and techniques that I developed within the framework of cohomology

The very formulation of the common formalism makes essential use of derived categories. Mebkhout makes it his constant working tool, going against the wind of fashion and the disdain of his elders, starting with the one who (we don't really know if it is willingly or reluctantly...) then appears as the "father" of said categories, always known as Verdier. Compared to the arsenal that I had introduced, the essential new ingredient of Mebkhout is the half-crolocal analysis of Sato and his school. More precisely, Mebkhout borrows from them the notion of $\mathcal{D}$ -module on a smooth complex analytical manifold (equivalent to the notion of "crystal of modules" that I introduced around 1965–66, which retains meaning in broader contexts, and in particular on singular varieties), and especially the notion of $\mathcal{D}$ -consistency and the delicate condition of holonomy on a coherent $\mathcal{D}$ -module. Moreover, it makes essential use of a theorem of Kashiwara from 1975, according to which the cohomology sheaves of the complex of differential operators associated with a holonomic $\mathcal{D}$ -module are analytically constructible. These were a point of view and results that I was totally unaware of before Mebkhout spoke to me about them two years ago and Deligne must have been equally ignorant of them in 1969/70, at the time of his reflections, which then remained without following, towards a formalism of De Rham coefficients. It is by putting together the two currents of ideas that Mebkhout achieves a common understanding of the two types of coefficients on a smooth complex analytic variety X , in terms of complexes of differential operators, or (better and more precisely, in the more flexible language of $\mathcal{D}$ -modules) in terms of complexes of modules with coherent cohomology (*). This is his great contribution to contemporary mathematics.

More precisely, if $\mathcal{D}_X$ is the full subcategory of the derived category $D^b(X, \mathbb{C})$ formed from complexes of $\mathcal{D}$ -vector sheaves $\mathcal{F}_X$ formed from complexes on X —

discreet spread. It seems unbelievable to me that I did not mention during the oral seminar, the problem of a synthesis of the two types of coefficients, if only in the final presentation on the open problems, which also disappeared body and good edition-massacre. Needless to say, no allusion to such a problem is found in this edition, carefully expurgated of anything that would not fit with the strict label: "volume of technical digressions"... (May 19) See also at

this subject the subnote "The Dead Pages" (n° 171(xii)).

(*) For details on the subject of the language of $\mathcal{D}$ -Modules, its relation to that of complexes of differential operators and that of crystals, see the subnote "Five photos ($\mathcal{D}$ -Modules and crystals)", n° 171 (ix), part (a).

analytically constructible homology, and finally by $\text{Coh}^{\sim}(X) = \underline{D}^{\sim} \text{coh}(X)$, Mebkhout highlights fundamental functions

$$\begin{array}{ccc} \text{Cons}^{\sim}(X, C) & & \text{Coh}^{\sim}(X) \\ & \searrow M \quad \swarrow N & \\ & \text{Cris}^{\sim} \text{coh}(X) & \end{array}$$

(Meb)

where the right functor N is the “tautological” functor, total derivative of the functor extension of the scalars by the obvious inclusion X . The left functor M , or “Mebkhout functor”, is much deeper in nature (**). It is fully faithful, and its essential image is the full subcategory of $\text{Cris}^{\sim} \text{coh}(X)$ formed of complexes of $\mathcal{O}_X$ -Modules with bundles of cohomology not only coherent, but more “holonomic” and “regular”.

These are subtle local conditions, the first introduced by the school of Sato, the second defined ad-hoc by Mebkhout (*), drawing inspiration above all (he tells me) from my theorem of comparison between cohomology De Rham algebraic and De Rham cohomology

(**) For an “explicit” description of a closely related functor M modules, see the [17] in the context of $(\tilde{Y})$ -already cited subnote nc 171 (ix), part (b); “The good Lord’s formula”.

(*) The name “regular” is taken, of course, from the classical terminology for the “regular critical points” of the differential equations of functions of a complex variable. If $i : U \hookrightarrow X$ is the inclusion of the complement $U = X \setminus Y$ of a divisor Y in X , one writes saying that the canonical morphism

$$Ri^{\text{me}}_{\tilde{Y}}(CU) \xrightarrow{\sim} Ri_{\tilde{Y}}(CU)$$

from the “meromorphic direct image” of the CU restriction from C to U , towards the ordinary direct image, induces a quasi-isomorphism for the associated De Rham complexes.

In the case where FU is reduced to a “local system” ie to a coherent $\mathcal{O}_U$ -module with an integrable connection, this notion is equivalent to that of Deligne. This is also visibly inspired by my comparison theorem (with this difference that Deligne takes care not to point it out, while Mebkhout constantly takes care to clearly indicate his sources). Mebkhout only became aware of the notion of Deligne after having introduced his own definition, which is of a transcendent nature. He had not previously sought a purely algebraic description of his condition. Deligne’s work showed that in the particular case considered, Deligne’s algebraic condition implied that of Mebkhout, and Mebkhout verifies that the reverse is also true. This therefore provides the key to a purely algebraic description of the regularity condition of Mebkhout, for any complex of $\mathcal{O}_X$ -Modules with coherent and holonomic cohomology.

complex analytical (ie complex Betti cohomology). These conditions (and this is what for me is their main interest) are in fact “purely algebraic”, retaining meaning in particular in the case where γ is not necessary) on any body of zero characteristic.

The Mebkhout functor M (or “God functor” (**)) is described as a quasi-inverse functor of the functor

$$m : \text{Cris}\tilde{\gamma}(X) \text{ where } \text{long } \tilde{\gamma} \text{ Cons}\tilde{\gamma}(X, C)$$

$$m : F \tilde{\gamma} \text{DR}(F) \stackrel{\text{def}}{=} \text{RHom}(\underline{\quad}_X, F),$$

restriction of the functor (defined on $\text{Cris}\tilde{\gamma} \text{ coh}(X)$ as a whole) associating with each complex of γ -modules (with γ coherent cohomology) the complex of differential operators (or “De Rham complex”) associated (*). Kashiwara's constructibility theorem implies that when F is holonomic (and a fortiori, when it is regular holonomic), $\text{DR}(F)$ is indeed in $\text{Cons}\tilde{\gamma}(X, C)$, which allows us to define the functor m — a definition obvious, of course, as a child, and yet which no one apart from Mebkhout (and until the moment of the “big rush” again, five years later...) had thought of (**)! (For this we would have had to remember

Mebkhout tells me that the Japanese have a notion of “micro-differential system with regular singularities”, which they used in a completely different spirit (for analysis purposes, and not geometry). After the rush on the God theorem, this was a ready-made way (among many others) to confuse the issue and to conceal the pioneering work of Mebkhout. It would seem that the two notions are equivalent - and chances are, given the state of deliberate chaos in the subject, that no one has ever bothered to check it. Mebkhout only ever worked with the notion of regularity as he introduced it in 1976 (and which appears in his thesis, submitted two years later).

(**) For the origin and meaning of the name “theorem (or functor) of the good Lord”, see the note “The unknown service and the theorem of the good God” (n° 68), written elsewhere before I learned of the mystification of the Perverse Colloquium or even of “the Burial in all its splendor”.

(*) See on this subject the note already cited “The five photos (crystals and γ -modules)” n° 171 (ix), part (a), “The album “De Rham coefficients”.

(**) (May 7) It is necessary to call the two functors m, M , establishing in one direction and in the other the equivalence of crucial categories, the Mebkhout functors, and the same for the functors $m \tilde{\gamma}, M \tilde{\gamma}$ re-lative to $\tilde{\gamma}$ -Modules. (About these, see the note cited “The Five Photos” (n° 171 (ix), part (b).)

By composing these functors with the natural dualizing functors, we find two other pairs of functors quasiinverse of each other, $(\tilde{\gamma}, \tilde{\gamma})$ and $(\tilde{\gamma}\tilde{\gamma}, \tilde{\gamma}\tilde{\gamma})$, which are contravariant, and more convenient in certain respects (see cited note). These are the four “Meckhout counterfactors”.

of a certain yoga, that of derived categories, which everyone by mutual agreement had decided to bury, alongside the deceased who had introduced it among other bombings of the same style.. (***)).

Furthermore, the condition of regularity, beyond that of holonomy, was released by Mebkhout “on measurements”, precisely in such a way that it becomes reasonable to hope that the functor m , thus restricted, is fully faithful and even, an equivalence of categories.

He arrived at this conviction in 1976. He ended up proving it, in a very similar form at least (*), in his thesis/early 1978.

(***) (May 7) More than once Mebkhout was treated like a joker, who believes that writing arrows between derived categories (we're asking you a little!) and $R\text{Hom}$, is doing maths... He did not let himself be shaken, any more than I did in time when I introduced (in 1955) the global and local Ext of bundles of Modules (while waiting for the $R\text{Hom}$ with or without underlines), which made everyone seasick and justified the most express reservations towards me (at least until 1957, the year of RiemannRoch-Grothendieck...).

All this did not prevent Mebkhout from trusting his own flair, and following him wherever he led. He got to work with his bare hands, without experience, without anyone's help. He was sure that the theorem he suspected must be true — all the indications he had in hand were consistent. With a little experience, it would have been obvious that he already had everything in hand to prove it, with the now standard means that the first of my students to come along would apply in a jiffy. But reduced to its sole resources, the theorem seemed dizzyingly distant and inaccessible to him - he hardly dared to hope that he would ever prove it.

1

If he struggled to prove it, for almost two years, it was because he did not have the advantage, as my students had, of being supported by a benevolent elder, and to learn from me a certain standard technique for unscrewing constructible beams, combined with the resolution of singularities à la Hironaka. The statement he made is certainly a profound statement and the demonstration is also profound, but today of a standard nature. In retrospect, it appears that the difficulty he had to overcome was mainly psychological, more than technical: working against the flow, and entirely reduced to his own lights...

(*) (May 5) In his thesis, Mebkhout states and proves the corresponding equivalence theorem for $\tilde{y}$ -Modules, and gives a remarkable explicit expression of the quasi-inverse functor M . See on this subject subnote 171(ix) (part (b)), and also the subnote “Blooming of a Vision — or the Intruder” (n^o 1711). Mebkhout had reached the conviction in 1976 that the two functors m , m (therefore also the function i of extension of scalars, which is discussed in the last subnote cited) are equivalences, and the explicit form of the functor quasi-inverse of $m\tilde{y}$. The result which appears in his thesis, concerning $m\tilde{y}$, is from 1978. From this moment, he has in hand all the ingredients for the demonstration (analogous, but presenting additional technical difficulties) in the case of m .

Given the general indifference which greeted his thesis, passed in February 1979, he made no effort to

This is above all the great new theorem brought by Mebkhout, representing the crowning of eight years of obstinate work, pursued in complete solitude. It contains, in a single concise statement, a whole range of profound results, of increasing generality, patiently identified and proven one by one, between 1972 and 1980. For some major milestones in this solitary journey to the discovery of a “philosophy” new in the cohomology of varieties, I refer to the subnote “The three milestones — or innocence” (n^o 171 (x)). In this note, my purpose will be above all to describe in a few words the new panorama which presents itself, at the end of this first long stage of the labors of the solitary worker, Zoghman Mebkhout.

The crucial fact (clearly recognized by Mebkhout already in 1976) is that the category $\text{Cons}(X, C)$ (of a “topological” nature) can be interpreted, thanks to the Mebkhout functor M , as a full subcategory of the category $\text{Cris} \text{ coh}(X)$ the which retains meaning in framework of “abstract” algebraic geometry; it can also be interpreted, “morally”, as a sort of “derived category” formed with complexes of differential operators in the ordinary sense (*). The full subcategory in question, defined by conditions of holonomy (à la Sato) and regularity (à la Mebkhout), is visibly the good category

write a proof in form for the case of m as well. The ingredients are the same as for m and are inspired by the demonstration of my comparison theorem for De Rham's cohomology of complex algebraic varieties (which he learned about in 1975), and the unscrewing techniques of SGA 5 (which he, learned in “the good reference” of Verdier, while the SGA 5 seminar continued to be carefully sequestered by the care of my dear cohomologist students). It was only at the end of 1980, given the importance that his ideas had for the demonstration of the Kazhdan-Lusztig conjecture, that he took the trouble to write a detailed demonstration in the case of m (where we do not have in advance of a quasi-inverse functor). This demonstration is published in “Another equivalence of categories” *Compositio Mathematica* 51 (1984), p. 63–88 (manuscript received 10.6.81).

I emphasize on this subject that between 1975 and 1980 (apart from an allusion in a few lines from Kashiwara in 1980, which will be discussed in the subnote “La mafia” n^o 1712), nowhere in the literature outside from the work of Zoghman Mebkhout alone, there is no question of the functor m or m nor of a “philosophy” of duality, putting into precise relationship analytically constructible discrete coefficients, and complexes of regular holonomic modules, or complexes of $\tilde{y}$ -holonomic modules. As we will see, when finally the importance of this relationship is recognized, with “Kazhdan-Lusztig” and the rush on intersection cohomology (under the rule of Deligne), the name of Zoghman Mebkhout is eliminated without fanfare, through a hushed, smiling and discreet agreement, and with implacable efficiency...

(*) For the precise relationship between the two points of view, I refer to the widely cited subnote “The five photos” (n^o 171 (ix)), part (a).

of “De Rham coefficients” that I anticipated from the sixties, and which was still missing from my panoply, in zero characteristic, to complete and to connect together, as in a single large range, the “-adic coefficients” that I had cleared in 1963; it is also the category that Deligne had tried to grasp at the end of the sixties, without succeeding (it seemed) in a way that satisfied him. This category, obviously, will have an essential role to play in algebraic geometry (and in particular in the description of the category of patterns on a base diagram X ...). The name that stands out for this category, for me at least, is that of “category of De Rham — Mebkhout coefficients” (**), denoted $\mathrm{DRM}_{\tilde{Y}}(X)$ (or $\mathrm{Meb}_{\tilde{Y}}(X)$), or $\mathrm{DRM}_{\tilde{Y}}(X/k)$ (or $\mathrm{Meb}_{\tilde{Y}}(X/k)$) in the schematic framework, when

It is via the functor diagram (Meb) above, which summarizes Mebkhout's philosophy (dating back to 1976, and established by him over the following years), that the coherent crystalline coefficients (ie the objects of $\mathrm{Cris}_{\tilde{Y}} \mathrm{coh}(X)$) can be seen as a “common generalization” of “discrete” (constructible) and “continuous” (coherent) coefficients. The category formed by the first is identified in any case, by the Mebkhout functor M (a functor of deep nature), with the full subcategory of the category

(**) The general incomprehension of the crucial role and meaning of this category already appears in the fact that it has still not received a name or a concise notation. Instead (in the texts that I looked at) the authors limit themselves to vague references to “regular holonomic differential systems” (very fine who will find their way there!), to “construction” or “correspondence” or “relationship” (supposed to be well known) between these and bundles (C-constructibles — and always, it is necessary to say, in passing, lies in silence the one who was the solitary craftsman, setting in motion all this great hype around the new cream pie of the beautiful world: “the -modules”).

(*) In the algebraic case, it is necessary to impose, in addition to the local “regularity” condition, a regularity condition “at infinity” (in the case of a non-proper variety) to find the “good” ones. De Rham — Mebkhout coefficients, which will correspond, in the case where the basic body is the complex body, to the C-vector complexes on X with algebraically (and not only analytically) constructible cohomology sheaves; It is for these coefficients also that we have a “comparison theorem”, generalizing my result on the cohomology of De Rham, namely that the “total crystalline cohomology” $R\tilde{Y}_{\mathrm{cris}}$, taken from the algebraic point of view (Zariskian) or from the transcendent meaning, is “the same”. This statement in turn must be considered as a special case of a more complete statement, namely that the “six operations” from the algebraic point of view are “compatible” with the six operations from the transcendent point of view.

If my students had not been so busy burying the master's work, it was at the very beginning of the seventies (if not from the sixties...) that they would have released the theory of coefficients which was essential, in all its simplicity and all its power...

coherent crystalline formed by the De Rham-Mebkhout coefficients. The situation is less good for the tautological functor N , which is not fully faithful. But to console ourselves and to complete the picture, we can add that in each of the categories present, we have a natural dualizing functor, giving rise to a theorem of biduality ("trivial" for the D -Modules, and using all the force of the resolution of Hironaka's singularities in the case of constructible C -vector sheaves), on the model that I had identified in the coherent (commutative) framework first, in the discrete framework then (in 1963) (**). That said, the two functors M and N are compatible with the functions

(**) (May 5) The extension, from the flat context to the analytical context, of my results of biduality, and of the stability of constructibility by the operation $R\text{Hom}$, is also automatic and was known to me from 1963, Verdier had been working with me for three years, getting into the yoga of derived categories (for which he was responsible for creating a systematic theory) and coherent duality. It was from me that he learned the techniques which make it possible to extend the formalism of coherent duality to the case of discrete coefficients. As we have seen, he appropriated the yoga of duality and biduality, in the complex analytical context, in "the good reference" thirteen years later (in 1976), with the connivance of Deligne and my other student cohomologists, all well aware of the situation.

In the massacre edition of SGA 5 the following year (1977), Illusie retained (in presentation I) the biduality theorem, so that for a reader of both texts, Verdier's deception is obvious - but apparently it was considered normal by everyone (given the times...). On the other hand, Illusie refrained from including the result of stability of constructibility by $R\text{Hom}$, which I had of course given before even stating and demonstrating the biduality theorem, including my demonstration (copied by Verdier) does not depend in any way. Thus (it still has to be done 1) Illusie limits itself to establishing the stability in question when the second argument is the dualizing complex!!! this was a way of covering for his friend Verdier, by making a little less apparent the fact that from start to finish (and except for three pages which were discussed in his place) Verdier's article is copied on my presentations of SGA 5. The best thing is that the stability in question is already an immediate corollary of the biduality formalism (which does not prevent it from being mathematically crazy to pretend not to establish the stability of constructibility by $R\text{Hom}(F, G)$ only when G is the dualizing complex). But the complacent Illusie is careful not to mention this corollary in his presentation, so as to maintain the appearance that the result of stability which appears in the friend's "The good reference" would indeed be his creation.

We can wonder why, under these conditions, Illusie still kept the theorem of biduality - massacre for massacre's sake, it was no longer close to that! But if he had emptied it, he would have been obliged to also empty the eternal Lefschetz-Verdier formula (which makes essential use of it) - that is to say precisely the "head of the Trojan horse" : the formula whose so-called crucial role in SGA 5 was to justify the impudent "saw" operation of his other friend, shattering the unity of my work on flat cohomology.

Congratulations to my ex-student Illusie, the clever "editor"-gravedigger...

natural dualizing factors (*). Additionally, if F are crystal coefficients in duality on

Mebkhout proves that the C-vector complexes "crystal cohomology" of F and F on X (**)

$$R\check{y}cris(F) \cong R\check{y}cris(F)$$

as complexes of topological vector spaces, are "in duality" by a natural coupling, in other words that we have a coupling which is a duality (of EVT)

$$H^i_{cris}(X, F) \otimes H^j_{cris}(X, F) \cong C$$

(for any integer i). This duality theorem "caps" the ("absolute") duality known in the case of discrete coefficients (which Mebkhou calls "Poincaré-Verdier duality"), and in the case of coherent coefficients (which Mebkhou calls "Serre duality"), in a duality that I would call "Mebkhout duality", and which he called "Poincaré-Serre-Verdier duality" (*).

(*) For the tautological functor N , this compatibility is itself tautological. On the other hand, for the Mebkhou functor M (or what amounts to the same thing, for its quasi-inverse $m = (G \rightarrow DR(G) = RHom(\_, G))$), this is a profound result, proven by Mebkhou in 1976 (under the name of "local duality theorem"), at the same time as the global duality theorem for $\mathcal{D}$ -Modules, which will be discussed shortly. This does not prevent "everyone" from using now this result as self-evident, and above all (something which is even more self-evident) without ever the slightest allusion to a certain vague unknown...

(**) I recall (cf. "The five photos", n° 171 (ix)) that the crystal cohomology ("absolute") of F on defined as

$$R\check{y}cris(F) \stackrel{\text{def}}{=} RHom(\_, \_X, F) \check{y} (RHom(\_, \_X, F) = R\check{y}(DR(F))).$$

On the other hand, the index 1 designates the cohomology (crystalline in this case) with proper supports, ie

$$R^1(F) \stackrel{\text{def}}{=} R\check{y}!RHom(\_, \_X, F).$$

(*) As I already say elsewhere (in the note "Le compère", n° 63), Mebkhou "could not do less" than tip his hat to his "benefactor" Verdier (since the latter had given him communicated the provisional "good reference"), wherever he had the opportunity. However, none of the essential ideas for one or the other duality (and even less, so to speak, for the one which covers them) are due to Verdier. In fact, apart from the duality theorems of Poincaré and Serre in their initial form, which of course served as starting points for me, all the essential ideas are contained in the formalism of the six variances and of bid-uality that I introduced and developed at length in both contexts, coherent and discreet, in solitude.

It was with this in mind that I wrote last year, in the note "The victim — or the two silences" (n° 78) that

These are, in my vision of things, the first stages of a program of duality of vast dimensions, including in particular (among others (171 (xi))) the development of a formalism of the six operations (and of biduality) for the coefficients of De Rham * Mebkhout on finite type schemes on a field of zero characteristic (while waiting for better). Given the conditions of isolation and the atmosphere of indifference in which Mebkhout had to work, there could be no question for him of developing a complete formalism, such as that which I had developed in the two contexts in which he worked. was inspired (171 (xii)). Among the main results that he identified and proved during the eight years 1972–1980 (171 (x)), the one that appears to me to be the most important in the perspective of my program of the sixties is of course the one that highlights in evidence 1 has a good category of crystalline coefficients, called “de Rham — Mebkhout”.

It turns out that it is this result also which, from October 1980, experienced the most brilliant, astonishing even, fortune, even though it was appropriated (like previously the p -adic cohomology, or the crystalline cream pie of car. p) as a tool only, torn from a vision which gives it all its meaning and all its force.

Even more than for Mebkhout's other results, and just as in my work developing the formalism of biduality and the six operations, the language of derived categories is essential here to identify the simple and deep relationship between discrete coefficients and coherent coefficients ($*$) described in the theorem of the good Lord (aka Mebkhout the never named...). Thus, it is almost twenty years after the creation of the slack cohomological tool

the “protectors” of Mebkhout “had wanted him to carry in his hands a small corner of the coffin containing my remains”. It would have been right if I also recalled at this moment that Zoghman had the courage, even though he clearly felt what wind was blowing in the beautiful world, to clearly repeat in each of his articles that he was inspired by my ideas, instead of doing like everyone else and plundering the deceased while ignoring them (in writing), and displaying an air of condescension (in words).

As for the name “Serre duality” which we ended up giving to the theory of coherent duality that I had developed over years and in total solitude, it has all the more salt (and Serre, which did not ask for so much, will appreciate it even better than anyone!), that Serre had shown a total disinterest in my work on duality, thus depriving me of the only interlocutor that I could have hoped to have for my cogitations ! I believe I can say moreover that this lack of interest has been preserved intact until today, including for the notion of derived category (and other useless details...). (*) (May 7) Precisely, to a holonomic $\mathcal{D}$ -Module (complex reduced to degree zero) the good God functor generally associated with a constructible complex of $\mathcal{C}$ -vectors which will have more than one non-zero cohomology sheaf, and vice versa. The simplest and most striking example

is the one where we take a divisor Y on X an inclusion $i: U_X \hookrightarrow Y$

and the sub-sheaf of $i^* \tilde{Y}(\mathcal{O}_U)$ formed by meromorphic functions along Y .

(which everyone today uses as self-evident, while treating with contempt the vision which gave birth to it...), and thanks to this result (becoming “tart-a-la-crème”) of an obscure posthumous student, that the language of derived categories will suddenly be rehabilitated (as if it had never been buried...), under the spotlight and in the ovations of the crowd, who came to acclaim the buried from yesterday playing (modestly) the new fathers. But again I anticipate...

(171(iii)) It is Verdier who more or less appears as Mebkhout's “thesis boss”, whose work for seven years had been carried out in complete solitude. At no time was he interested in the work of this young man, visibly as narrow as he was stubborn - a vague, retarded Grothendieckian who is treated from the height of his grandeur. In the four years since the first meeting in 1975, he will grant a total of three “interviews” to this person who comes from nowhere. None of my other cohomologist students deign to take an interest in the work of said individual either. Its significance for their own research completely escapes them (although it is obvious, even to a crumbling person like me who “dropped out” of all that fifteen years ago...). They are far too locked in their trip-funeral, and in a sullen crank routine, to be able to apprehend a new thing presenting itself without a business card and without preparations, with the sole force of very simple and good things. too obvious. For a long time they buried

It is a profound result of Mebkhout, obtained in 1976 (and then absorbed in the theorem of the good Lord) that this is a holonomic and regular $\mathcal{D}$ -Module (no one before Mebkhout had ever even thought of looking at this beam as a $\mathcal{D}$ -module, and to suspect moreover that it was even coherent...). Its transformed by the good God functor is $Ri_{\mathcal{Y}}(CU)$, which has non-zero cohomology sheaves in sion 0 and 1 at least.

This is an aspect of Mebkhout's philosophy which was absent from Deligne's approach, which obtained a dictionary between sheaves of (constructible $\mathbb{C}$ -vectors and certain pro-objects of $\text{Coh}(\mathcal{Y})$) (the category of Coherent $\mathcal{D}$ -Modules on $\mathcal{Y}$) equipped with a stratification, without having to move on to plexes and derived categories. (He still took care to bring these into play, at a time when I was still around and when the idea would not be no one would ever bury the said categories...). This is (at first glance at least) an advantage of Deligne's approach, closer to the direct geometric intuition of discrete coefficients - but it is also a sign, no doubt, that his approach is less profound. I tend to believe that it will still have its role to play, however, but in “tandem” undoubtedly with the point of view of Mebkhout, who (I presume) is somehow dual.

(May 24) For details in this direction, see the subnote “The five photos (crystals $\mathcal{D}$ -Modules)” (n^o 171(ix)), part (c), especially p. 1009 et seq.

their own creative faculties, limiting themselves to being consumers of popular brand products. Subsequently, however, they will largely take their revenge on the intruder who allowed himself to see what had escaped them, like everyone else (even though they had everything, like him and beyond, to see and to do...). But here again I anticipate...

The defense took place on February 15, 1979, to general indifference. Mebkhout sent his thesis to all the mathematicians of whom he could think, rightly or wrongly, that they were interested in the cohomology of analytical or algebraic varieties — starting, of course, with all my students. Among all those who received a copy of his thesis, not a single one even acknowledged receipt of the sending, or sent a note of thanks. It is true that Mebkhout's thesis is felt, even more (it seemed to me) than some of his articles, by the conditions of adversity which surrounded it - it did not seem dense and not easy to access, to say the least, and those who weren't in on it had excuses for not having caught on straight away.

On the other hand, I found the oral explanations that Mebkhout gave me of his philosophy perfectly clear and immediately convincing, and there is no reason other than those he was able to give to Verdier (1976), Berthelot (1978), Illusie (1978) and Deligne (1979) were less so than those to which I was entitled.

It was at the Bourbaki seminar in June 1979 that Deligne learned from Mebkhout about the “Riemann-Hilbert correspondence” which appears in the unread thesis. (This was the name given by Mebkhout to the category equivalence (or to the “dictionaries”) discussed earlier.) Apparently, Verdier had never yet thought, during the past four years, to have a word with Deligne about the work of his obscure student, a work whose interest obviously escaped him completely until around the time of the Pervers conference in 1981 (where Deligne had to take it upon himself to explain to him what it was all about.. .), at Deligne on the other hand it could only “click” immediately — it was the solution, complete and concise, of the problem that he himself had left behind ten years before!

The reflex that would seem self-evident in such a situation (so much so that I still find it difficult, at this moment, to imagine how one could act differently...), is to immediately congratulate the young unknown for having finally found the end of a question, my word, a deep one, on which we had labored for an entire year, and which we ended up abandoning for profit and loss. Morals have changed a lot... Deligne, always affable of course, limits himself to a vague compliment (and yet, it warms the heart of the candid Zoghman, not spoiled it must be said and far from suspecting what awaited him): yes, he had received his thesis and

had even read the introduction, and found it to be “beautiful mathematics”.

For Zoghman it was a good day! it was surely the first time (and the last too...) where he was entitled to a compliment coming from such a great gentleman, whom everyone knows and quotes... (*)

I cannot say what was going through Deligne's head, at that moment and in the year that followed, concerning this remarkable theorem that he had just learned from the mouth of an unknown person. I presume that he must talk about it to those around him (*) — the fact remains that he communicated it in October the following year (**) to the Soviet mathematicians Beilinson and Bernstein, surely guessing that they would have it usage. The same year, in fact, it is this “correspondence” (always called “Riemann-Hilbert” when we deign to name it, and without the name of Mebkhout ever being pronounced) which is the essential ingredient, the new fact which had been missing until then, for the demonstration of a famous conjecture (***) of which I barely know except the name, the “Kazhdan-Lusztig conjecture”. this is the kick-off, at the same time, of a sudden and spectacular revival in the cohomology of algebraic varieties, finally emerging from a long stagnation of more than ten years (if we put aside the work of Deligne and the conjectures of Weil). This unexpected renewal materialized the following year, par. the “happening” of the Luminy Conference in June 1981, on the theme “Analysis and topology on spaces: singular” (****).

(*) (May 14) This is also the one and only time that Mebkhout had the honor of a conversation with Deligne. (June 7)

For another compliment, from the previous year (June 1978) and from the mouth of Illusie this time, see the note “carte blanche for pillage — or Hautes Œuvres” (n° 1714), notably page 1091.

(*) (May 14) On reflection, and from what I know elsewhere about Deligne, I doubt that he really “talked about it around him”, before doing so with a very precise idea and a well-defined plan. See the note “The Waltz of the Fathers” (n° 1764 about the very particular game played by Deligne, and the role he made the two straw fathers Beilinson and Bernstein play. (See also “Dupes' Market — or the puppet theater”, note n° 1722 (e)). (**) (May

14) This is what emerges from a letter from Deligne to Mebkhout (received October 10, 1980. For details on the Kazhdan-Lusztig episode, see the subnote “The maffia” (n° 1712), part (d), “The General Rehearsal”.

(***) The same conjecture is demonstrated, independently and nevertheless with a remarkable ensemble, at the same time (within a few days) by Brylinski-Kashiwara, with the same main ingredient, and the same manipulation of sleight of hand, and of the key role of this new fact, and of the name of the author of it. For details, see the already cited subnote “La maffia” (n° 1712) parts (c) and (d).

(****) The Proceedings of the Conference appeared in Asterisk n° 100 (1982). These Acts are also not im-

(171(iv)) Concerning this “memorable Colloquy”, I refer the reader to the note “Iniquity — or the meaning of a return” (n° 75), and to the following notes, still written on the spot and in the amazement (the word is not too strong) of the discovery. These notes form Procession VII of the Burial, which I have named “The Colloquy — or bundles of Mebkhout and Perversity”.

It is enough for me to recall here that in the Introduction to the Proceedings of the Colloquium, signed by Bernard Teissier and Jean-Louis Verdier, the famous “Riemann-Hilbert correspondence” is presented as the “Deus ex machina” of the Colloquium. It is the same in the main article which forms (with the cited Introduction) volume I of the Acts, article signed by A.

A. Beilinson, J. Bernstein and P. Deligne (and in fact written, and presented at the conference, by the latter, in the absence of the two other co-authors). Moreover, the first two authors named had been informed directly by Mebkhout (and independently of Deligne) on the ins and outs of his theorem., from the previous year (November 1980) — Mebkhout had even moved to Moscow on purpose for this purpose (*). Teissier was also aware of it first hand and for a long time - let's not talk about Verdier, who had chaired Mebkhout's thesis jury... Finally, I add that it had been decided “in extremis” to ask Mebkhout to give a presentation on the theory of $\mathcal{A}$ -Modules (which no one apart from him knew much about, among the people there), Mebkhout thus had the opportunity to inform the entire Conference (**) on the theorem which he had modestly called by the name

awarded prizes only in December 1983, and appeared in January 1984, almost two years after the date marked on the volume.

(*) See, on the subject of this instructive episode, the cited subnote “La mafia” (n° 1712), part (d) “The General Rehearsal (before Apotheosis)”. (**) (May

14) About the participants in this strange conference, very “festival of Grothendieckian maths”, but with absolute silence on the late ancestor himself, just as on the obscure posthumous student “who had had the gift... of bringing together all these beautiful people... As the only students “before 1970” to participate in this Conference, there were Deligne and Verdier, but already enough to occupy the front of the stage , strangely enough, Berthelot and Illusie (whose work was particularly marked, I could say, by the absence of Mebkhout's point of view exhumed there with great fanfare) are not at the party. On the other hand, Contou-Carrère (student after “) got lost there, happy that he had been invited to tell his method of solving Schubert's cycles.

I remember that he came back euphoric, entirely identified with all these brilliant and famous people with whom he felt like you and you, and who had come to listen to him, visibly interested but yes! He put on a contrite air to talk to me about Mebkhout, who had opened up to him with bitterness but he couldn't really say why - for him Contou, in any case life was obviously beautiful!

It was in June 1981. Four months later, (in response to his unique application for a position in Perpignan) it was

of Riemann and Hilbert, without leaving the slightest ambiguity (we suspect) about the authorship of this result, which had the gift (unforeseen for him as for everyone) of bringing together all these beautiful people .

Moreover, it is in vain that the reader would look for traces of Mebkhout's presentation in the Proceedings of the Conference. Verdier kindly explained to him afterwards that only articles presenting new results would be included in the Proceedings, while those in his thesis were already two years old and more. It is also in vain that the reader would look for a trace, in the said Proceedings, of the slightest bibliographical reference or the slightest indication that is even slightly precise regarding the origin of this famous theorem, which is however not due to Riemann nor to Hilbert. He will also have difficulty finding any trace of the name of Zoghman Mebkhout there. This name does not appear in the first volume, nor in the text, nor in the bibliography. In the second, it appears twice in the bibliography, by references-“thumb! ” (we cannot say that we have not cited it!) from the pen of Brylinski and Malgrange – references which have nothing to do with the theorem of the good Lord – alias Riemann-Hilbert – alias Deligne (and especially not Mebkhout) (*).

the well-delivered slap, harshly received by him as a humiliation and an affront. (See, for this episode, the note “coffin 3 - or the Jacobians a little too relative” n° 95, in particular p. 404–406. This note was written without me yet making the connection with the episode of the participation of Contou-Carrère, a little neglected no doubt, in the brilliant Colloquium.)

(*) (May 14 and 26) Apart from the participants already named, I was aware by name of the participation of Brylinski, Malgrange and Laumon. All three were perfectly aware of the work of Mebkhout, who had had the opportunity to inform everyone in detail, even outside of the conference he had given at the Colloquium. This did not prevent Brylinski and Malgrange/in their article published in the Actes, which essentially uses the ideas of Mebkhout and the theorem of the good Lord, from evading the crucial role played by the appearance of these ideas. news and new tools, only the name of their author.

As for Laumon, he will make up for it later, in an article in collaboration with Katz. It is the same N. Katz who already distinguished himself in 1973 with “Operation SGA 7”, which was discussed in the note “Episodes of an escalation” (n° 169 (iii), episode 2). He had also been informed directly by Mebkhout of his results in 1979 (see on this subject the note “Carte blanche pour le pillage”, n° 1714). This is the article “Fourier transformation and augmentation of exponential sums” (which also constitutes Laumon's doctoral thesis), which article has been circulating in preprint form for two years (I was even given a copy by Laumon). These authors develop a Fourier transformation for the p -adic coefficients, based on the model of that introduced by Malgrange in 1982 in the case of p -modules (in the wake of the work of the vague unknown, and without mention of his name, as of course). Mebkhout's work represents the heuristical foundation of the theory developed by Malgrange as well as that of Laumon-Katz, in the same way as they were

To return to the Colloquium in the flesh, we must believe that none of the brilliant mathematicians assembled in these places, deigning to come and listen to the presentation given to them by a vague stranger on duty, noticed that the “correspondence of Riemann-Hilbert” which he presented to them as being his own, was indeed the very one which the most brilliant of them had already so brilliantly introduced, as the heuristic keystone of his brilliant presentation, which formed (in the opinion of the organizers, Teissier and Verdier (*)) the “highlight”

for the article already cited by Beilinson-Bernstein-Deligne (on the bundles called by them, wrongly, “perverse”). That said, Laumon and Katz also follow the general trend (no mention of the unknown person in service either in the article or in the bibliography - no more than any mention of the ancestor, it goes without saying. ..), following the tone given by Deligne, Verdier, Berthelot, Illusie, Teissier, Malgrange, Brylinski, Kashiwara, Beilinson, Bernstein — I apologize for affecting the alphabetical order in any case that already makes twelve directly and actively involved in the brilliant mystification-scam of the Colloquy Pervers - not to mention Hotta putting his own effort across the Pacific, and thirteen!

Malgrange is also not cited in the article in question - apparently there are coteries of allied authors who cite each other without fail, avoiding quoting those next door even when they pump on them as best they can. In any case, when it comes to the ancestor or the vague unknown, they all agree.

It's often brilliant math, surely - but as an old-fashioned person, I'm not indifferent to the mentality and it takes away my appetite for reading, and ultimately, even for doing it. Not the ones they do, anyway. The smell is too painful...

I also took a look at the article by JL Verdier, “Specialization and moderate monodromy bundles”, published in these same Proceedings. Unsurprisingly, of course, I saw the “Riemann-Hilbert correspondence”, without allusion (in the text or in the bibliography) to the vague unknown whose thesis he had chaired. He must have forgotten, of course... There is also talk of a simple Riemann-Roch theorem (this name means something to me...) - and I had also seen that in Laumon-Katz's article. As neither one nor the other says a word about a certain deceased person, I tell myself that this “theorem” must surely be due to MM. Riemann and Roch, just like the particular case which is found among the “technical digressions” and the “nonsense” of SGA 5 (not counting the presentation of conjectures, providentially emptied by the far-sighted and astute “editor” Illusie.. ..).

Mebkhout had also sensed a link between his philosophy and the Fourier transformation as early as 1977, at a time when he was strictly alone in being interested in a yoga of duality, linking $\mathcal{D}$ -Modules and discrete coefficients (like myself). I was previously, for the formalism of coherent duality, then flat).

This “Fourier transformed” intuition remained vague — the context was no more encouraging for him to pursue this path than for me, around 1960, to broaden my theory of coherent duality to a theory which encompasses the complexes of differential operators (see b. de p. note (**)) page 946 — There is an allusion to the Fourier transform on p. 2 of the introduction to the “Poincaré Duality” talk by Z. Mebkhout, in seminar on singularities, University of Paris VII (1977–79).

(*) This is the implicit “opinion” which clearly emerges from the Introduction to the Conference, already mentioned, signed by Teissier and Verdier.

of all this brilliant Symposium on the so-called (one wonders why) “perverse” beams. Still, none of them was surprised, one must believe, that the name of the vague stranger was not mentioned in this presentation, which certainly flew so high that there was no instead of burdening oneself with little; nor, two and a half years later, with the publication of the Actes (early 1984), that the name of the said unknown person does not appear either, neither in the introduction (already mentioned) nor in the article in question of Deligne et al. This article also left little room for doubt about the true authorship of this correspondence, which the main author and presenter-conjuror (*), with his customary modesty, also refrained from naming, not even the name of its two illustrious precursors.

If there were some who were surprised, they did not make themselves known until today - not to me, in any case, nor especially to the main person concerned who provided the sauce for the stuffing, namely the posthumous student and strictly unknown as it should be, today as before — Zoghman Mebkhout (**).

(171(v)) (***) (a) (May 4) Even Serre is no exception to the rule, having long ago (like André Weil) developed an unfortunate tendency to decree that mathematics which does not have time to interest him are “bullshit”. He and Weil are, however, of a format which (one might think) should put them above such childishness. In this case (and apart from the “last twenty pages” of Deligne), it is through two or three thousand pages of Grothendieckian “conner-ies” that Weil's conjectures ended up being demonstrated (and quite a few (other things too that Weil nor Serre had never dreamed of). This did not encourage Serre to be more modest, since in the very text where he presents Deligne's demonstration of the last step in these conjectures (in the Bourbaki seminar of February 1974, presentation no. 446), he takes this opportunity between all to ironize (in polite terms, of course) about the useless details with which the “1583 pages” of SGA 4 must be crammed. In this easy irony, I do not detect malice or bad faith, but rather unconsciousness. and an

(*) for details about my friend Pierre's conjuring-scam tricks around the father-
 nity of the theorem never named, see last year's note “The conjuror” (n° 75).

(**) (May 19) for details about the misadventures of my friend Zoghman, candidly lost in an environment of
 “tough guys” dressed to the nines and with affable airs, see the continuation of subnotes “Blooming of a vision —
 or the intruder”, “The mafia”, “The roots”, “Carte blanche pour le plunder” (n° 171(i) to 171(iv))

(***) This note (in three parts (a)(b)(c)) comes from two notes from b. from p. to the note “The ancestor” (n°
 171 (i)) — see the notes of b. from p. (**) p. 944 and (*) p. 945.

lightness. He will have taken the trouble to note down the number of pages of three volumes (which he has refrained from reading and the substance of which escapes him) and to make an addition - just to make fun of them with "elegance".

But everything holds together, both my former complacency towards such brilliant students, as well as this "elegance" of Serre (at a time when the Funeral had already been going well for four years...) (*), and everything that followed. Barely three years later, one would believe that one would find under the pen of my non-student Deligne, with added malice and impudence, the very terms of Serre or their innuendoes, with these "useless details" that one trims away, "the confused state" and the "gangue of nonsense" (where this same Deligne learned his trade and found his main source of inspiration), which a pale digest of his pen is charitably intended "to make people forget". Thus, from complacency to ease and impudence, we have arrived in the mathematical world, in barely ten years, to a state of morals where the simple feeling of decency seems to have disappeared.

It is not Weil nor Serre, and even less Deligne, who created the new tools that were missing for "La Conjecture", but rather the one on which they like to ironize - through deliberate ignorance or calculated malice, the effect does not is not very different. But I who, with infinite care, have written and rewritten, and caused to be written and rewritten, tirelessly, throughout the months and years, a text which exposes with all the breadth it deserves, the language and certain tools basis for a vast unifying, new and fruitful vision - I know, and with full knowledge of the facts, that there is not a page among the 1583 left behind by Serre, by my students and by unanimous fashion, which has not been weighed and reweighed by the worker and which is not in its place and fulfills its function, which no other page written to date could fulfill. These pages are not the product of fashion nor that of vanity, taking pleasure in putting oneself above others. These are the fruits of my loves and the long and obscure labors which prepare a birth.

For this part of my work, as also for all my major contributions in mathematics which have now become part of the common heritage, no one until today has been able to redo what I did (with "bullshit", "useless details" and "nonsense"), if not by copying myself (with insignificant variations (**)). Some copy (as is or in neighboring contexts, even new) by saying it (it begins

(*) (May 27) For a follow-up reflection on the mention of Serre, see part (c) of this note. (**) (June 7) I recently read Fulton's beautiful book Intersection Theory ("Ergeb-

to make themselves more than rare...), the others by playing the new fathers, and by taking on an air of disdainful condescension towards the work that they shamelessly pillage, and towards the worker who taught them their trade. This indecency was only able to prosper and spread because it found a consensus ready to welcome it, and this in the first place among those who (often by their exceptional stature) set the tone. .

(b) The yoga of the six operations is an integral part of this vast unifying vision developed in the SGA 4 and SGA 5 seminars. I would even say that this yoga is the central theme of the SGA 5 oral seminar or, to put it better, that it is its “nerve” and its soul. Also Illusie took care to remove it from the massacre edition (destined to become by his “care”, a volume of “technical digressions”...).

In the note “The Ancestor” (n^o 171 (i), p. 945) I write (without further details) that the vision-force of the six operations “gave eloquent proof of its power”. For me, perhaps the most striking concrete sign of this power is found in the mastery that we possess of equate cohomology. To achieve this mastery, in 1963, the “six operations” vision that came to me from coherent duality was my constant guiding principle. I also believe that I am the only person in the world qualified to comment on what was decisive in the development of this tool.

It is understood here that in the discovery process, the so-called “heuristic” elements are almost always decisive. If I speak of the “power” of a point of view or a vision (something of a completely different order than a theorem in itself), this cannot be measured in strictly technical terms. It is above all about its “suggestive” power, as a discreet and sure guide in the journey of discovery, prompting us at sensitive moments “the” right notion to introduce, “the” right statement to draw out and prove, “the” theory which remains to be developed. It is having forgotten such a guiding vision (after having buried it) which means that in the cohomological theory of algebraic varieties, the powerful momentum of the sixties resulted, in the years following my departure, in a state of confusion and of slump. Apart from the great “prestige question”, (namely that of the absolute values of Frobenius' eigenvalues), all the essential questions have been obstinately evaded...

As another sign of the power of the vision (or in this case, the formalism) of the six operations, I see the formula of the fixed points of Lefschetz-Verdier, both in the context

nisse”, Springer Verlag, 1984), and notes that an exception should be made for the Riemann-Roch-Grothendieck theorem.

discrete coefficients, rather than coherent ones. Here, the role of the “six operations” formalism was both heuristic (in the sense that the formula is irresistibly suggested by this formalism) and technical (in the sense that the formalism also provides the necessary and sufficient means for the proof of the formula). It is true, given the Burial, that only a tiny portion of the cohomological formalism that I had developed was used, at least until the moment of the “rush” on intersection cohomology and on sheaves. baptized “pervert” (where part of the formalism is exhumed without mention of the worker...). But I know well, for my part, that with Weil's conjectures and with the omnipresent intuition of the topos, the vision of the six operations was my main source of inspiration in my cohomological reflections throughout the years 1955-1970. (*). This means that the “power” of this vision is obvious to me, or to put it better, a reality that I experienced almost daily for fifteen years of my life as a mathematician. This experience has also been reconfirmed in a striking way in recent weeks, as soon as I reconnected with the “abandoned construction sites” of crystalline and De Rham coefficients and that of

reasons (**).

This very “subjective” experience that I have of the power of a certain vision-force, has

(*) (May 15) It is understood that the vision itself took shape gradually during this period, from the first seeds contained in my 1955 article “On some points of homological algebra” (in Tohoku Math . Newspaper). It reached full maturity in 1963, with the sudden start of étale cohomology. This happens (as if by chance) on the very days, more or less, when I introduce the “missing functor” Rf (direct image with proper support). But the role of the six operations, as “vision-force” and as an omnipresent common thread, only became fully conscious, I believe, with the SGA 5 seminar.

Since 1966, with the start of crystal cohomology, it was clear to me that the first objective (beyond the limited “running-in” program, which will be accomplished in Berthelot's thesis work) was to arrive at a formalism of the six operations (and biduality) for “the good” crystalline coefficients. It was necessary for a crumbling person (declared deceased) to come out of the coffin prepared for him, so that (nearly twenty years later, and drawing inspiration from the ideas of a vague stranger on duty and co-buried) these “good coefficients” finally end up being only defined. A description of it, for finite type schemes on Z in particular, will be found in volume 3 of *Réflexions* (with the fifth and last part of *Récoltes et Semailles*).

(**) (May 15) For the image of “abandoned construction sites” (or “desolate” construction sites), see part 6 of the Funeral ceremony (notes 176, 177, 178), and in particular the last of the three notes cited. It will have been enough for me, in addition to writing *Récoltes et Semailles*, to devote a few hours here and there to the problem of De Rham's crystal coefficients and that of patterns to see a convincing definition appear for the former, and a principle at least for the construction of the latter, in the crucial context of finite type schemes on Z . (Compare with the comments in the previous b. de p. note.)

also an “objective” meaning, difficult to dismiss out of hand. This meaning appears when we remember that (apart from a few rare exceptions) the main ideas and notions concerning the cohomology of “abstract” algebraic varieties and schemes (which everyone uses today as if they went back to Adam and Eve (*)) were released by none other than me, during this same period 1955-1970. (It is understood that I set aside here my FAC starting point, and Weil's conjectures).

This great era has resulted, mathematically speaking (and from what I have seen so far) into a morose mediocrity, the root cause of which is not at all at the technical level. It is one of the signs of this mediocrity that a powerful vision designed to inspire and nourish great designs was buried or abandoned to derision, by the very people who had been its depositaries and first beneficiaries. And another sign, that neither a Deligne, nor a Verdier, nor a Berthelot or an Illusie, fulfilled as they were nevertheless by all the facilities conferred by position and prestige, brilliant gifts and consummate experience, was able to carry out the necessary work on the De Rham coefficients, in line with their own research (and the challenged vision...); nor even recognize the innovative and fruitful work, when they were confronted with it. And it is in this same spirit (because everything fits together, once again...) that once the scope of one of the tools from the new work was finally recognized, they hastened to seize it without even understanding it, and to bury, alongside the ancestor, the unknown worker who had shaped him...

(c) (May 27) (**) The way in which I express myself about Serre came spontaneously, and stems from a perception of things concerning him, which must have formed in me over the last few years. weeks or months. However, in writing these lines, there was a residue of uncertainty or perplexity, or reserve, regarding what I had just written. I made it understood, in short, that Serre on this occasion would have lacked “elegance”!

The fact is that, in the almost thirty years that I have known Serre, his person has represented for me the very embodiment of “elegance”. I must not be the only one, surely, to

(*) About this mentality of the “user” (or “consumer”) of finished mathematical products, who has forgotten (if he ever knew...) what a creation, and also on the subject of Adam and Eve and the good God I refer the reader to last year's notes “A feeling of injustice and powerlessness...” (n° 44) and “The unknown service and the theorem of the good Lord” (n° 48). See also “Failure of teaching (2) — or creation and conceit” (note n° 44).

(**) This third part of the note “Useless details” comes from a footnote to the first part. See the reference in note to b. from p. (*) page 965.

perceive this way. It is an elegance, both in his work and in his work, and in his relationship with others, which is by no means purely formal. It also implies scrupulous probity in work, and an equal demand for probity towards others. More than once I have noted his acuity of judgment in the face of any desire for "disruption" on the part of a less scrupulous colleague, striving to avoid an embarrassing difficulty (so as not to have to recognize that he did not know how to overcome it), or some error of his own... This elegance therefore also implied rigor, both towards himself and others.

It is all these things, which for me remain inseparable from the person of Serre, which must have intervened in this "reserve of reserve" in me that I have just mentioned, in the face of the spontaneous expression of another perception of things, unexpectedly taking the lead on familiar perception. There is no question for me of wanting to exclude one of the two for the "benefit" of the other. Both have something to teach me, different aspects of a complex reality, which is in no way static. It's up to me to situate them in relation to each other, to achieve a nuanced apprehension of a person to whom I connect a past, and feelings of sympathy and respect.

This "rigor" of which I have just spoken did not extend, however, to everything relating to Serre's relationships with mathematics and mathematicians. I sometimes invoked an "unconsciousness" or a "lightness", which I could just as easily have called a "closure". It is in contrast with this attitude of "prudence and modesty" that I encountered among most of the elders who, like Serre himself, welcomed me with kindness when I started, and sometimes (and such was his case) with heat. I express myself on this subject further (in the note "Freedom...", n° 171 (vii)), where I note that this attitude had been part of "the atmosphere of respect... which permeated the environment that welcomed me".

The "closure" that I noticed at Serre, on certain occasions, is not new. I saw the first signs of it in the second half of the 1950s. I believe that she greatly limited the depth and scope of her work from the 1960s onwards. I feel a link between this aspect of "closure" towards approaches to mathematics different from his own, and a deliberate intention which developed in him little by little, to confine his apprehension of mathematical things and mathematics in a view (or "blindness", I would like to write) purely technical or technicist, closing oneself to anything resembling a vision; to something, therefore, which would go beyond the tangible, immediate, provable statement (or set of statements) or (at most) taking the form of conjecture

“pure and hard”, with entirely clear contours, “closed” in short (except that it still remains to be proven...). Looking back, it seems to me that he ended up pushing this aspect of his creative abilities to the extreme limit, the exclusively “yang” and “superyang” aspect, the “macho” aspect. Given his exceptional influence over the mathematicians of his generation, and two or three others who followed, it seems to me that Serre contributed a lot to the advent of the excessively technicist spirit that I see rampant in the seventies and eighties, the only one these days which is still tolerated, while any other approach to mathematics has become the object of general derision.

To use CL Siegel's expression, today we are witnessing an extraordinary “Verflachung” (*), a “flattening”, a “narrowing” of mathematical thought, deprived of a dimension - the visionary dimension, that of dreams and mystery, that of the depths — with which she had never before (it seems to me) lost all contact. I feel it as a drying up, a hardening of thought, losing its living suppleness, its nurturing quality — becoming a pure tool, stiff and cold, for the impeccable execution of tasks “on the fly”, tasks for public auction (*) — when the sense of purpose and direction, and the sense of these tasks themselves as parts of a vast Whole, are forgotten

(*) I take this expression (in German) from a letter from Serre, received very recently. The phrase is taken from CL Siegel's preface to Hecke's works. Serre cites this impression from CL Siegel at the very end of his letter, to immediately add: “it was unfair, and it would be even more so now, it seems to me”, however for me it clicked and it continued to work. My short reflection on the relationship between Serre and I undoubtedly came from there.

I believe, moreover, that if Serre cited Siegel, it is because in a certain way this impression, coming from one of the great mathematicians of our time, must have already worked in him; it was like a hiccup, no doubt, in mathematical “la vie en rosé”. A hiccup surely among others, but less easy to get rid of, apparently...

“Flach” in German means “flat”, “devoid of depth”; “Verflachung” designates the process leading to such a state of “flatness”, or the culmination of such a process which has just taken place. In the main text, I tried to follow the associations aroused in me by this very telling term, untranslatable as it is, unfortunately. Of course, I don't entirely know if the way in which I perceive the thing overlaps at all with the perception of Siegel, whose text that Serre cites I have not read.

(*) This image of “public auctions” must be suggested to me by the announcements of “calls for tender” (sic) with which the “CNRS newsletters” and other papers that I receive periodically, in as a newly minted research associate in this esteemed Institution. This jargon, among many other signs, show to what extent this “flattening” of the work of discovery is in no way limited to the environment that I had known well, nor to mathematical science. I have not yet found a call for tenders in pure mathematics, but it will not be long - and I can easily imagine one of my friends or students of giant antarysiér seriously

by all. There is deep sclerosis, hidden by feverish hypertrophy.

This imbalance of thought is one sign among others of a more essential imbalance, and of a deeper emptiness, of a deficiency. It is no coincidence that this drying up of thought has spread and established itself over the last two decades, at the same time as the customary forms of delicacy and respect in the relationship between people have been eroded. And it is also no coincidence that this wind of contempt which rose and whose breath I finally felt, was accompanied by a more or less generalized corruption, of which I have not finished for more of a year to go around.

Serre, until today, has felt nothing of this corruption, which surrounds him on all sides. I knew he had a fine nose, though. But the whole point is not to have a fine nose, we still have to use it, take note of what it has to tell us, even when the odors of which it speaks to us are capable of inconveniencing us; even, to worry us, when they blame us ourselves. I know very well that Serre, any more than I, would not dream of howling with the wolves, of pillaging, of scheming and of scheming) where "everyone" is pillaging, scheming and scheming. He doesn't do any of that, of course - he just holds his nose (and too bad if he has one less hand as a result...), and acts like he hasn't felt anything.

And he is there in good company - not a single one of those who were my friends, in this world which was common to us and whose smell reaches me even in my retirement - not a single one has spoken to me yet, even if by allusion, of an odor that he would have smelled and which would have bothered him. There are still many, surely, among my colleagues who continue to practice with probity the profession of mathematician, who well deserves this respect. But among those who sit in the front seats, I do not know one who had the simplicity to believe the testimony of his healthy faculties (olfactory, in this case), rather than blocking his nose to not have to say to yourself: something smells bad here - perhaps we should go and see...

But I come back to Serre's person and to mine, and to this "closure" that I have. feeling in him, which appeared I don't know when and which grew more pronounced over the years. I believe

behind padded doors, in such a committee with the forbidding acronym, to decide which "areas of research" should be declared priorities, which "approach strategies" to promote, and which "offers" from teams "classified as winners" it is appropriate to "retain" for a "pre-selection", or even, honor the jackpot, the official grant by the Supervisory Ministry, renewable every two years after favorable opinion from the Competent Commission...

that the most fruitful part of his work, the one which most profoundly influenced the mathematics of his time, is placed at the beginning, before the appearance of this closure or at least, before it took a decisive hold on its relationship to mathematics and mathematicians. It was also in these years, in the fifties, that the contact with him was the most fruitful for me, it was in these years that the role of "detonator" that Serre played with me was placed, giving my work some of its most decisive impulses. It was also in those years that a vast vision was born and grew in me, which inspired and fertilized my work in those years and until today. I can say, with full knowledge of the facts, that if there was anyone besides me who had a part in the blossoming of the vision, it was him, Serre, and in those years. And it could only be so because in these fruitful and decisive years, there was in him an openness to mathematical things for what they are, including those which still escape immediate grasp. ; those which appear reluctant at first to allow themselves to be surrounded by the meshes of already formed language - those which will perhaps require years of obscure and patient labor, if not a whole life, before condensing into substance tangible and to reveal the limbs and the shapes and contours of a body, alive and vigorous, attesting to the unexpected appearance, in the familiar context of the known, of a new being.

I believe that in the first years that I knew Serre and until towards the end of the fifties, he retained a sensitivity for this intangible and delicate thing that is "creation", and for the humble labors which prepare a birth. I believe that at one moment, he knew how to feel the blossoming of a vision, and of the language which gave it form, like the soul or the spirit, and the body... There was then a warmth without speech, a discreet and effective availability, where he could assist a laborious and intense work which was not his own, and in which, however, through sympathy and expectation, he participated.

I cannot say when and how this vivacity in him, at the level of our common passion, faded, gave way to something else, which I tried to identify earlier. Already towards the beginning of the sixties, if not before, he stopped perceiving the forest, only agreeing to see this tree or that which he found to his liking. The rest was irrelevant. It simply annoyed him, I think, to see myself so absorbed in tirelessly clearing vast, seemingly insignificant areas and patiently planting there all these things that didn't yet resemble anything, with the air of someone who would already see a flourishing forest there (*).

(*) (June 17) Among the six "construction sites" that I review in the note "The tour of the construction sites — or tools and

That didn't stop me from continuing to clear, to plant and replant, to prune, and to re-clear and re-plant — nor that we were friends as always and spent hours and hours still discussing math (on the phone, most often). When I had a clearly decided question, and on a question which was not on the index, it was to him above all that I was accustomed to address, whenever he had any insight - and often, in indeed, he had some. I continued to learn many things from him, and surely he learned things from me which might then interest him. It was better than an exchange of good practices or services — there was always a common passion that connected us, there was the fire and the spark.

But he had already ceased to be a source of inspiration for me. This source now was found in myself only (**).

(171(vi)) (May 5) (***) My memory here was a little vague, and became clearer over the following weeks, where I had the opportunity to somewhat reconnect with these questions. There were actually two distinct questions in my mind, one perfectly specific, the other quite vague.

The first question concerned the need to identify a complete theory of the six variances, for “De Rham coefficients” which remained to be precisely defined. My crystalline ideas; both in characteristic $p > 0$ and in characteristic zero, provided a very precise start - we already knew, in advance, what was to replace the “local systems” (or “twisted constant beams”) -adic (or Betti, in the transcendent framework), and it was necessary to define “coefficients with singularities”, in the spirit of the derived categories of course (*). What was missing, therefore, was a good “finitude” condition for

vision” (n^y 178), there had only been one (the “motifs” site) which had once had the good fortune to interest Serre ever so slightly - and even then... When I recently wrote without comments, in a PS, that I thought I had the principle of a shaped construction of the category of patterns on a finite type schema on $\mathbb{Z}$, he did not allude to it in his response. Clearly these “Grothendieckian maths” no longer make him either hot or cold... (**) (June 12) For a continuation of this reflection on the subject of the relationship between Serre and me, see the note “The family album” (n^y 173, part c. (“He among all — or acquiescence”), of June 11, and parts d. and e.

(***) This rating comes from a rating of b. from p. to the note “The ancestor” (n^y 171 (i)) — see note (*) page 946

(*) It is also clear, when the basic body was C , that we wanted a category equivalent to that of complexes of C -vector sheaves with algebraically constructible cohomology sheaves. This indication of great precision suggested that, by unscrewing, the neuralgic question was that of associating, with any local crystal system on a sub-diagram (not necessarily closed), a crystal beam on the am-diagram.

crystal complexes. As a zero characteristic, it is “coherence” (which neither I nor any of my students thought of, even though it is such a simple and natural idea M , combined with the more delicate conditions of holonomy and regularity, which gives the — answer, as we learned (twelve years after the start of crystalline yoga) the philosophy of the good Lord alias Mebkhout. I am waiting with curiosity if one of my ex-students will end up moving (without naming the unknown service, nor the ancestor, that's a given...) to identify the corresponding conditions in $\text{char. } p > 0$, or rather without doubt, in the rigid-analytical context of zero characteristic. Better better late than never... (*).

biant. This is essentially what was done by Deligne in 1969, except that it turned out that instead of a crystal beam there was a pro-crystal beam, which then represented an important new idea (and “obvious”, as soon as you take the trouble to look...). But systematic work with pro-objects would have required quite considerable foundational work, of which that done by Jouanolou for his thesis (on adic coefficients) gave a foretaste. We should have rolled up our sleeves again...

Mebkhout's new approach using $-$ Modules therefore amounts (from Deligne's point of view and mine) to replacing a crystalline pro-beam with a crystalline ind-beam (thanks to the ordinary coherent dualizing functor $R\text{Hom}$), and ~~pass to the~~ ^{pass to the} projective limit to find an ordinary crystal beam, ie (now assuming X smooth on a body of zero characteristic) a $-$ Module. The unexpected “miracle” then, established by Mebkhout between 1972 and 1976 (starting from an opposite “end”, cf. the note “The three milestones” n° 171 (x)), is that this $-$ Module is coherent (more precisely, with coherent cohomology sheaves*). Another equally unexpected miracle is that we can characterize the $-$ modules (or rather, the complexes of $-$ modules) that we thus obtain, by simple conditions, of an entirely new nature compared to crystal optics. Grothendieckian (namely the “mierolocal” condition of holonomy, in addition to a condition of “regularity” introduced by Mebkhout and which has become familiar in the meantime). (May 26) For details about the

duality relationship between De Rham — Mebkhout coefficients and De Rham — Deligne coefficients, see the note “The five photos (crystals and $-$ Modules)” (n° 171 (ix)), part (c). For the need to replace Deligne's point of view of procoherent modules by that of crystals in coherent promodules, and on the possibility (not yet proven) of replacing the cumbersome point of view of pro-objects (crystalline or stratified) by crystalline beams without more (by passing to the projective limit), see the same note, parts Ce) and (d).

(*) (May 26) Since these lines were written, and as an unexpected fruit of my efforts to make a story of the Apotheosis that is worthy of passing down to posterity, I have been led to release (without almost making on purpose) which seems to me now to be the good definition of the De Rham coefficients, at least for a finite type scheme on $\text{Spec } \mathbb{Z}$ (which appears to me to be the most crucial case of all). Of course, the essential new ingredient, in relation to my ideas of 1966, is the philosophy of the vague unknown, which I will refrain (like everyone else) from naming here.

The approach that I plan for finite type schemes on $\text{Spec}(\mathbb{Z})$, must also give the right coefficients

I did not pursue this question myself in the sixties, having enough other tasks and thinking that with Berthelot and Deligne in the ranks, it was in good hands (which shows that one could be wrong. ..). Deligne's work in 1969/70 nevertheless provided in principle an answer with zero characteristics, which would undoubtedly have satisfied me, if Deligne had completed this work.

But in my mind, such a conjectural theory of De Rham coefficients, even if it were to relate "discrete" cohomology (in the form of a "crystalline cohomology") and "coherent" cohomology, did not "fit" the theory of coherent duality. Thus, I did not see that a Zariskian coherent beam defined an "enveloping crystal" (**) (NB in the language of $\mathcal{O}_X$ -modules, it is the extension of the Ring of scalars at least...) — and even if I had seen it, the result obtained (already for $\mathcal{O}_X$) is not of the De Rham type. However, I wondered whether coherent duality (for example in the Serre form, if X is smooth and for locally free coefficients) could not be obtained as a "special" $F = \bigoplus_{i \geq 0} F^i$, which gives the crystal $\mathcal{O}_X$ case" of discrete duality, developed by Verdier on the model of the theory if on a complex analytical space $\mathbb{C}^n$. As it was, it looked a little crazy and immediately raised a host of questions: how to explain "in discrete terms" the role of the dualizing module (differential forms of maximum degree) ω_X , and how to take into account eveste pathologies, which had no analogue in "discrete" duality?

It was Mebkhout who was the first (and the only one until today apart from me, it seems) to understand that there is indeed a deep link between the two dualities, but that the -this is not expressed by saying that one "caps" the other, but by finding a third theory of duality (*) that of $\mathcal{O}_X$ -modules (or "crystals" on one and the other, and limiting ourselves, moreover, on the "discrete" side, to the $\mathbb{C}$ -vector complexes which are beams

cients of De Rham (Mebkhout or Deligne style, your choice) for finite type schemes on any body (of zero characteristic, or not). I plan to outline this approach in the "De Rham Coefficients" section of volume 3 of the Reflections, among other "technical digressions" that my students will be able to copy at

ease... (**) (May 26) It is perhaps better to take the enveloping "co-crystal" (see note 171 (ix) part B, for allusions to the notion of co-crystal). I will undoubtedly return to this question in the presentation promised in the previous note by b. from p.

(*) For details on the subject of this "third theory of duality... which covers the other two", see the note "The work..." (n° 171 (ii)).

of analytically constructible cohomologies. There is no doubt in my mind that this is “the correct answer” to this “vague question” (and a little off the mark...) that I didn't have never had the opportunity to ask my posthumous student...

(May 15) The writing of “The Apotheosis” became at the same time an unforeseen opportunity to familiarize myself a little with the work of Mebkhout, and with the yoga of $\mathcal{D}$ -modules which he introduced into the cohomological study of varieties. Along the way, it also brought back memories that had sunk. I noticed in particular that at the end of the fifties, or at the beginning of the sixties, I had been closer to the “philosophy of Mebkhout” than I realized only ten days ago, when writing the beginning of this note (“The absurd questions”). Within the framework of the own schemes and smooth on an arbitrary basis, I had in hand a statement of duality (in terms of a complex relative differential operators and the “adjoint” complex), “covering” the coherent duality and duality for De Rham cohomology. Technically speaking, it was little near the equivalent of the algebraic version of Mebkhout's duality theorem (of which it was question, in the complex analytical context, in the note “The work... the, n° 171 (ii)). However, my statement of duality did not satisfy me, and I did not think of publishing it or even advertise it, because it appeared to me, in the so-called form, too close to the theorem of duality of Serre (relativized on any basis, this is an understood thing), of which it is a more or less immediate corollary. To arrive at a statement that satisfied me, it would have been necessary that I know how to make a “derived category” with complexes of differential operators, so as to be able to formulate a do statement. intrinsic duality in terms of objects of these categories, based on the model of the coherent duality theory emerged over the years previous ones.

What was missing, therefore, was a good notion of “quasi-isomorphism” for a (differential) morphism between complexes of differential operators. so as to form a derived category (by formally inverting these quasiisomorphisms). It was clear that the usual definition (via the associated cohomology sheaves) could not be used in the framework algebraic (and it is undoubtedly no more so in the transcendent framework (*)). The transition to $\mathcal{D}$ -Modules matching complexes now gives a wonderfully answer

(*) I am mistaken here. Mebkhout guarantees me that for a (differential) homomorphism between complexes of differential operators, this is a quasiisomorphism (in the naive sense of the complexes of associated $\mathcal{C}$ -vector sheaves) if and only if the corresponding homomorphism for the complexes of associated $\mathcal{D}$ -Modules

simple to my former perplexity!

Not seeing a ready-made definition for the notion of quasi-isomorphism, I did not then try to find out whether it existed or not, and whether there would indeed be a remarkable derived category there. It was at a time when I was the only one interested in categories derivatives (yet much less sophisticated) formed from coherent modules and linear morphisms between these... I did not clearly feel that this question of a notion to be released from quasi-isomorphism (also a little vague, not to say far-fetched) touched on a fruitful mystery, which mystery admitted a “key” of childish simplicity! And that there was a category of remarkable “coefficients” which only waited let us define it. For this, it would undoubtedly have been necessary for my reflections to continue in an atmosphere where they meet a minimum of interest and echo, even if only among interlocutor who is a stakeholder!

It was De Rham's cohomology that drew my attention to this obvious fact. of course, that the global cohomology spaces of coherent sheaves, on a manifold algebraic X on a field k say, are “functors” not only with respect to the $\mathcal{O}_X$ -linear homomorphisms, but even with respect to all k -vector bundle homomorphisms, and in particular, for differential operators. It is this observation which motivated an embryonic reflection on a theory of “coherent” duality (or “quasi-consistent”), where the “morphisms”; between beams would be differential operators, instead of being linear. This reflection was cut short, as I said, and to such an extent even though it has not remained in a corner of my memory, as a thing (among a number of others) which one day would have to be clarified — it sank (I believe) into a totally forgotten until just a few days ago. Even my sporadic reflection on crystals, around 1966, did not bring it back to my memory, as far as I remember. However, this crystalline reflection, without my suspecting it at the time (for lack of just remember the question!), would provide me with another “dual” key in 1966 in a way that of Mebkhout, for my perplexities of yesteryear, via the complex of main parts of infinite order associated with a complex of differential operators. I'm doing al-

is a quasi-isomorphism. It is in fact equivalent (by switching to mapping-cylinder) to say that a complex of differential operators is almost zero in the naive sense, if and only if the associated complex of $\mathcal{O}_X$ -Modules is almost zero, something apparently well known (at least to Mebkhout, who demonstrates it in his inexhaustible thesis...).

lusion in a note of b. from p. written yesterday (note (**) page 946), and I intend to return to it in detail in the part of volume 3 of the Reflections, developing the yoga of "types of coefficients" and giving, in particular, a definition in the form of what I presume to be "the" good De Rham coefficients (Mebkhout style, or Deligne, as desired) on a finite type scheme on Z (for example).

Technically, and even "psychologically" (in terms of the problems already posed then/and the overall vision which gave them strength and life) everything was ready, from the second half of the sixties, to identify this definition of coefficients by De Rham.

Deligne after me was on the verge of the right notion, and he could not have prevented himself from releasing it, if a force to which he gave omnipotence over his life and his work, had not placed a premature and peremptory end to his reflections along this path...(*)

To discover is not to hit a nail, or a chisel, or a corner of steel, with shortened arms and blows of a hammer or sledgehammer. Discovering is, above all, knowing how to listen, with respect and intense attention, to the voice of things. The new thing does not spring ready-made from the diamond, like a sparkling jet of light, any more than it comes out of a machine tool however perfected and powerful it may be. It does not announce itself with great fanfare, clad in its letters of nobility; I am this and I am that... It is a humble and fragile thing, a delicate and living thing, a humble acorn perhaps from which an oak will emerge (if the seasons are favorable...), or a seed which will give rise to a stem and this to a flower. She is not born in the limelight, nor even in the light of the sun. It is not the fruit of the known. Its mother is the Night and the twilight, the elusive and contourless mists - the presentiment which escapes the words which would like to define it, the absurd question which is still sought, or some dissatisfaction so vague and so elusive and yet very real, with this indefinable (and undeniable...) feeling that something is wrong or askew and that something is wrong...

When we know how to listen humbly to these voices which speak to us in a low voice, and to follow obstinately, passionately their elusive message, then - at the end of obscure and groping labors, muddy perhaps and without appearance - suddenly the mists become incarnate and con-dense, in substance, firm and tangible, and in form, visible and clear. In this solitary moment of intense attention and silence, the new thing, daughter of the night and the mists, appears...

(*) See on this subject the reflection in the sub-note "... and hindrance" (n^o 171 (viii)).

171 (vii)) (May 4) (*) I do not claim to ask the “mature” or “wise” man, surrounded by (the immaturity and irresponsibility of his fellow men — that is not there, I imagine the image that emerges of my person in the pages of *Récoltes et Semailles* (**). However, in my relationship to mathematics at least, I believe I can say that everything throughout my life has a good quality simplicity is maintained (***), at the same time as a fidelity to my original nature. Vanity, which has been as invasive in my life as in that of any other of my colleagues, hardly interfered yet (as far as I remember) with my sound judgment and with my mathematical flair (*).

It was only after my departure in 1970 that I began to realize, little by little and each time with astonishment, how common it is, even among men with exceptional abilities, that these sometimes find themselves annihilated, blocked without hope, it would seem, by prejudices of an “irrational” nature — and all the more

(*) This sub-note comes from a note of b. from p. to the note “The ancestor” (n° 171 (i)) — see note (**) page

945. (**) (May 26) I can even say that if the writing of *Récoltes et semailles* appeals to me revealed something on this subject, it is indeed a state of “immaturity” in fact, a lack of “wisdom”, and not at all the opposite, this was perhaps the most unexpected discovery of all, and the most crucial also by its immediate implications, that the strength of my attachment to a certain past and to my work as a mathematician, this attachment/in still relatively discreet form, first revealed itself to me at the end of March last year, during the reflection in the final note “The weight of a past” (n° 50) of *Fatuity and Renewal*, is to be confronted with the brutal reality of the Burial, in its aspects especially of contempt deliberate and violent, which set in motion powerful egoic defense reflexes in me. At the same time they reveal to me the power of the links which attach me to a past, which I had previously believed had become detached from me. Over the past year, these bonds seem to have taken on new vigor, and very often (especially recently) I feel them as a weight indeed, a grueling weight in fact - like other weights which have weighed on me previously, and which were resolved...

(***) (May 16) I would have to make an exception here for a certain possessive attitude towards my “guarded grounds”, which I put my finger on in *Fatuity and Renewal*, in the section “Sports mathematics” (n° 40). These “sporty” dispositions should lead me to minimize the ideas of others, whenever they were already known to me on my side. We can therefore say (contrary to what I assert in the main text) that in these cases, my vanity did indeed interfere with “my sound judgment”, and tended in such cases to incite me to an attitude discouraging, where kind encouragement would have been in order. However, it seems to me that such situations have been exceptional in my life as a mathematician, and that they have not represented an obstacle to my mathematical creativity.

(*) See note b. from p. previous for reservations on this subject.

more tenacious! My first experiences in this direction took place in 1976 (**), and are mentioned in the note “we cannot stop progress” (nŷ 50), and a first written reflection on this subject is continued in the note “The Gravedigger — or the entire Congregation” (nŷ 97) (***), in the particular context of the Burial. It was also only little by little, and against considerable forces of inertia, that I realized that these “irrational” causes are no less perfectly intelligible, as long as we give ourselves the It's hard to stop and explore them. It's thanks to this that I ended up “accepting” them too, as best I could...

To come back to myself, and my relationship to mathematics. By my work style, I tend to operate with often hasty presumptions, without worrying about “prudence” (*); but I follow each of the intuitions (or “presumptions”) that appear to the end, which means that the numerous errors that are scattered throughout the first stages of the work end up being eliminated, to make way for an understanding of a unfailing solidity, and which (most often) really gets to the heart of things. My spontaneous way of proceeding is quite different when it comes to passing judgment on the work of others, and especially when it is placed on a subject or on registers with which I am not familiar. I have always had a tendency, it seems to me, to exercise prudence and modesty. This was indeed the example given to me by most of the

(**) (May 16) These are not really my first experiences in this sense — I had had others in previous years, with Deligne in particular, and also in my past before my departure. But these experiences remained sporadic, while the episode surrounding Ladegaillerie's thesis was impressive, due to the perfect concordance in the acts and omissions of five mathematicians (all of high level), who surely had not not agreed between them. This is my first contact with the Funeral, beyond the vicissitudes of my relationship with the sole person of my friend Pierre.

But this extraordinary weight of “irrational” factors in so-called “scientific” thought goes far beyond the context of the Burial, and even that of an era. It is not necessary to be versed in the history of science (and I am in no way), to realize that it is that at each step by the effects of an immense inertia, opposing the emergence of any innovative idea, and its flourishing when the idea nevertheless appeared. For reflections along these lines, see in particular the first two parts of Fatuity and Renewal (“Work and Discovery” and “The Dream and the Dreamer”), sections 1 to 8.

(***) This reflection deepens considerably in “The key to yin and yang”, notably, in the two notes (concerning this same “Congregation”) “The providential circumstance - or the Apotheosis” and “The disavowal (tî — or the reminder” (nŷ s 151, 152). See also the note “The muscle and the guts (yang buries yin (1))” (nŷ 106) which opens the long-term reflection on yin and yang.

(*) Regarding this style of work, see in particular the note “Brothers and spouses — or double signature” (n* 134), and also the section (in Fatuity and Renewal) “Error and discovery” (nŷ 2).

elders who had welcomed me among them, such as Cartan, Dieudonné, Chevalley, Schwartz, Leray — to name just a few. I don't remember hearing any of them express themselves peremptorily, whether for bad or good, about a work whose substance escaped them. This caution, I realize now, was part of the atmosphere of respect that I spoke about elsewhere, which permeated the environment that welcomed me (**). It seems to me that it is this prudence, a sign of respect, which was the first to deteriorate in this environment with which I identified for more than twenty years of my life. Perhaps my memory is betraying me and I am deluding myself, but it seems to me that I was relatively unaffected by this aspect of the degradation of an atmosphere of respect. I have always remained aware, I believe, of the extent of my ignorance in mathematics in general, and of my limitations in being able to understand such work by others, as soon as it was placed outside my focus of interest, strongly centered most often.

As for the works of others that I was able to understand and thereby appreciate or judge (if only I wanted to take the trouble), I don't remember either gross error of judgment, whether for bad or good, that I would have had to notice after the fact. It is also the same with the feeling I had about my own ideas and intuitions, whether this feeling concerns the presence (or absence) of a “good question”, or that of a rich substance to be probed. , or the scope of a certain idea, or the more or less complete and more or less deep understanding that I had of a situation or a thing. In all these cases, if there was an error, it was each time in the sense of a “minus”. Yes — most often the richness of a new theme or a new idea, its true scope in depth and extension, are only fully revealed little by little, over the course of weeks and months, when they are not years. This progressive confirmation of a correct initial feeling (most often), but which initially remains vague and diffuse, through more or less in-depth and more or less meticulous “work on pieces”, then comes to us as a surprise. and like a wonder, constantly renewing itself over the hours and days. This is, surely, the cause of the extraordinary fascination exercised by research work (whether mathematical or otherwise): at each step, the reality that reveals itself to our eyes goes beyond our very dreams. the most daring, in richness, delicacy and depth...

But I come back to my apprehension of the work of others, when it was placed in

(**) See the section “The welcome stranger”, n° 9.

topics that were familiar to me, even “hot” topics for me. I believe I can say that my liveliness in sensing the true significance of an idea (which often escapes the author himself) has played a capital role in my work. I am thinking first of all, here, of the exceptional role played by Serre, and of the fact that during these fifteen years of exceptional richness in my work, between 1955 and 1970, most of my ideas, and most also of my major investments, had their starting point in some idea or approach of Serre, sometimes seemingly innocuous. I plan to talk about it in more detail in the “Historical Commentaries” to the Thematic Outline (*). But this is not, however, a particular openness towards the person of Serre alone. The same thing (relatively speaking) happened with other mathematicians, both in my past as a functional analyst and in that of a geometer (**). I can say that, throughout my life as a mathematician, I have been overly “rewarded” for this simplicity of approach to mathematics, which I have just tried to understand somewhat. This simplicity, which in other areas of my life has often been lacking, is a blessing in itself. To tell the truth, the fertility and power of my work are due to this simplicity, which is also none other than that of the child...

(*) These “Comments” are announced in “Compass and baggage” (Intr. 3).

(**) As an example (among many others), I point out the principle of reduction of statements on relative schematic situations “of finite presentation” on any basis, in the case where this is the spectrum of a finite local ring (or even, of a finite body), a principle of great significance that I extracted from an idea of striking demonstration of a remarkable (and very particular) result of D. Lazare. See on this subject the note “Pouce l” (n° 77) and the note b. from p. (***) p. 297 to this one.

(May 16) I'm not sure that each time I was inspired by an idea from someone else, I took care to point it out. For example, I do not remember, in the relevant paragraph of EGA IV, having taken care to cite Lazarus, as the source of the general method of reduction which is developed there. This was a negligence which, in those times, did not seem to have any consequences. I believe that people like Dieudonné (co-editor of the EGA with me) or Serre, who must have known like me this result of Lazare, as being (without doubt) the first of its kind, would not have considered it compelling either (or only opportune) to cite it — it was in any case not in the canons of the Bourbaki style! It is true that Bourbaki made up for it in the historical notes, which are lacking in the EGA and elsewhere in my work. Today, educated by the frightening degradation of scientific ethics in mathematical circles during the 70s and 80s, I would be much more meticulous than I have been, to carefully indicate my sources, not only in the technical sense, but also in a heuristic sense, which is often even more crucial. In the historical “Commentaries” already cited, I intend to repair at least some of my omissions in this regard.

(171(viii)) (May 4) (*) I am mistaken here, and my memories have become clearer (and corrected) over the past two months, as I have regained a little better contact with the subject. In fact, Deligne's main purpose had been precisely to give this "purely algebraic description" of the discrete sheaves (of $\mathbb{C}$ -vector) constructibles and of the appropriate derivative category (**). The coefficients that he introduces (via a condition of ad hoc "constructibility" on a pro-crystalline beam, condition defined by the existence of a suitable "unscrewing", modeled on that which I had introduced in the $\mathbb{A}^1$ or complex analytical context) are made "to measure" to respond to this desiderata. From then on, it became (heuristically) "obvious" that a formalism of the six operations must exist for these coefficients (in zero characteristic), and it must even be able to be demonstrated strictly, "brutally and stupidly", by judicious application of the "Weyl principle" of reduction to the (known) case where the basic body is $\mathbb{C}$.

Therefore, it may seem a mystery, if we stop at it, that Deligne could have abandoned an approach visibly full of promise, towards the description of "categories of coefficients" which (that was the one thing clear from the mid-sixties) would have a crucial role to play in the cohomology of algebraic varieties. Thus he left it to someone else to finally identify, eight years later, a somewhat dual and more penetrating approach (*), which would immediately (**) renew the cohomological theme in geometry. The thing had not struck me so much previously, given that this beginning of a theory by Deligne took place shortly before my departure, and that nothing, at that moment, could have foreshadowed the fate that would be reserved for it. After my departure on the other hand, and practically until these very last months, I had completely lost contact with the cohomological theme.

(*) This note comes from a note of b. from p. in the note "The ancestor" (n^o 171 (i)), see the note (*) on page 947.

(**) This is, here, the category (noted $\text{Cons}_{\mathbb{A}^1}(X, \mathbb{C})$) in the note "The work...", n^o 171 (ii) formed by analytically complexes of $\mathbb{C}$ -vector sheaves on X as a full subcategory of $D_{\mathbb{A}^1}(X, \mathbb{C})$.

(*) I have no doubt, moreover, that if Deligne had not abandoned the theme of De Rham coefficients (which he got from me), he would not have been able to prevent himself, in the process, to discover (eight years before the stranger on duty) the "dual" yoga of the $\mathbb{A}^1$ -modules, and to become familiar with the ideas of the Sato school.

(**) The term "immediately" does not entirely correspond to reality as it was (but rather to that "which should have been", yes...). In fact, three years passed between the moment when the new philosophy and the new tool were ready, and the moment when the people setting the tone finally realized that there was something there that could be useful (and good to pocket...).

I had thought recently, a little hastily and without stopping, that the reason for this disaffection of Deligne for a theory in which he had invested himself for an entire year, could be due to the fact that he was not satisfied with his criterion-definition of “constructibility” by unscrewing. This could seem too simplistic, and it is a fact that it is surely less profound than the local algebraic condition of holonomy and regularity, identified by Mebkhout in 1976 in his “dual” point of view. But when you think about it, this “explanation” simply doesn’t hold up! It is certainly not because an approach to a sensitive question would be “too simple” that a mathematician in full possession of his means would abandon both the approach, and the question. At most he would abandon his first approach, the day he would have found another which would allow him to achieve a deeper and more complete vision of this same question (*).

As soon as I ask a little about this strange situation, it becomes clear that in this case again, as in many others, the motivations of my friend Pierre had nothing mathematical or even “rational”. Thinking about it again, I realized to what extent the problem surrounding the De Rham coefficients, which only took on its full meaning in the perspective of the six operations and crystalline yoga (**) (yoga that I had introduced a few years before with the crystalline topos, and in the spirit of the six operations...) — a

(*) In fact, in this specific case, it seems to me that there is no reason to “abandon” Deligne’s approach, in favor of that of the good Lord (not to mention Mebkhout). The two approaches complement each other, that of Deligne having the advantage of being closer to geometric intuition, and that of Mebkhout being technically simpler (by avoiding the use of pro-objects), and in various respects deeper.

(**) I also remember that in Deligne’s presentation of his theory, he systematically avoided recourse to crystalline language, which nevertheless gave his theory a deeper dimension, by inserting it into a cohomological formalism topological already existing. Also, I realize that, just like Berthelot and my other cohomologist students, he had lost the sense of the profound uniqueness between the crystal cohomology in characteristic p , and the crystal phenomena of characteristic zero (which were the subject of his semi-naïve). These are there. signs of a deliberate intention of ignorance of a Land Unit, which finds itself arbitrarily divided and thereby destroyed. This deliberate statement is in the nature of a “blockage”, by the intervention of forces of an egotistic nature, foreign to the drive for knowledge. For an illustration of this blockage in another of my cohomologist students, whom I knew to be gifted with a fine intuition, see subnote no. 912 to the note “The coheirs...”.

(**) This seems to emerge clearly in any case from Serre’s report on Deligne’s work, cited in subnote no. 1651 to the note “Requiem for vague skeleton” (notably p. 813). For an exploitation of this connection, see “The dots on the i’s” (note n° 164), I 4 (in particular p. 793), and its subnote n° 1641.

to what extent this whole problem was rooted in my work and in my person, and this in a way that was clearly apparent to everyone.

It is true that the problem of Hodge coefficients also came from the same master, from whom, deep down (and without his own knowledge, perhaps) the student was already distancing himself. But the connection there was much less obvious to the outside world (and no one, including even Serre, seems to have perceived it (**)), and above all: a first section of the far-reaching work that had to be done, was not part of an ostentatiously Grothendieckian vision ("six operations" or other...), not in a way clearly apparent to everyone, at least.

But it is no coincidence, as I have emphasized more than once, that the cohomological theory of Hodge-Deligne, after a spectacular start at the end of the sixties, still remains today at the stage of childhood, where the only tolerated coefficients are constant (or, strictly speaking, "smooth", that is to say the equivalents in the "Hodge-Deligne" sense of local systems), and where operations as crucial as the higher direct images of Leray Rf_* (to speak only of these) are not current. The question of defining the right notion of "Hodge coefficients" and the relevant operations on it, is not only mentioned in the Deligne's work (as far as I know), even though it was already familiar to me, unless I'm mistaken, even before I had the pleasure of getting to know it. When, after my departure and over the years, I happened to ask the question (I ended up getting tired, of course...), of what he was waiting for to ultimately develop the theory which was necessary, he invariably replied: "it's too difficult..." (*) That didn't convince me, that's for sure — if I wasn't

(*) This response was recently associated with "L'Eloge Funèbre" (or the burial by compliment), from the pen of Deligne, which was discussed again recently (see the note "Les jewels" n° 170(iii)). This "Praise" ends with this question (which is worth its weight in Peter...):

He left IHES in 1970 at a time when his passion for mathematics was fading. Are we to believe that the problems he posed in the line he had drawn for himself had become too difficult?" (emphasis mine))

This kind suggestion is taken up in part 2 of L'Eloge, devoted to Pierre Deligne, where we learn that certain conjectures of the deceased, "still as unapproachable today as then", had undoubtedly been (at least it is clearly suggested) the main obstacle that the said Deligne had to overcome, to prove a certain conjecture "of proverbial difficulty".

These connections make me understand that in the stereotypical response "it's too difficult..." from my friend Pierre, there was an undertone of derision, which must have given him all the more piquant satisfaction, as he was visible that this great daddy of a deceased person was a thousand miles from suspecting the said implication (any more than

having gone on a completely different adventure, I would have just as quickly set about it, to develop this “too difficult” theory and that of the De Rham coefficients at the same time...

With hindsight, I am struck by the parallelism between the stagnation in the Hodge-Deligne theory on the one hand, and on the other the aberrant attitude of Deligne towards the theme of De Rham coefficients (attitude culminating in the “perverse” inequity which will remain attached to the memorable Luminy Colloquium of June 1981...). These two aberrances now appear to me to be intimately linked, and this on a completely different level than the mathematical level.

It is true that, visibly, the development of a formalism for Hodge coefficients is subordinate to that for De Rham coefficients (something which was obvious to me since 1966, and which people seem to be discovering since then). a year or two, on the broken work of the posthumous student — never named...). This mathematical fact makes more striking, both the link between the two series of facts, and the aberrant character of one and the other: because this “objective” link was an additional powerful incentive (for someone from the less “in full possession of his faculties”) to develop both theories, which could therefore only clarify and reinforce each other.

The stagnation in both theories (until the Pervers Colloquy of 1981 for De Rham, and even today for Hodge) is largely due to the general slump in the cohomological theme, a slump to which I had occasion to allude more than once (*). Even ignoring the spiritual dimension of the human being, and taking into account only the factors of “profitability” through “cutting edge” scientific production, this stagnation illustrates for me in a striking way both the the unsuspected empire that occult egoic forces can take over a being, and this even in the exercise of a so-called “disinterested” science, and the (apparently) aberrant character of this empire, which here (at first view of less) seems to constantly go against the aim pursued (**).

of his status as deceased...).

(*) On the subject of this slump, see in particular “The desolate construction sites” (The Funeral Ceremony, 6.), and more particularly the note “The tour of the construction sites — or tools and vision” (n° 178).

(**) This is so, at least, if we consider as a “goal” that displayed before the world (“the advancement of Science”, let us say), or even the one, in no way bogus, which would consist in the enlargement of prestige, through the accumulation of works commanding esteem and admiration. However, it appears to me that even this “benefit” is incidental, compared to the satisfactions pursued by the most powerful occult forces, those to which my friend has chosen to give dominion over his being.

171 (ix) (*) .

(a) (May 4 and May 19–20) I recall that for a smooth complex analytical space, we designate by on

free, where we take as morphisms not only the $\mathcal{O}_X$ -linear morphisms, but the differential operators between such Modules, is immersed as a full subcategory (but by an a priori functor contravariant in that of the locally free $\mathcal{O}_X$ -Modules, by the contrafunctor

$$(1) \quad F \mapsto \text{Hom}_{\mathcal{O}_X}(F, d) \xrightarrow{\sim} \text{Opdiff}(F, \mathcal{O}_X) (\check{Y}),$$

(*) This sub-note to the note “The work...” (n° 171 (ii)) is of an exclusively mathematical nature.

It can be omitted by a reader who does not feel encouraged to understand even a little, in mathematical terms, the work of Zoghman Mebkhout and “the yoga of $\mathcal{O}_X$ -Modules”, as a new “theory of coefficients” in the cohomological theory of varieties. The following pages can be considered as a short introduction to this yoga, or to the “philosophy of Mebkhout”, situated in terms of a conceptual background and a crystal clear overview. This became clear to me in 1966.

This vision was systematically, and practically completely, obscured by my cohomologist students Deligne, Berthelot, Illusie, Verdier, who had been its main custodians. The only written trace that survives is the text of my presentations at IHES in 1966 “Crystals and the De Rham cohomology of schemes”, notes by I. coates and O. Jussila, in Ten presentations on the cohomology of schemes, North Holland pub. Co. (1968). However, this presentation contains, from a technical point of view, all the ideas for starting crystal cohomology. Apart from Mebkhout's work, it does not seem that any really crucial progress has been made at the conceptual (or other) level — on the contrary, I see a stunning regression from my ideas of the 1960s. These unfortunately only appear very piecemeal, or between the lines, in the presentation cited - the most important gap, here as elsewhere, being the absence of any explicit mention of the problem of De Rham coefficients, and a formalism of the six operations (and of biduality) to be established for such coefficients ($\mathcal{O}_X$). I was able to see that Mebkhout, although familiar more than anyone else with my written work on cohomology (and that of my students), was entirely unaware of this original problem (until two years ago) — and he told me seems that from the point of view of the mathematical “substrate” (and excluding psychological factors of a non-intellectual order), this has still been its main handicap until today.

Subsequently, I will refer to the cited 1966 presentation by

[Crystals]. (x) (June 16) For a correction, see note b. from p. (**) page 990.

Or $\mathcal{C}_d$ designates $\mathcal{C}$, provided with its $\mathcal{C}$ -Module structure induced by its $\mathcal{C}$ -Module structure canonical on the right, which commutes with the operations of $\mathcal{C}$ on the left on itself (which make of the second member of (1) a $\mathcal{C}$ -Module). This fully faithful functor also induces an (anti-)equivalence between the full subcategories formed from free Modules. This one does not admit a canonical quasi-inverse functor, "commuting to the restriction to an open" — this is why the first counterfunctor considered is undoubtedly not (in general) an equivalence. If $\mathcal{C}$ ($\mathcal{C}$ like "crystal", see below) designates $\mathcal{C}$ -Locally free module (or even free, that doesn't matter), we can certainly associate with it a functionally dependent bundle by $\mathcal{C}$:

$$(2) \quad \mathcal{C} \rightarrow \text{Hom}(\mathcal{C}, \underline{\quad}_X),$$

Here we have a contravariant functor, which could seem to provide "the" natural candidate for a quasi-inverse functor of (1). The problem is that this beam (2) is not equipped in such a way natural of a $\mathcal{C}$ -Module structure, but only of a CX -Module structure (where CX is the constant sheaf on X defined by the body of complexes $\mathcal{C}$). When $\mathcal{C}$ comes from of a locally free $\mathcal{C}$ -Module F by the counterfunctor (1), then (2) is canonically isomorphic to the bundle of $\mathcal{C}$ -vectors underlying F . The functor (1)

extends (like any additive functor) to the categories of complexes: it transforms a complex of differential operators on X (in the ordinary sense) into a complex of locally free $\mathcal{C}$ -modules, and the (contra-) functor thus obtained is of course fully faithful (for differential morphisms between complexes of differential operators, in the first category of complexes). It is in this sense that we can say that the complexes of $\mathcal{C}$ -Modules (with locally free components) "generalize" the operator complexes differentials on

The point of view of the complexes of $\mathcal{C}$ -Modules has the decisive advantage, over that of the complexes of differential operators, to fit directly into yoga (first developed in my 1955 article "On some points of homological algebra" (*)) of the complexes of Modules on a ringed space, and through there and above all, in that of the derived categories (which I had released in the years following the cited article). The crucial notion of "quasi-isomorphism" does not appear to the naked eye, when we adopt the point of view of differential morphisms in-

(**) The isomorphism written here is $u \rightarrow u$, where: $\rightarrow_X$ est "l'augmentation" $\rightarrow \rightarrow(1)$.

(*) In Tohoku Mathematical Journal, 9 (1957) p. 121–138.

be differential complexes, while it becomes manifest by passing to the associated complex of Modules.

Therefore, even more than a generalization from the point of view of complexes of differential operators, the point of view introduced by Mebkhout (**) represents a crucial as-flexibility: it is thanks to this point of view, and thanks to only him, that the complexes of differential operators can now be used as “coefficients” for a new cohomological theory, with all the wealth of intuitions attached to it. If I draw a parallel between De Rham's theory of coefficients and that of adic coefficients (which was also one of the main sources of inspiration for Mebkhout in the development of his philosophy), I would say that this first not of a conceptual nature, a “childish” step, similar to the one I took (in 1958) by introducing the notion of a flat beam (containing in seed the crucial unifying notion of topos). In this same analogy, the “God theorem” (which we will recall below) is similar to the change of base theorem for a proper morphism in equal cohomology, which was (in 1963) the first great theorem for the start of slack cohomology, leading in the space of a few weeks to a situation of almost complete “control” over the slack cohomology tool. Analogous work in the framework of $\mathcal{D}$ -Modules (or more generally in the crystalline framework), to achieve a mastery of “crystal cohomology” (or “de Rham”, in a broad sense that I saw in such a theory from the sixties) — this work still remains to be done, seven years since the first major breakthrough was finally accomplished by Zogharn Mebkhout.

The new category of coefficients introduced by Mebkhout, which “contains” (in the sense explained in the note “The work...”, n° 171 (ii)) both the “discrete analytically constructible coefficients”, and the coherent coefficients introduced by Serre (systematized* by me into a cohomological theory of “coherent coefficients” (*), is that formed from complexes of $\mathcal{D}$ -Modules with coherent cohomology bundle (as $\mathcal{D}$ -Modules), seen as a subcategory full

(3) $\mathcal{D}^b_{\text{crys}}(\text{coh}(X, X))$ or $\text{Cris}\mathcal{D}^b(\text{coh}(X))$

(**) (June 8) It should be read here: introduced by Mebkhout into the Grothendieckian panoply, for the purposes of a new theory of coefficients. It is of course understood that “the point of view of the $\mathcal{D}$ -Modules” is due to Sato, but used in a completely different perspective.

(*) This is the formalism of the six operations and biduality, which I developed within the coherent framework in the second half of the fifties.

of the usual derived category $D^b(X, \mathcal{O}_X)$. If we limit ourselves to complexes with bounded cohomology (forming the full subcategory $\text{Crisb coh}(X)$), such a “coefficient” is represented locally by a complex of free $\mathcal{O}_X$ -Modules of finite type in any degree, and in degrees bounded; or also, which essentially amounts to the same thing, by a complex of differential operators with bounded degrees (**).

When working with derived categories, it is of course necessary to replace the functors fundamentals (1) and (2) by the total derivative functors

$$(4) \quad F \mapsto \text{RHom}_{\mathcal{O}_X}(F, \mathcal{O}_X), \quad C \mapsto \text{RHom}(C, \mathcal{O}_X).$$

If we look for covariant functors of a similar nature to these two functors, we first come across the “scalar extension” functor (designated by N in the cited note):

$$(5) \quad F \mapsto F \otimes_{\mathcal{O}_X} \mathcal{O}_X,$$

(total tensor product), where in the tensor product we still use the structure of $\mathcal{O}_X$ -Module to the right of ie $\otimes_{\mathcal{O}_X}^L$. (*) This functor in F has the disadvantage, compared to (1), of not extending to morphisms between arguments $F \mapsto F$ which are only differential operators (instead of being linear). The second functor (4), which must be considered as a counterfunctor

$$\text{Crisb coh}(X) \mapsto D^b(X, \mathcal{O}_X),$$

also admits an important covariant “pendant”, given by

$$(6) \quad C \mapsto \text{RHom}(\mathcal{O}_X, C) \stackrel{\text{def}}{=} \text{DR}(C) \text{ (“De Rham complex associated with } C\text{),}$$

where the second member is indeed explained by a complex of the De Rham type, thanks to the so-called “Spencer” canonical resolution of $\mathcal{O}_X$, by locally free $\mathcal{O}_X$ -Modules of finite type, (this resolution is deduced from the ordinary De Rham complex, by taking

(**) (June 16 — see end of note (*) page 988). Mebkhout has just pointed out to me that this is not entirely correct - this problem is mentioned in loc. cit. 1.5 d) (p. 312). Mebkhout explicitly refers to it in his work “Poincaré Duality” (“Singularities” seminar in Paris VII, 1977–79), in the last three lines of §4.4 (relative duality theorem for $\mathcal{O}_X$ -modules).

(*) It is known that it is flat as an $\mathcal{O}_X$ -Module. It follows that the “total” tensor product in (5) is in fact an ordinary tensor product.

the complex of $\mathcal{F}$ -Modules associated by the functor (1). In crystalline terms (which will be explained below), the functor DR is explained as the total derivative functor of the function (C) , associating to each $\mathcal{F}$ -Module variable open U (or "crystal") the beam of C -vectors $C|_U \rightarrow \text{Hom}$ (formed of its "horizontal" sections (on spaces)). This is an operation of local nature. The good (global) notion of "integration" (or global cohomology object) for a "coefficient" C (ie a $\mathcal{F}$ -Module or complex of such) is not here the usual functor

$$R\tilde{Y}X(C) = R\text{Hom}(X, C),$$

but the functor (which is familiar to me as a total crystal cohomology functor) derived derivative of the functor "(global) horizontal sections" $C|_U \rightarrow \text{Hom}(U, \mathcal{F})$; I note this total total by $R\tilde{Y}_{\text{cris}}(C)$, so that we have tautological isomorphisms

$$(8) \quad R\tilde{Y}_{\text{cris}}(C) \stackrel{\text{def}}{=} R\text{Hom}(U, C) = R\tilde{Y}(DR(C)),$$

ie the crystal cohomology of C on X is obtained by taking the ordinary (global) cohomology of the associated De Rham complex.

We can define in $\text{Cris}\tilde{Y} \text{coh}(X)$ a dualizing functor, giving rise to a biduality theorem, based on the model of those that I have identified in the coherent (commutative) context first, discrete (spread) then. I will rate it D (as in the cited contexts):

$$(8) \quad D : \text{Cris}\tilde{Y} \text{coh}(X) \xrightarrow{\sim} \text{Cris}\tilde{Y} \text{coh}(X)$$

It is an anti-equivalence, essentially involutive (ie we have an isomorphism of biduality, functional in C :

$$(9) \quad CD(D(X)) \cong X.$$

This functor makes it possible to transform (by composition) the contrafunctors (1) and (2) into covariant functors. The simple fact to remember is that if C and C' are "dual" of each other, then the De Rham complex (6) of one is identified with the "co-De Rham" (2) the other :

$$(10) \quad R\text{Hom}(U, C) = R\text{Hom}(C, X), \text{ and viceversa.}$$

On the complexes of differential operators/ this operation D is expressed (within a "shift" of n on the degrees) by passing to the complex of "adjoint" differential operators, of $\text{com}(\mathcal{F}, \tilde{Y}X)$, obtained by taking posing $\text{Hom}(U, \mathcal{F})$ the adjoint operators term by term. So,

the dualizing functor for $\mathcal{O}_X$ -modules is compatible with the familiar dualizing functor in Serre duality,

$$(11) \quad F \simeq \text{Hom}_{\mathcal{O}_X}(\underline{F}, \underline{\omega}_X) \simeq F \otimes_{\mathcal{O}_X} \omega_X \quad (F \text{ un } \mathcal{O}_X\text{-Moulo loc. lib. finished type),}$$

where ω_X designates the “dualizing module” of the differential forms of maximum degree on X

We will pay attention that the De Rham functor

$$DR : D^b_{\text{coh}}(X) \rightarrow D^b(X, \mathcal{O}_X),$$

does not generally commute to dualizing functors (taking the functor $R\text{Hom}_{\mathcal{O}_X}(\omega_X, -)$ in the second category).

But it is a deep theorem of Mebkhout (which everyone uses without citing anyone of course and as if it were a simple sorite) only for holonomic arguments, therefore for the induced functor

$$\text{Cris}_{\mathcal{O}_X}(X)_{\text{hol}} \xrightarrow{\sim} \text{Cons}_{\mathcal{O}_X}(X, \mathcal{O}_X) \xrightarrow{\sim} D^b(X, \mathcal{O}_X),$$

there is switching to dualizing functors. I do not “recall” here the condition of holonomy, and limit myself to pointing out that a complex of $\mathcal{O}_X$ -modules is holonomic if its co-homology bundles are holonomic $\mathcal{O}_X$ -Modules, and that this is a condition of nature local on X , and moreover, “algebraic”. On the other hand, Kashiwara's constructibility theorem (which he had stated for a holonomic module, at a time when he and no one - except Mebkhout - were working with derived categories...) implies that the restriction of the functor de Rham to holonomic complexes ends up in $\text{Cons}_{\mathcal{O}_X}(X, \mathcal{O}_X)$. By introducing the notion of regularity of Mebkhout, also of a local and “algebraic” nature (*), we find the “God functor” (aka Mebkhout)

$$(12) \quad m : \text{Cris}_{\mathcal{O}_X}(X) \xrightarrow{\sim} \text{Cons}_{\mathcal{O}_X}(X, \mathcal{O}_X)$$

which, this time, is an equivalence (as we saw in the note “The work...”, n° 171 (ii)), which is therefore compatible with natural dualizing functors. It is the quasi-inverse functor

$$(13) \quad M : \text{Cons}_{\mathcal{O}_X}(X, \mathcal{O}_X) \xrightarrow{\sim} \text{Cris}_{\mathcal{O}_X}(X)_{\text{hol}} \xrightarrow{\sim} D^b_{\text{coh}}(X)$$

(*) I recall that Mebkhout's original definition of regularity was of a transcendent nature, for a “purely algebraic” translation, I refer to the planned presentation on the coefficients of De Rham (“Mebkhout” style or “Deligne” style), in volume 3 of Reflections.

which allows us to consider the category of “discrete constructible coefficients” (of $\mathcal{C}$ -as a full subcategory of D^b vectors) on $(X, \mathcal{O}_X)$ and more precisely of $\tilde{y} \text{ cons}(X, \mathcal{O}_X) = \text{Cris} \tilde{y} \text{ coh}(X, \mathcal{O}_X)$, which we will sometimes be D^b interpreted as a category of “crystalline” coefficients.

(May 19) For the moment, we can say that we have described in three different “languages” or “points of view”, as with so many different “photos”, the same reality, or (essentially) a “same” type of “coefficients”, called “De Rham coefficients”: there is the point of view of d -vector bundles and complexes of such (“topological” point of view), with a condition of “analytical constructibility” (**), playing the role of a finiteness condition (essential, in particular, to be able to write theorems of the Riemann-Roch type, involving “Euler-Poincaré characteristics” and suitable “Grothendieck groups”).

There is the “differential operator complex” point of view, with holonomy and regularity conditions taking the place of constructibility conditions. And there is the “module complex” point of view, with conditions of coherence, holonomy and regularity at stake. The second “photo” (taken from the “analysis” angle) is attractive, due to the fact that it is intelligible to us in “classical” terms, and that the objects it shows us, namely operator complexes differentials, appear to us to have reasonable “dimensions”, while the $\mathcal{O}_X$ -Modules, even coherent (starting with itself!), appear disproportionate when we look at them with the “ $\mathcal{O}_X$ -Modules” glasses. Technically speaking, however, these provide a more complete picture. Indeed, while it is “clear” that locally, each complex of $\mathcal{O}_X$ -Modules with coherent cohomology and bounded degrees (let's say) can be represented by a complex of differential operators via (1)/ it is unlikely that this is also the case globally, if we do not make drastic hypotheses on X (like “Stein variety” or, in the algebraic framework, an hypothesis of quasi-projectivity) (*).

“Photo” 1 has the advantage of retaining meaning when X is no longer supposed to be smooth, but is

(**) I recall that a sheaf of $\mathcal{C}$ -vectors on an analytical space i

(F), where $i: Y \hookrightarrow X$ is the inclusion of an analytical subspace $Y = Z \cap T$ of X (with $T \cap Z$ two analytically closed subspaces of locally free of finite type (or “local $\mathcal{C}$ -vector system”) on Y).

(*) Of course, nothing prevents us from constructing a “derived category” from the category of complexes of differential operators on x and differential morphisms between such complexes, by formally “inverting” the “quasiisomorphisms” (defined by passing to the corresponding complexes of $\mathcal{O}_X$ -Modules). We will find

any complex analytical space. On the other hand, as is, photos 2 and 3 are reasonable only under the assumption of smoothness. We can certainly still define a bundle of rings and we still find a dictionary tau-

without assumption of smoothness on X !
 tological between complex of differential operators (with components of locally free $\mathcal{O}_X$ -Modules) and complexes of $\mathcal{O}_X$ -modules (with locally free components), but (it seems) ceases to be coherent, too bad! There is undoubtedly little chance that a “theorem of good God” can emerge in the singular case, on the model of that known in the smooth case. He It is obvious on the other hand that we need photos of type 2 or 3 in the singular case also, given that photo n° 1 is of a transcendent nature: by naively tracing it, in terms of Zariski or equate topology for an algebraic variety, we would find “coefficients” much too specific to be usable (because these topologies are too crude, for example relation to the transcendent topology). Photos 2 and 3, on the other hand, restricted to begin with the “smooth” field of vision, retain meaning in “abstract” algebraic geometry (on a coach body. zero, let's say, to begin with), which is (for me) their main charm. This means that it is necessary to make enlargements, such that the singular varieties are included in the field of vision.

This didn't seem to worry Mebkhout, who had many other worries. When I him asked the question, his immediate idea was this, suppose that a smooth variety U as a closed analytical subspace. Then the category $\text{Cons}_Y(X, C)$ can be interpreted as the full subcategory of $\text{Cons}_Y(X, C)$ formed of objects whose restriction to $U = X \setminus X$ is zero (ie objects “with support in X ”). But this one can also be interpreted, by God's theorem, in terms of photos 2 or 3, as the category of “De Rham — Mebkhout coefficients” on X whose restriction to U is zero. He must be easy to verify a priori (remaining in the context of “De Rham coefficients — Mebkhout”, ie that of photos 2, 3), that this category, up to defined equivalence itself, up to a unique isomorphism, is independent of the chosen “smoothing” X of

part

cohomological” to reconstitute a global category from these local pieces, or introduce the “lissification site” of works of $\mathcal{O}_X$ and work on it. There are

(I presume) a subcategory full of $\text{Cris}_Y \text{coh}(X)$, but not this entire category undoubtedly, in the absence hypotheses like “Stein” or “projective X ” (or only, quasi-projective, in the algebraic case).

chances that we can indeed manage, but instead of a "smoothing site" (imposed by Mebkhout for the purposes of the reply, in a conversation which remained platonic), site which appears to me to be highly redundant, why not work with the crystalline site, which has proven itself (even if it has been forgotten, it would seem, with a touching whole, by those who were my students...)? And all the more so since it was very clear to me, from the year 1966 where I released the ideas for starting crystalline yoga, that the future "coefficients of De Rham" had to be expressed precisely in crystalline terms!

This therefore leads me to take out of my drawer a photo which has had time to accumulate dust, poor thing - and yet, once blown on it, it appears to me as new, and perfectly clear, it's one of the first things I thought of, by writing last year (even before having met the Funeral...) the note "My orphans" (n° 46), vaguely feeling that it was time for someone to speak out respect on things that deserve respect... Besides, since Mebkhout spoke to me of $\mathcal{D}$ -modules (in 1980 — God knows I wasn't "connected" then!), I couldn't stop myself from thinking of them as "crystals" instead, and using the words " $\mathcal{D}$ -Modules" and "crystals" (from $\mathcal{D}$ -Modules) as synonyms, with (of course) a marked preference for the second.

So I come to the fourth promised photo, the "crystalline" photo. First suppose X smooth. Give yourself a $\mathcal{D}$ -Module F on X — it is the same thing as giving yourself a Module, with $\mathcal{D}_X$ an additional structure, which can be expressed in various equivalent ways. One, the tautological, consists of saying that we "extend" the operations of the $\mathcal{D}_X$ abelian beam F in one operation of the Ring). As is begun by which contains $\mathcal{D}_X$ and the additive sub-bundle of the derivations, we see that it amounts to the same thing to give on F what we call an "integrable connection", that is to say a law which, at each derivation $\tilde{y}$ on an open U of X linearly associated with a " $\tilde{y}$ -derivation" $\tilde{y}\tilde{y}$ of F in $\tilde{y}$, and in a manner compatible with the "hook" operation of derivations (*). We can say that this is a structure of a "differential" nature on F of order 1.

(*) There must also, of course, be a compatibility condition for the restriction to an open one.

(**) We can, in what follows, free ourselves from any hypothesis of characteristic (in the context of a diagram relative smooth, let's say), by replacing the formal complement of $X \times S$ "with divided powers". This also leads, for a beam to replace the $\mathcal{D}_X$ -modules F on X pro-sheaf $\tilde{P}(F)$ of its "main parts of infinite order", by "main parts with divided powers

Due to the fact that we have a zero characteristic (**), this structure can also be interpreted as a richer structure, a differential structure of infinite order, which I called a “stratification” on F (which F takes then the name “Laminated module”). One way of expressing a stratification is as an “infinitesimal descent data of infinite order” on F (with respect to the morphism formal complement of $X \times \text{suitable}$).

The passage from an integrable connection to an “infinitesimal descent data” (or stratified structure) represents a new idea – and “trivial”, like all the new ideas that I have had the honor of discovering! However, this only takes on its full force once re-interpreted in terms of the notion of a crystal of modules. We show in fact that the structure in question on F also returns to the data, for any “infinitesimal neighborhood” U of an open U of X

of an extension F_U , from $F|_U$ to U (in short, F “grows” above the infinitesimal neighborhoods, like a “crystal” — a crystal of modules, in this case, but there are crystals of all kinds. ...) — this extension behaving in the way that we guess, for the notion of restriction to an open V of U , and for the morphisms between infinitesimal neighborhoods (or “thickenings”) U on U , of course).

of the same U (morphisms inducing identity

The interest from the crystalline point of view is that the objects to be studied (the $\mathcal{F}$ -modules) can be interpreted as bundles of “ordinary” Modules on a suitable site (*), ringed in local commutative rings, namely the “crystalline site” formed by the thickenings U of the various open U of X (the crystalline structural bundle simply being $U \rightarrow U/U$).

From then on, we have the entire arsenal of geometric intuitions associated with such a situation.

(of infinite order)”. On the dual side, this amounts to replacing the relative $\mathcal{D}_{X/S}$ differential operators ring sheaf (which has nothing coherent even if S is Noetherian), by the ring sheaf “enveloping” the relative derivations of on $\mathcal{O}_S$ (which, according to which Mebkhout assures me, would be very coherent!). This is, in fact, the conceptual context for the coefficients of De Rham, which will extend that of Mebkhout of $\mathcal{F}$ -Modules, for the development in particular of a theory of De Rham coefficients for finite type schemes on Z .

(*) We will pay attention that we do not find all the bundles of modules on the crystalline site, but only those that satisfy a simple additional condition (beams called “special” in [Crystals]).

ation. A remarkable relationship that I discovered in 1966 and which amazed me then was that the cohomology of the crystal site (or of the crystal topos which corresponds to it), with coefficients in the structural sheaves (or more generally, with coefficients in F , at least when F is consistent on the ---_X), is identified with the De Rham cohomology of X (with coefficients in F in occurrence, ie the ordinary hypercohomology of X with coefficients in $DR(F)$). It was the start of crystal cohomology (**).

So we have a perfect dictionary, explained at length in my 1966 talks. already mentioned (*), between four types of objects on X or four types of structure on one ---_X Module:

	$\tilde{y}$	$\tilde{y}$ Modules
(Cr)	---_X	$\tilde{y}$ Modules with integrable connection
	–	Stratified modules (infinitesimal descent data of infinite order)
	---_X	crystals of $\tilde{y}$ Modules.

This dictionary is valid without any restriction of the coherence or quasi-consistency type on F . Note, however, that if we compare the extreme terms

$$\tilde{y} \text{ Modules } \tilde{y} \tilde{y} \text{ crystals } \text{---}_X \tilde{y} \text{ Modules,}$$

the natural notions of “coherence” in both contexts do not correspond.

The crystal structural bundle is coherent, but the coherent modules on the crystalline topos correspond exactly to the modules which are coherent as ---_X modules, in which case they are even free of finite type. The category they form is canonically equivalent, by the functor “extension of scalars” relative to $CX \tilde{y} \tilde{y}$ to the ---_X , category of locally free CX -module bundles, i.e. that of “local systems of (C-vectorials)” on X . This therefore makes, for this type of object, five possible descriptions (or five “photos” counting the four from the previous table (Cr)! But these are “coef-ficients” of an excessively special nature (**), among those (from De Rham — Mebkhout) which

(**) Then again, startup ideas are so “trivial” that there’s really no point in bothering a bit, when you have spent fifteen years of your life, afterwards, developing a small part of it (and forgetting the rest...).

(*) See the discussion [Crystals], cited in the first footnote to this subnote (note (*) page 988).

interest us.

Instead, let's go back to the four photos in the table (Cr) above, and see what happens when we no longer assume X is smooth. The four types of objects considered retain meaning. It would seem, on the other hand, that the first two do not form important categories - rather, that all $\mathcal{D}$ -Modules, and all $\mathcal{D}$ -Modules with integrable connection, which we encounter naturally, as "having a geometric sense", "come" (in an obvious sense) from stratified modules, which moreover can still be interpreted as crystals of $\mathcal{D}_X$ -Modules, just like in the smooth case (**).

I admit that, for lack of having thought about it, I do not yet visualize very well the exact relationship, for X immersed in smooth X (let's say), between crystals on X and crystals on X is smooth) (*). What is certain is that the crystalline site, or better, the topos

(**) In fact, it is coherence, of course (which had escaped me in the sixties) which is here the important notion of finitude.

(***) This assertion was made hastily, and is false as it stands. For it to become true, it is necessary to replace the "crystalline site", formed by all the infinitesimal thickenings of openings of X , by the subsite (called "stratifying site") formed by those which locally admit a retraction on (condition automatically satisfied when X is smooth). When we give ourselves a stratified module F on x , its inverse image by such a retraction does not depend, up to a single isomorphism, on the chosen retraction, hence a "canonical extension" of F above the thickening envisaged.

We therefore see that when any open evils of X , and in particular (and this is something of particular importance), above the infinitesimal neighborhoods of all orders of X , immersed in an ambient space. smooth. It turns out, in fact, that the most crucial and fruitful new notion, between that of stratified module and that of crystal of modules, is the latter. It is she who is called to dominate the theory of De Rham coefficients. I "recall" in this regard that for a clean and smooth relative diagram Z on crystal structure, making it "grow" over any infinitesimal neighborhood.

the relative De Rham cohomology of Z on

This is a crucial mathematical fact, which Deligne had actually forgotten before my departure, in 1969, when he described coefficients of the De Rham type in terms of stratified procoherent modules, instead of the stronger crystalline version, ie in terms of crystals of procoherent modules. It must be said that my name was less notoriously attached to the notion of stratified module (so natural that one would swear that it must date back to the last century), than to that of the notion of crystal of Modules, which looks very less "traditional". See on this subject the reflections in "... and hindrance" (subnote n° 171 (viii)).

(*) (May 26) The situation became considerably clearer for me with the introduction of the notion of co-crystal, alluded to in D) below.

crystalline X_{cris} , with its ringed structure, depends on the analytical space

$$f_{\text{cris}} : X_{\text{cris}} \rightarrow X_{\text{cris}};$$

hence in particular a “direct image” functor for the bundles of Modules on these ringed topos. We would like to understand this operation (in the case of a closed immersion $X \hookrightarrow Y$, in particular), and understand under what condition a crystal is transformed into a crystal. We would also like X , in the case of a closed immersion, for this functor to be exact. The idea here is this: if F is an object of the derived category $D^b(X_{\text{cris}}, \mathcal{O}_{X_{\text{cris}}})$ and F its image by the total derived functor of f and further supposing X smooth, the condition that F is regular holonomy should not depend on the chosen immersion of X in a smooth space Y . If this is indeed so, then we will define the category of crystal coefficients of De Rham — Mebkhout on X as the full subcategory (of the derived category) defined by the previous condition (visibly local on X).

Thus, modulating foundational work which should have been done for twenty years and which apparently still remains to be done (concerning the fundamental operations on crystalline modules), we can say that in the case where X is any analytical space (not necessarily smooth), there remain two photos (instead of four) to describe to us the “De Rham coefficients” we have: there is $\text{Cons}_Y(X, C)$ ne varietur, and there is the category (which for the moment remains hypothetical, and as it is I still have difficulty seeing (*)) of the “De Rham — Mebkhout” coefficients $\text{DRM}_Y(X)$, for which I have just ventured a definition principle. The category $\text{Cons}_Y(X, C)$, the description of which presents no problem from the transcendent point of view, however disappears as soon as we move to the algebraic context. This makes obvious the need to find a good definition of $\text{DRM}_Y(x)$, which retains meaning in this context. And it is also clear to me that the right “frame” for this photo, which therefore seems (at first glance at least) the only one left, is the one formed by the crystalline modules (**).

(*) I refer below to a “fifth photo”, which is much clearer for me now, to capture the “good” De Rham coefficients by a purely algebraic language in crystalline terms, keeping a meaning without assumptions of smoothness. This photo is taken from a somewhat “dual” angle to that of De Rham-Mebkhout’s photo.

(**) I call “Crystalline Module” on X a bundle of Modules on the ringed crystalline topos X_{cris} . We can therefore consider module crystals as special cases of crystalline modules.

I also recognize that even in the case where This does not respect natural multiplicative structures: it is the Mebkhout contra-functor, which will be discussed in (b), which (it seems) is compatible (**).

A fortiori, this functor does not commute “with six operations”. The intuition which attaches to Mebkhout coefficients therefore seems of a very different nature, at first sight, from that which attaches to discrete coefficients. This is, from a certain point of view, an advantage — we have two photos taken from radically different angles! This just makes it more difficult for those accustomed to looking under. one of these angles, to clearly recognize oneself in the photo taken from the other.

In fact, in addition to the four photos already reviewed (for the “De Rham coefficients”, I mean), there is a fifth (*) that I kept in reserve: it is that of Deligne, at shots of laminated pro-modules (**). It has the advantage of “sticking” very closely to the intuition of constructible discrete sheaves: an object “of degree zero” corresponds to an object of the same type, the notions of tensor product and inverse image correspond by Deligne equivalence; so it will be the same for all six operations

(**) This “it seems” is a somewhat casual way (almost like “new style”...) of evading a beautiful theorem, always due to the same unknown person in the department (but of a more recent vintage, ai -I thought I understood, that of the good Lord). It implies for example, for two analytically closed subspaces Y and Z of K, the following formula on local cohomology, obviously too beautiful even to be true (and yet...):

$$R\Gamma_{YZ}^{\text{alg}}(\text{---}_X) \cong R\Gamma_{\text{AND}}^{\text{alg}}(\text{---}_X) \overset{L}{\otimes} (R\Gamma_{\text{AND}}^{\text{alg}}(\text{---}_X)),$$

that some handsome gentlemen are going to pocket one of these mornings, I bet, as if “they had always known about it” — while waiting to award it to the most handsome among them...

(*) Thus, I did better than keep the promise of the title of this note “The five photos”: I have in fact highlighted two series of five photos, the first describing the “De Rham coefficients” alone. , and the second the crystal coefficients in general.

(**) As noted in a previous note by b. from p. (note (**) page 998), this photo of De Rham - Deligne was taken with a slightly distorted “lens” (for reasons which are beyond the competence of the manufacturing worker). It is necessary to retouch it, and also to enlarge it, by taking it outside the framework of the null characteristic. This will be done in volume 3 of the Reflections, where my dear ex-students will be able to come and pump out at ease all the “useless details” and other “technical digressions” that they did not have the leisure to find for themselves- themselves, for almost twenty years since I left them to fend for themselves with a splendid subject in hand...

(which can indeed be described in terms of these two). On the other hand, the operation of passing from the “De Rham — Deligne coefficients” $DRD\tilde{y}(X)$, to those of De Rham — Mebkhout $DRM\tilde{y}(X)$, seems to me in principle particularly well understood, in terms of “duality operations”) on $\mathcal{D}$ -Modules (at least, first of all, for smooth X I therefore $\mathcal{D}_X$ have the impression, there, of being on ground that is both solid and familiar, which should allow me to recognize myself there, as soon as I take the leisure to do so. I even thought of outlining in this note the point of Deligne’s view, and make the link with that of Mebkhout and with the formalism outlined in my already cited presentations from 1966. But this subnote is starting to get long, and is becoming more and more of a digression! So I prefer to return the thing in volume 3 of the Reflections, where I also think about giving the description of the “good” De Rham coefficients (Deligne style, or Mebkhout, as desired) on finite type schemes on $\mathbb{Z}$.

(b) (May 5 and May 21) I would like to return here to the description of the Mebkhout functor (also called “from the good Lord”)

$$(1) \quad M : \text{Cons}\tilde{y}(X, \mathbb{C}) \rightarrow \text{Cris}\tilde{y} \text{ coh}(X) \quad (\text{def} = D \rightarrow \text{coh}(X, X)),$$

where X is a smooth complex analytical space. As we said in the note “The work...” (n° 171 (ii)), this is a functor of deep nature, which is defined as quasi-inverse of the restriction functor of the De Rham functor DR to the full subcategory $DRM\tilde{y}(X)$ (of “De Rham-Mebkhout coefficients” on X) of $\text{Cris}\tilde{y} \text{ coh}(X)$,

$$(2) \quad m = DR|_{DRM\tilde{y}(X)} : DRM\tilde{y}(X) \rightarrow \text{Cris}\tilde{y}(X) \quad \text{where long } \tilde{y} \rightarrow \text{Cons}\tilde{y}(X, \mathbb{C})$$

which happens to be an equivalence (“God’s theorem”). In fact, Mebkhout obtains a remarkable direct description of the function $M\tilde{y}$ deduced from the functor M by the functor i “extension of scalars” by the Homomorphism of Rings

$$(3) \quad \mathcal{D}_X \xrightarrow{\tilde{y}} \mathcal{D}_{\tilde{X}},$$

where $\tilde{y}$ (or $\tilde{y}$) designates the Ring of “differential operators of infinite order on X ”, ie X (by definition) that of the $\mathbb{C}$ -endomorphisms of the bundle seen as a bundle of spaces

(***) This “previous note from b. of p.” has since become part (c) of this note “The five photos”.

complex topological vectors. It is known that is faithfully flat on the left and right⁹ on such that the total derivative functor of the Rings extension functor

$$(4) \quad i : \text{Cris}_{\tilde{y}}(X) = D(X, \cdot) \tilde{y} \tilde{y} D(X, \tilde{y}) \stackrel{\text{def}}{=} \text{Cris}_{\tilde{y}}(X)$$

is explained by an ordinary tensor product. Note that we do not know if the Ring $\tilde{y}$ is coherent, but apparently we do without it. We define the full subcategory

$$\text{Cris}_{\tilde{y}}(X)_{\text{hol}} \tilde{y} \text{Cris}_{\tilde{y}}(X)$$

complexes of $\tilde{y}$ -Modules which are "holonomic", by the condition of being deduced locally (by the functor i) from a complex of $\tilde{y}$ -Modules C which is holonomic. (It will result from the double theorem of the good Lord, recalled below, that we can then take even C to be both holonomic and regular, ie a "De Rham — Mebkhout coefficient", and this determines C on all X with isomorphism unique except...) We consider the functor $M_{\tilde{y}} = iM$, fitting into the commutative diagram

$$\begin{array}{ccc} & \text{Cons}_{\tilde{y}}(X, C) & \\ M \swarrow & & \searrow M_{\tilde{y}} \\ \text{DRM}_{\tilde{y}}(X) & \xrightarrow{i} & \text{Cris}_{\tilde{y}}(X)_{\text{where}} \\ & & \\ & = \text{Cris}_{\tilde{y}}(X)_{\text{where long}} & \end{array}$$

It turns out (or rather, the unknown worker proves...) that the functor $M_{\tilde{y}}$ is also an equivalence of categories (hence i also). It can also be obtained as a quasi-inverse of the functor $m_{\tilde{y}}$ of the "De Rham" type analogous to m , defined on $\text{Cris}_{\tilde{y}}(X)_{\text{hol}}$. To describe the functor $M_{\tilde{y}}$, it is more convenient to describe the counterfunctor

$$(6) \quad \tilde{y} \tilde{y} \stackrel{\text{def}}{=} M_{\tilde{y}} D = D_{\tilde{y}} M_{\tilde{y}} = i(M D) = i(DM),$$

where D designates the dualizing functor already mentioned, in $\text{Cons}_{\tilde{y}}$ or $\text{DRM}_{\tilde{y}}$ and $D_{\tilde{y}}$ the similar dualizing functor that exists in $\text{Cris}_{\tilde{y}}(X)_{\text{hol}}$ (and even in $\text{Cris}_{\tilde{y}}(X)$). (NB The three functors which intervene in (5) commute to dualizing functors.) The quasi-inverse $\tilde{y} \tilde{y}$ of $\tilde{y} \tilde{y}$ is therefore given by the formula analogous to (6)

$$(7) \quad \tilde{y} \tilde{y} \stackrel{\text{def}}{=} D m_{\tilde{y}} = m_{\tilde{y}} D_{\tilde{y}}.$$

We then find the Mebkhout expression of $\tilde{y}^*$, $\tilde{y}$ by the following two formulas, of remarkable symmetry:

$$(8) \quad \begin{aligned} \tilde{y}^* \tilde{y}^*(F) &= R\text{Hom}_C(F, \underline{\quad}_X), \\ \tilde{y} \tilde{y}(F) &= R\text{Hom}_C(F, \tilde{y} \underline{\quad}_X). \end{aligned}$$

Note that in the first of these formulas, the second member inherits a $\tilde{y}$ -structure, thanks to the operations of $\tilde{y}$ on the second argument of C -vectors. The second of these formulas, put there “for the record”, is moreover essentially tautological, and simply says that the functor $\tilde{y}^*$ associates with the complex of $\tilde{y}$ -Modules C the complex of differential operators (of infinite order) “adjoint” of that associated with C (by the De Rham functor $DR(\tilde{y})$) — this complex being interpreted as a complex of C -vector sheaves. (That we thus find a complex with constructible cohomology sheaves is equivalent to Kashiwara's constructibility theorem.)

It is a deep theorem, on the other hand, that the first functor $\tilde{y}^*$ transforms constructible sheaves into (complexes of) $\tilde{y}$ -Modules which are holonomic. The only finiteness theorem implied by this result (*) (without even talking about holonomy) is already in itself a remarkable new result. The even more extraordinary thing, however, is that the two functors are quasi-inverse of each other. Formally, this fact resembles either in the category

of biduality relations, which can be expressed either in the category $\text{Cons} \tilde{y} \tilde{y}(X)_{\text{hol}}$.

— except that the “dualizing” contrafunctors (expressed in both cases as a $R\text{Hom}(\tilde{y}, \cdot)$) connect the two different categories. It is this formal analogy which led Mebkhout to call the theorem which asserts isomorphism

$$(9) \quad \tilde{y}^* \tilde{y}^* \text{id} \text{ (in } \text{Cons} \tilde{y} \tilde{y}(X)_{\text{coh}} \text{)}$$

the “biduality theorem” for complexes of holonomic $\tilde{y}$ -Modules (terminology which also risks giving rise to confusion). This relation, plus the fact that the functor $\tilde{y}^*$ is fully faithful (or more precisely, that $\tilde{y}^*$ is an adjoint of it, something that it includes in

(*) This finiteness result implies for example that locally on X , the $R\text{Hom}_C(F, \cdot)$ is $\underline{\quad}_X$ isomorphic (in the derived category) to a $\tilde{y}$ -Modules complex which is locally free of finite type in each degree, and that its cohomology modules come (locally), by extension from scalars, coherent modules. In fact, we can even assume the latter to be holonomic and regular.

the statement of his biduality theorem) had been obtained by Mebkhout in 1977, before the complete good God theorem. The so-called “biduality” theorem therefore essentially means (just like “my” biduality theorem, from which it is inspired) that a complex of holonomic $\tilde{y}$ -Modules can be reconstituted, as an object of a derived category, by knowledge of the associated complex of differential operators (of infinite order), seen as simply a complex of $\mathbb{C}$ -vector sheaves (in the appropriate derivative category); and more precisely, that it can be reconstituted by the explicit inversion formula (8- (first formula)). A fortiori, a morphism between complexes of holonomic $\tilde{y}$ -Modules is a quasi-isomorphism if and only if the morphism corresponding for complexes of differential operators (of infinite order) is in the naive sense (ie induces an isomorphism on the cohomology sheaves) (**).

Mebkhout's biduality theorem constitutes in a way “half” of God's theorem (for $\tilde{y}$ -Modules), when the latter is taken in its strongest form, that affirming that the functors (8) are quasi -inverses of each other. This is the central result of Mebkhout's thesis, submitted in January 1980. But this “half”, in itself, is already a new and (as far as I know) entirely unexpected result. It constitutes a typical result, bridging Sato's ideas and mine, but in the perspective of my long-standing program: to formulate in a “continuous” or “differential” way (and in the perspective of categories derivatives), the “discrete coefficients”. As such, it seems to me that this result completely escapes, through its spirit and through its inspiration, the problems of the Japanese school of analysis. Kashiwara's constructibility theorem seems to have represented a “sideline”, and in no way the starting point of a new theory of coefficients. As the publications for the period between 1976 and 1980 demonstrate beyond doubt, Mebkhout was the only one then to develop such a philosophy.

Mebkhout spoke about his results to Kashiwara, who was visiting Paris, in January 1978, when he had just finished writing his thesis. At Kashiwara's request, the candid Mebkhout, very happy to have finally found someone who seemed interested “in what he has to say, sent him to Princeton chapter III very hot - the one where among others the

(**) (May 26) In fact (as I point out below, beginning of (c)) Mebkhout proves this last result, even outside of any holonomy condition, in the equivalent form: if the complex d The differential operators associated with a complex of $\tilde{y}$ -Modules is almost zero, it is the same for the latter (and it is also true for the $\tilde{y}$ -Modules).

the so-called “biduality” theorem. It was in February 1978. Three years later, this same result appears (with a pretend demonstration) in a famous article by Kashiwara-Kawai (*). It is renamed “reconstruction theorem” for the occasion, and without the slightest allusion to a certain Zoghman Mebkhout. It was also the memorable year of the Colloquy Pervers - the glorious year when a certain “new style” (**) conquered with no fault of its own (and without encountering the slightest resistance...), this part of the mathematics, of all places, where I used to feel at home...

(c) (May 21) The “biduality theorem” (9) is from 1977. To prove the other half of the “God theorem” for $\tilde{Y}$ -Modules, which therefore amounted to proving that the functor $\tilde{Y}$ is essentially surjective, a first difficulty was to prove that for F in $\text{Cons}_{\tilde{Y}}$

_____ and by defining the complex of $\tilde{Y}$ -Modules $C = \tilde{Y}(F)$ by the first for-using mule (8), that this could be obtained via the functor i , at least locally on X of a complex of $\tilde{Y}$ -Modules (holonomic, regular). A priori, according to Mebkhout's ideas (ie following God's double theorem, implying that the functor i in (5) is an equivalence), the latter had to be unique up to unique quasi-isomorphism.

I didn't try to understand how Mebkhout finally managed in his thesis to build $\tilde{Y}$ -Module. It seems to me that the situation must be clarified, here, by using Deligne's idea of the proconsistent sheaf associated with a constructible C -vector sheaf F (*) This idea was developed by him in the context of algebraic varieties on must be able to adapt mutatis mutandis to the analytical case, on the condition perhaps of working “locally” on _____ more

_____ or on each compact of X . The procoherent sheaf associated with F , which is therefore (at least on each compact K of X) a projective system (F_i) of sheaves

(*) M. Kashiwara, T. Kawai, On holonomic Systems of micro-differential equations, III Systems with regular singularities, Publ. RIMS 17, 813–979 (1981). The “reconstruction theorem” plundered from Mebkhout is found in par. 4 of this long work (received in November 1980). The main result of the work is a weakened variant due to the fact that the functor i in (5) is an equivalence of categories. This is therefore an immediate corollary of Mebkhout's (geometric) theory, a consequence that these authors obtain by analytical means (independently of Mebkhout). See for details* the sub-note “The maffia” n° 171 (ii), part (b): “First troubles — or the bigwigs from across the Pacific”.

(**) See, on the subject of this “new style” (of which Kashiwara and Hotta are eminent emulators across the Pacific) the note “Congratulations — or the new style” (n° 1699).

(*) This is the idea that he developed in his seminar at IHES in 1969–70, then left behind. See on this subject the subnote “... and hindrance” (n° 171 (viii)).

coherent (defined in the neighborhood of K), can be defined very simply as the sheaf which pro-represents the functor

$$G \mapsto \text{Hom}_C(F, G)$$

on the category of being ---_X -coherent modules G on X in the neighborhood of K ...), which functor, exact on the left, is indeed pro-representable. For example, if F is the constant sheaf C on a closed analytical subspace Y of X , “extended by zero” over all projective limit of this projective system is the formal complement of along Y .)

— X

We note (returning to the general case) that the pro-sheaf (F_i) is provided with a canonical stratification (**). Deligne's idea is that the “Deligne functor” going from the category of C -vector sheaves constructible on the first category (which is transcendent in nature) in terms of a full subcategory of the category of stratified pro-coherent bundles. The latter has a purely algebraic meaning, and the full subcategory in question can also be defined (in a more or less tautological way (*)), in purely algebraic terms as well. This is the category I will rate

(10) $\text{DRD}^*(X)$ or $\text{Del}^*(X)$,

which constitutes the “fifth photo”, which I did not want to explain yesterday (**). I seem to remember, moreover, that Deligne had taken the trouble to develop his interpretation (and the statement

(**) The notion of stratification for a pro-Module is defined in the same way as for a Module - the description given in the notes from the day before (part (a) applies in principle each time we have a “relative” notion (such as Modules, pro-Module, relative schema etc.) admitting a notion of inverse “image”, ie giving rise to a “fibered category” on the category of “varieties” on which we are working. Note that if (F_i) is a pro-Module, a stratification of it cannot generally be described in terms of a “compatible” system of stratification of F_i — the objects considered are of a much more general nature than the pro-objects of the Laminated Modules category.

(*) “Tautological” at least in terms of the already known dictionary (first released by Deligne) between bundle of locally constant C -vectors (or “local systems”) on the complement $Y \setminus Z$ of a divisor Z in an analytical space Y , and coherent modules stratified on $Y \setminus Z$ which are “regular” (in the sense of Deligne) along Z .

(**) Finally, this explanation (qualified as “tautological”!) is not given here either, at least not immediately. However, it will be given later (page 1011). Please note that notation (10) refers to the “derived categories” variant.

of full previous fidelity) in such a way that it passes to the derived categories (at a time when it had not yet been decided by my unanimous cohomologist students, Deligne in the lead, to scrap the latter), and this is indeed the “derived category” version which I designate by the notation (10), of course.

That said, the “algebraic part” in $\mathrm{RHom}_C(F, \_X)$ must be able to be defined in a very natural way as an inductive limit (in a suitable sense) of $\mathrm{RHom}_{\_X}(F_i, \_)$

$$\lim_{\substack{\longrightarrow \\ i}} \mathrm{Ext}_{\_X}^d(F_i, X) \cong \mathrm{Ext}_{\mathrm{CX}}^d(F, \_X) \quad (\forall d \in \mathbb{Z}).$$

By using the stratification on the pro-object (F_i) and the tautological stratification (11) a $\_$ of the second one must be able to define on the first member of stratification i.e. argument compatible with the homomorphism of Rings of corresponding operators $\_ \_$. That said, Mebkhout's theorem of the good Lord must be able to be clarified, by saying that (11) identifies the second member with the $\_$ -Module deduced from the first by extension of the scalars (*) — which implies in particular that the arrow is an inclusion. Thus, the left member must visualize itself as being a sort of “algebraic” (or “meromorphic”) part in the right member (which is of a “transcendent” nature).

The general situation becomes considerably clearer on the previous particular example, $F = \_ (CY)$ where $i : Y \_ X$ is the inclusion of a closed analytical subspace of X . Then the i second member of (11) is a local cohomology sheaf with supports in Y — a transcendent invariant, while the first member

$$\lim_{\substack{\longrightarrow \\ n}} \mathrm{Ext}_{\_X}^d(\mathcal{O}_{Xn}, X),$$

is the well-known expression that I introduced for local cohomology, in the schematic framework. The fiber of this beam at a point $x \_ Y$ is nothing other than the local cohomology, on the spectrum $\_x$ of the structural beam with supports in the “trace” Y_x of Y on X_x of $\mathcal{O}_X X_x$.

(*) Moreover, of course, the first member of (11) (in agreement with Mebkhout's philosophy) must be a coherent, holonomic and regular $\_$ -Module.

We see in this example to what extent Deligne's idea is close to those that I had developed on the theme of local cohomology, at the beginning of the sixties (**). Still it is that the main theme of work of Mebkhout, between 1972 and 1976, was precisely to study the arrow (11) in this crucial case

$$(12) \quad \lim_{\leftarrow} \text{Ext}_{\mathcal{O}_X}^d(\mathcal{O}_X(n), X) \stackrel{\text{def}}{=} \text{Hd}_{\mathcal{O}_X}^d(\mathcal{O}_X(n) \text{ alg } \tilde{y} \tilde{y} \text{ Hd}_{\mathcal{O}_X}^d(\mathcal{O}_X(n)))$$

In this case it proves the relation announced above, and moreover (something which I had earlier neglected to include in the statement) that the first member of (12) -Coherent module/ and even, holonomic and regular. From there, the analogous statement for (11) must be an immediate consequence by unscrewing (***), including in the case where F constructible vectors, is a complex in $\text{Cons}_{\tilde{y}}(X, \mathbb{C})$. The $\tilde{y}$ instead of being a bundle of $\mathbb{C}$ -only grain of salt, apart from the construction in the form of the Deligne functor, is in the definition of the RHom of a complex of stratified promodules, with values in a complex of stratified Modules ie in a complex of $\mathcal{O}_X$ -Modules (in the occurrence, $\tilde{y}$), as a complex of $\mathcal{O}_X$ -Modules (and as an object of a derived category).

$\mathcal{O}_X$

Modulate this grain of salt, we therefore find a description that is quite simple and conceptual, of the functor of the good God M "algebraic" (as opposed to the functor of the good God $M_{\tilde{y}}$ "transcendent"), or rather of the associated counterfunctor $\tilde{y}$ and its quasi-inverse $\tilde{y}$

$$(13) \quad \tilde{y} = MD = DM, \tilde{y} = mD = Dm,$$

by a double-formula which paraphrases (8). But to write it, -using the Deligne equivalence

$$(14) \quad \text{Del} : \text{Cons}_{\tilde{y}}(X, \mathbb{C}) \xrightarrow{\tilde{y}} \text{DRD}_{\tilde{y}}(X),$$

we will instead look at the corresponding functors $\tilde{y}$ the signs are $\tilde{y}$ between $\text{DRD}_{\tilde{y}}(X)$ and $\text{DRM}_{\tilde{y}}(X)$, where supposed to remind us that we are going to work (on the "constructible" side) with pro-objects.

(**) It will appear below that Deligne's idea is also closely linked to that which I introduced in 1966 (in [Crystals]: for any complex of differential operators, I consider its "formalized" $p_{\tilde{y}}(L \cdot)$ as a layered pro-module complex or, better still, as defining a crystal complex, whose (global) crystal cohomology is identified with the (global) cohomology of $L \cdot$ (***) (May 22) I'm a little sharp here! The "elementary types" of $\mathbb{C}$ -constructible sheaves are of a more general nature than just CY (But it is true that the proof of the general theorem uses the same technique as the particular case of 1976.)

We then find the remarkable formulas (morally contained in (8), but this time linking coefficients “of an algebraic nature” to each other, and this by formulas “of an algebraic nature” as well):

$$(15) \quad \begin{aligned} \tilde{y}^* \tilde{y}^* (C) &= R\text{Hom}_{\text{---}X} (C, X) \\ \tilde{y}^* \tilde{y}^* (C) &= R\text{Hom}_{\text{---}X} (C, \text{---}X) \end{aligned}$$

We therefore have here the “same” formula twice, with the only difference that C “is here a complex of stratified pro-coherent beams (or what amounts to the same thing (*), a complex of pro-coherent module crystals). coherent), while C is a complex of S — Modules (which we can see, morally, as a complex of $\text{---}X$ -Laminated ind-coherent modules, or even, like a crystal of ind-coherent Modules). It is essentially the “same” functor which passes from one to the other, namely, the “ordinary dualizing functor” (consistent), my old friend from the 1950s... It is “obvious”, certainly, that this one this must exchange pro-objects and ind-objects (even if it means going to the inductive limit in the latter...).

Of course there is foundational work to be done, to give a precise meaning to these formulas - work of the type of that done by Deligne in his famous scuttled seminar, or by Jouanolou in his famous equally scuttled thesis (which everyone quotes, since the Col-loque Pervers, and which no one has held in their hands...). This is work, I am sure, which will perhaps be a little long, but essentially “sorital”. The “hard” part is contained in Mebkhout’s theorem of the good Lord, supplemented by the formulas of Mebkhout (8) called (improperly perhaps) formulas of “biduality”. Their algebraic translation on the other hand, affirming that the two functors (15) are quasi-inverse of each other, is indeed (morally) “the” ordinary biduality theorem for coherent coefficients, put to the ind-pro sauce and with stratifications to boot (which must “pass” without problems into the dualizing functor).

$\text{---}X$

The correspondence between the two types of dual objects can be visualized perfectly (without any foundational work!) in terms of complexes of differential operators.

(In this duality, moreover, the condition of holonomy (and a fortiori, that of regularity) plays no role.) At such a complex $L \bullet (F, d)$ (contravariant) envisaged yesterday (in (a)(1)), the functor $F \bullet \text{Hom}_{\text{---}X}$ associates a complex of $\text{---}X$ -Modules with locally free components

(*) See note b. from p. (**) page 1006, about this translation.

of finite type, i.e. C . On the other hand, the “formalization” of this complex $L \bullet$ passing through main ties of infinite order $P\check{y}(L \text{ complex } C^i)$ (regarded as stratified promodules) provides a $= P\check{y}(L \bullet)$ of stratified pro-modules. That said, we see that these two complexes correspond by formulas (15), in which here, visibly, the $R\text{Hom}$ is reduced to Hom . (It is enough to verify this term-to-term duality for the components L and it is then reduced to the more or less tautological fact that the “continuous” linear homomorphisms $P\check{y}(L$ to the differential operators $L \check{y} \check{y} P\check{y}(L$ $\check{y} \check{y} \xrightarrow{x}$ match exactly, just like linear homomorphisms $L^i \check{y} \check{y} \xrightarrow{x}$ respectively using the operator dif- “universal” referential (of infinite order) L by $\check{y}^i$), and “the increase” $\check{y} \check{y} \xrightarrow{x}$, given $\check{y} \check{y}(1)$). Like at least locally on any object of $\text{Cris}\check{y}\text{-coh}(X)$ (ie any complex of $\check{y}$ -Modules with coherent cohomology) is described using a complex of differential operators $L \bullet$. we can consider that for all practical purposes, this particular case gives a perfect grip on the duality (15) between the two types of coefficients, provided that appropriate hypotheses of $\check{y}$ -consistency and “pro-consistency” are made on C and on C of each other. It would therefore suffice to develop the “sorite” “duals” to which I alluded, limiting ourselves, on the C or “pro” side, to complexes of stratified pro-coherent bundles which, locally, can be described (with quasi-isomorphism close) like a $P\check{y}(L \bullet)$.

Compared to Deligne's original approach, the fact that the pro-consistent and complex modules such as he introduces can be realized locally by a complex of differential operators, is moreover an entirely unexpected phenomenon, brought by Mebkhout's theory. It seems to me essentially equivalent (*) to the Mebkhout theorem mentioned above (dating from 1976, before the demonstration of the theorem of the good Lord), concerning the $\check{y}$ -coherence of the beams $H_d \text{ alg}$ (which appear in (12) above). This is a profound theorem, the result of four years of work, and using all the force of the resolution of Hironaka's singularities (without counting the courage of the worker who released and proved it, against the general indifference). The consequence (*) that I have just pointed out is a deep relationship between De Rham coefficients (as I saw them from 1966) and complexes of differential operators, a relationship that I had never anticipated (nor Neither did Deligne, when he developed his first approach to De Rham coefficients). As for the condition of holonomy and regularity on the complex

(*) (May 26) Here again, I am “a little lively”, the result of 1976 is not enough. Compare with comment of the grade of b . from p. (***) page 1008.

of differential operators envisaged, it must be equivalent (a posteriori, thanks to God's providential theorem) to the condition of "finitude" (plus "regularity") of Deligne (which I neglected to explain earlier, by introducing the category $\text{DRD}^{\vee}(X) = \text{Del}^{\vee}(X)$). It is the following: the cohomology pro-sheaves of $P^{\vee}(L \bullet)$ are "unscrewed" locally by composition sequences, in such a way that the successive factors can be described (via the Deligne functor) by local $\mathbb{C}$ -vector systems on subspaces $Y \tilde{Y} Z$ of X (where $Z \tilde{Y} Y \tilde{Y} X$ are closed analytic subspaces of X). To complete giving this criterion an "algebraic" aspect, it suffices to replace the local system of $\mathbb{C}$ -vectors by a coherent sheaf stratified on $Y \tilde{Y} Z$ subject to the condition that the connection which expresses the stratification (NB we can assume $Y \tilde{Y} Z$ smooth) is "regular" in the vicinity of Z , in the sense of Deligne (**). (NB. The associated pro-beam is obtained by growing the crystal we have on and "crushing" along Z , to

$Y \tilde{Y} Z = T$ above infinitesimal neighborhoods of T have coherent sheaves everywhere, not just in the complement of Z ...)

(**) This condition of regularity is introduced here in a natural way, taking into account the equivalence of categories identified by Deligne, between the local $\mathbb{C}$ -vector systems on YZ , and the fibers with integrable connection on Yz , equipped with a "meromorphic structure" along Z , and with regular connection along Z . This meromorphic structure (implying the possibility of extending the coherent Module on YZ into a coherent Module on Y , at least locally in the vicinity of each point of Z) was implied in the description given earlier.

Unless I am mistaken, when we drop the regularity condition in the previous condition (simply assuming given a meromorphic structure of E in the neighborhood of Z , to be able to associate with it a pro-consistent Module on the entire X , by the Deligne process), we find a "cohomological" description of the holonomy condition. Sato's definition is done "microlocally" — I've never really learned about it yet, I admit...

(d) When we no longer assume 'both' $\mathrm{DRM}_{\tilde{Y}}(X)$ or $\mathrm{Del}_{\tilde{Y}}(X)$, which have a purely algebraic meaning. I outlined yesterday (in a Rham" on $\tilde{Y}$) definition principle for $\mathrm{DRM}_{\tilde{Y}}(X)$ and today even the category $\mathrm{DRD}_{\tilde{Y}}(X)$. It is the latter which from now on is perfectly intelligible to me. As I pointed out yesterday (see (a), note by b. de p. (***) page 998), it is necessary here to refine the point of view of pro-stratified modules, by that of crystals in pro-Modules (pro-consistent) (*). The only problem that still remains with this point of view is the "pro" sorite that it will force to develop, sorite which (according to my modest experience in such matters) risks taking on prohibitive dimensions! These promodule crystals, which associate, with each infinitesimal thickening U of an open U of X coherent on U

a professional module $\mathcal{C}_U$ "in a manner compatible with the inverse images" for morphisms $U \rightarrow U$ of thickenings, cannot even be interpreted as pro-beams on the crystal site (or what amounts to the same thing, on the X_{cris} crystal topos) ! Therefore we cannot a priori apply to them the cohomological formalism known from sheaves of Modules on (commutatively) ringed topos, such as X_{cris} .

The temptation is great, here, to move to the projective limit of the probeam that we have on each thickening. We thus find crystalline Modules (if not crystals in Mod-ules), whose "value" on each U is neither coherent nor quasi-consistent. The hope is that at least for the type of pro-module crystals that interest us (those, in particular, obtained by the Deligne functor) such a pro-module crystal can be reconstituted from the Crystal module C deduced by passing to the limit, taking on each thickening U the "pro-coherent envelope" of the Zariskian beam CU (restriction of C to the Zariskian open ends of U) (*) This seems to me to be the case throughout less for pro-module crystals associated with a coherent module stratified on a $Y \rightarrow Z$ as above, for example in the typical case where we take the formal complement of OX along $Y \rightarrow Z$ and extend by zero elsewhere (and itou on the thickenings). If my "hope" is justified, then

(*) (May 27) On reflection, I even find it hard to believe that Deligne's theorem $\mathrm{Cons}_{\tilde{Y}}(X, C) \rightarrow \mathrm{Del}_{\tilde{Y}}(X)$ is true for non-smooth X , when $\mathrm{Del}_{\tilde{Y}}(X)$ is defined as Deligne does without recourse to the crystalline site. It is perhaps even because he realized this that he finally preferred to scuttle the entire theory, rather than agree to reintroduce the taboo site... (Compare with the note "... and hindrance", n° 171 (viii).)

(*) Speaking here of a "Zariskian" beam (as opposed to "crystalline"), I surreptitiously slipped back into the schematic context. The reader who prefers the analytical context will have corrected this for himself.

the category $\text{DRD}^b(X)$ of the De Rham — Deligne coefficients on regularity”
 (themselves described in terms of unscrewing, as above) on the cohomology sheaves.
 This would be a description of disconcerting simplicity, which I could just as easily
 have given in 1966, if I had taken the leisure then to continue my crystalline reflection...

This question of “foundations” (whether it is licit to pass to the limit) obviously does
 not depend on the question whether X is smooth or not — if it is not, we immerse it in
 a smooth reduces to the smooth case. If this point of view (almost too good to be true!)
 did indeed work, then (in the smooth case now) there would be reason (I think) to
 interpret the “biduality” formulas (algebraic version) (15) as being $\text{ordinary\_RHom}_{OX}$,
 without bothering with pro-questions (but simply being careful to transport the
 stratifications...). A first test in this sense would be the following: if $u: C_1 \rightarrow C_2$ is a
 morphism of complexes of $\mathcal{O}_X$ -Modules with coherent cohomology, such that its image by
 the naive dualizing functor $\text{RHom}_{OX}(\mathcal{Y}, \mathcal{O}_X)$ is a quasi-isomorphism, is it the same for
 u ? But this amounts (by a mapping-cylinder argument) to asking whether a complex of
 $\mathcal{O}_X$ -Modules with coherent cohomology, such that its “naive dual” is zero (in the sense of
 derived cat., ie with zero cohomology sheaves), is itself null (in the same sense). Or
 again, if we have a complex of differential operators $L^\bullet$, does it amount to the same
 thing to say that the associated complex of $\mathcal{O}_X$ -Modules has sheaves of zero cohomology,
 or that this is the case for the “formalized” complex $P^\bullet(L^\bullet)$, seen this time not as a
 complex of pro-sheaves, but as a complex of ordinary sheaves (moving on to $\lim$?).
 Mebkhout will surely be able to tell me...

(May 23) I called Mebkhout again yesterday evening - I've been calling him almost
 every evening for a week or two, for mathematical or historical questions - and in total,
 it's going to make a note of astronomical telephone! But the Apotheosis, which I've
 been working on and polishing for three solid weeks, is well worth that...

Still, Zoghman guaranteed me a result which seems close to the “question is such
 test” on which I finished last night: if C in Cris^b of associated $\text{L}^\bullet_{\text{coh}}$, that the complex
 operators $L^\bullet = \text{DR}(C)$ is almost zero, then C is itself almost zero (analytical case). We
 have a homomorphism of bundle complexes (of C -vectors), given by the

“main parts of infinite order”

$$L^\bullet \rightarrow P^\bullet(L^\bullet),$$

hence homomorphisms

$$(16) \quad H_i(L^\bullet) \rightarrow H_i(P^\bullet(L^\bullet)) \quad (i \in \mathbb{Z})$$

on cohomology sheaves. We want to say that this homomorphism (16) is always injective, and identifies the first member with the sub-sheaf of “horizontal” sections of the second (which would be a sort of accuracy property of the “sheaf of sections” functor horizontal” on a suitable category of laminated pro-Modules...). Injectivity would already imply that if the second member is zero, it is the same for the first, so if it is true for all i (and according to what Mebkhout assures me) the complex of $\mathcal{D}$ -Modules associated with $L^\bullet$ is almost zero — what I wanted.

The injectivity in (16) also means that for a differential operator $E \rightarrow F$ section f of F which at each point $x \in X$, and such that the “formal solution” (of the equation $d(g) = f$ in $\mathcal{D}$) can be taken, for x variable, analytically dependent on x — the equation then locally admits a solution. Mebkhout tells me that he is not aware of such a result; yet the question is so natural that the answer should be known!

To finish with the “five photos”, I would like to return here again to the two “crystalline photos”, one corresponding to the point of view of Mebkhout des $\mathcal{D}$ -Modules, the other to the dual point of view. It is well understood that we must work in the spirit of the derived categories — so a “crystalline” interpretation worthy of the name must take this into account. So the two crystalline photos are “fully faithful” only if the corresponding functor, going from the category $\mathcal{D}\text{-coh}(X)$ (say), to an appropriate crystalline category, such as $\mathcal{D}\text{-b}(X_{\text{cris}}, \mathcal{O}_{X_{\text{cris}}})$, is itself fully faithful. I hope that this is indeed the case without even being burdened with conditions of holonomy and regularity on the complexes of $\mathcal{D}$ -Modules envisaged.

The simplest case is undoubtedly that of photo n° 4, which consists of interpreting the category of $\mathcal{D}$ -Modules as that of crystals of Modules, hence a total derivative functor (called “Grothendieck” — to take the lead on lovers of “useless details” and

“digressions techniques”...) :

$$(17) \quad G : D^b \text{coh}(X, \mathcal{O}_X) \xrightarrow{\sim} D^b(X_{\text{cris}}, \mathcal{O}_{X_{\text{cris}}}).$$

The crucial question here is whether this functor is fully faithful. It is only in this case that the notation $\text{Cris} \tilde{\text{coh}}(X)$ for the first member is completely justified - and at the same time also, the crystal point of view in cohomology of De Rham (at least, in this case, in the complex analytical framework, or the framework of algebraic schemes on a null field).

To prove full fidelity, in algebraic geometry say, we are brought back by standard arguments to the case where X is affine (or, in the analytical case, to the case of a polydisk), and to the case where the two objects C, C' envisaged in the first member (of which it is a question of comparing the Homs in one and the other direction) are both equal to itself, with simply a shift of degrees. (This reduction is done without problem, at least assuming C, C' with bounded degrees, therefore limiting ourselves to $D^b \text{coh}(X, \mathcal{O}_X)$, which seems largely sufficient for applications.) We are therefore led to finally verify the formulas

$$(18) \quad C(X, \mathcal{O}_X) \xrightarrow{\sim} \text{Hom}(G(i), G(j)), \text{ Ext}^i(X_{\text{cris}}; G(i), G(j)) = 0 \text{ pour } i > 0.$$

(for X affine, resp. Stein). I have not taken the time to verify it (*), but have little doubt that it is true. I demonstrated something very similar, it seems to me, in [Crystals] (in 1966) (**).

As for photo five, there are several different prints. Deligne's original draw is in terms of stratified pro-coherent modules. The first important modification, with a view to generalization to the non-smooth case X , consists of interpreting the animals in question as crystals in pro-Modules. But here we are getting into the gears (not very engaging!)

(*) I have excuses, most of my time, for more than a year, having been absorbed in following the prowess of some of those who were my students...

(**) This is the result to which I have already alluded elsewhere, that for a complex of differential operators L on a smooth relative scheme (or in the itou analytical framework, surely), the “Zariskian” hypercohomology” of L^* is identified with the crystalline hypercohomology of its formalized $\text{P}\tilde{Y}(L \bullet)$. To tell the truth, this statement concerns more directly the “dual” arrow (19) of (17), and can also be expressed by saying that for C, C' complexes of $\mathcal{O}_X$ -Modules with coherent cohomology, the arrow

$$\text{Hom}(C, C') \xrightarrow{\sim} \text{Hom}(G \tilde{Y}(C), G \tilde{Y}(C'))$$

is bijective, in the case where $C \equiv \mathcal{O}_X$ (which is already not bad and gives all hope...).

endless pro — foundations of pro-cohomological algebra — and we lose the benefit of direct topological intuition, attached to X_{cris} . So I prefer (if possible) to take another photo altogether, from roughly the same angle of view, via a contravariant functor (also known as “Grothendieck”, hopefully...)

$$(19) \quad G^{\vee} : D^b \text{coh}(X, \mathcal{O}_X) \rightarrow D^b(X_{\text{cris}}, \mathcal{O}_{X_{\text{cris}}}).$$

We can say that it is the one which is deduced from the Deligne photo by suddenly passing to the projective limit on each infinitesimal thickening. of an open U of “formalization” of the complex $L \bullet$ like. a complex of stratified promodules (idea introduced in [Crystal]), or even as a complex of crystals of pro-Modules, and passing to the projective limit on any thickening. Another way of saying this is that at any locally free $\mathcal{O}_X$ its image by (19) is obtained by looking -Module (for example) L on crystalline X (which is not a crystal of modules, unless I'm mistaken), which I note $P^{\vee}(L)$ “obvious” certainly (and which my students have long forgotten), which module depends functorially on L with respect to the differential operators, and therefore passes to complexes of differential operators.

— a module is associated
 $\mathcal{O}_{X_{\text{cris}}}$ In a way

One or the other previous description of the functor (19) also remains incomplete, notably due to the fact that an object on the first member does not necessarily come, on all X , from a complex of differential operators. I assume that we can give an intrinsic interpretation of this heuristic description, by the formula

$$(20) \quad G^{\vee}(C) \cong \text{RHom}_{\mathcal{O}_{X_{\text{cris}}}}(G(C), \mathcal{O}_{X_{\text{cris}}}) \quad (\text{where } G \text{ defined in (17)}),$$

but have not verified that it is correct. By the standard arguments, we still come back here is well (to prove that the natural arrow (20), when C is associated as above with $L \bullet$ an iso) in the case where $C =$ and then (20) is reduced to the formulas

$$(21) \quad \text{Exist} \quad \text{Ext}_{\mathcal{O}_{X_{\text{cris}}}}^i(G(), \mathcal{O}_{X_{\text{cris}}}) = 0 \text{ pour } i > 0,$$

which look quite similar to (18).

The meaning of the full fidelity of (19) is in any case quite clear, and is reduced again, by unscrewing (and as for (17)) to the case where $C =$ $C = [i]$ (shift of degrees by i), and

then reduced to the formulas

$$(22) \quad \check{H}^i(X, \mathcal{H}) = \text{Hom}(\check{H}^i(X, \mathcal{H}), \mathbb{Q}), \text{ Exist } H^i_{\text{crys}}(X; \mathbb{Q}) = 0 \text{ for } i > 0,$$

where we put

$$H^i_{\text{crys}}(X; \mathbb{Q}) = H^i_{\text{crys}}(X, \mathcal{H}) \otimes_{\mathbb{Z}} \mathbb{Q},$$

which is a crystalline Algebra everything that is remarkable about X . We assume here (for the nullity of crystalline Exti) that X is affine (resp. Stein).

Finally, what had seemed to me just yesterday “almost too good to be true”, while I was still seeing things through Deligne's photo, suddenly takes on a completely reasonable appearance — once things are written without being burdened with conditions of holonomy (and even less, regularity). If God gives me life, and if no one else does the work for me first, I hope to clear this up (and the validity of (21) and (18)) before the end of the year, with the part of volume 3 of the Reflections which will be devoted to De Rham coefficients.

As I said, it is photo five, the one which “sticks” closest to the topological intuition associated with discrete coefficients, which is my preference. It would be with death in my soul that I would learn that the formulas (22) are false (while I would be less bothered if this were the case with the formulas (18), which, however, seem technically less screws). This would show that we would have to return to the pro-point of view (of the retouched Deligne photo) — a not so cheerful perspective! In any case, there is no doubt in my mind that apart from technical adjustments, we indeed have an excellent photo, valid in particular in algebraic geometry (and even on something other than bodies with zero characteristics), and without any assumption of its site.

As for photo four, the fidelity of which is subordinate to the validity of (18), I confess again that I still “do not see it well” outside of the smooth case (and even in the smooth case), and am not not sure that for X not smooth, the crystalline interpretation that I proposed does indeed work as is. It seems to me, however, that my endemic perplexities of variance, concerning the point of view of Mebkhout des $\mathcal{H}$ -Modules (and above all, my crystalline interpretation of this point of view), are about to be resolved, by the introduction of a notion dual to that of crystal, which I call co-crystal. It was not later than yesterday that this diffuse feeling of unease that there was (for the “variance” of the $\mathcal{H}$ -Modules by closed immersions) finally ended up giving birth to a “good notion” (what seems to me, without having

nothing really written yet). It seems to stick to the “ind” side, as well as the notion of crystal (which is familiar to me) to the “pro” side. On a smooth manifold, the two categories (crystals and co-crystals) are canonically equivalent (and this is why I necessarily tended to confuse them - it's excusable...), but it is no longer even for any X . The situation is quite analogous to what happens with the cohomology ring $H^\bullet(X)$ and the cohomology group $H^\bullet(X)$, or the Chow ring $Ch^\bullet(X)$ and the Chow group $Ch_\bullet(X)$, or the Grothendieck ring (I apologize for the odd...) $K_0(X)$ and the Grothendieck group $K_0(X)$ (re-apologies) Here too for a long time we confused the two types of objects when X is a smooth variety (topological, or algebraic, etc. — depending on the case). This is “explained” after the fact, due to the fact that the second term is provided in any case with a module structure on the first (the “cap”-product — in the last two cases this was introduced by an ancestor that I would not dare to name here...), and that in the smooth case, we find that this Module is free of rank 1 and provided with a canonical base, which caused it to be unfortunately confused with the ring (much more beautiful, of course). Well it's the same for the categories $Cris^\bullet(X)$ of the crystals of Modules on

provided with a “ring” structure by the tensor product, and that Cris. (X) co-crystals of modules, on which the previous “operates” by a capproduct, perfectly!

But it is time to stop this long mathematical digression, entirely out of place (I admit) in the ordering of a beautiful Funeral Ceremony. The reader interested in knowing what happens next (extensive, of course) will be reduced to purchasing volume 3 of the Reflections (if he does not regret his finances), where an unrepentant deceased intends to continue his confusing “technical digressions” (*)

(e) (May 27) A “final” footnote, added to the “Five Photos” at the last minute yesterday (before giving the first twelve notes of the Apotheosis), has taken on even more “prohibitive dimensions”, and I will finally continue “this long mathematical-ematics digression” with a last (and short) section. Thus, “The Five Photos” will consist of the five sections a) to (e) — so that everything is rounded and perfect...

This is a commentary on the true (presumed) domain of validity of Mebkhout's “God theorem”, which goes far beyond (in my opinion) the initial framework of spaces

(*) This time, need I say, as a “collaborator” of another of my students, promoted since beautiful long “father” of crystals...

complex analytical concepts — not only through the new philosophy that it brings (and which has now renewed the cohomological theme), but also in a technical sense.

Once we interpret the $\mathbb{C}$ -vector sheaves constructible on in terms of crystalline beams (à la Grothendieck), the “good God theorem” alias Mebkhout affirms the equivalence of two categories which, this time, are both of a “purely algebraic” nature. In other words, this theorem now takes on a precise meaning, in contexts other than the complex analytical context: as well the context of smooth diagrams on a body (which there is not even reason to suppose zero characteristic — see, on this subject, the note by b. de p. (**) page 996 above; in char. $p > 0$ the “crystalline with divided powers” point of view is essential here), i.e. the rigid varieties -analytics of any characteristic, i.e. smooth schemes of finite type on $\mathbb{Z}$ (and so on...).

The “formal” part of the God's theorem concerns all complexes of coherent $\mathcal{O}$ -Modules, not only those which are holonomic, and says that the God's functor, revised and corrected by the care of the ancestor (ie the duality by relation to the structural bundle $\mathcal{O}_X$, essentially) is fully faithful from the category $\text{Dcoh}(X)$, When you get it right, it should be more or less “sorital”.

But in the arrival category, we define, “by unscrewing”, two remarkable full subcategories, that of “coefficients. holonoms” resp. that of “regular holonomic coefficients” (as at the end of (c)), and in the note to b. from p. (**) page 1011). That said, the “generalized Mebkhout theorem” (in the context envisaged), which will certainly have nothing sorital but is surely profound, will say two things:

1. The Coeffy category where, holonomic “coefficients” is in the image of the category Crisy $\text{coh}(X)$ by the (fully faithful) “de MebkhoutGrothendieck” functor. (NB. Morally, this functor is the functor of Mebkhout, but looked at on Crisy $\text{coh}(X)$ as a whole, and moreover “reviewed and corrected by the care of the ancestor”, so that the goal is in Coeffy which has a meaning purely algebraic...).

2. Characterize the inverse image of $\text{Coeff}_{\text{where}}$ and $\text{Coeff}_{\text{hol reg}}$ by “microlocal” “holonomy” and “regularity” conditions, in terms of complexes of differential operators.

For this last point (which for my program of the sixties is perhaps relatively incidental), we have in zero characteristic a holonomy condition already found. As for the condition of regularity, it's time to see if the Japanese don't have the right notion up their sleeves - but it's not Mebkhout who will teach me that, since he has seen too much to want to hear about it.

As for me, who has not seen anything like him, it seems to me that there are three different aspects of regularity, which complement each other:

- 1) “Geometric” aspect released by Deligne by unscrewing in $\text{Coeff}_{\text{to hol}}$, bringing himself back the regularity condition for a “local system” (e.g. fiber with integrable connection) in the vicinity of a singular divisor.
- 2) “Microlocal” or “Japanese” aspect, expressed directly in terms of complexes differential operators (?)
- 3) “Cohomological” aspect introduced by Mebkhout, aspect which for the moment is only well understood (it seems to me) only in the complex analytical case. I do not have the slightest idea if it has a chance of generalizing to the rigidanalytic .

The aspect 3) will of course be crucial, each time it comes to establishing a comparison theorem between “Zariskian” cohomology and “rigid” cohomology, for an algebraic variety defined on a value field. complete, and holonomic coefficients.

For my great “variance program” from the sixties, it is of course the “geometric” aspect which is the most important aspect of all. What is important is to define a formalism of the six operations for the $\text{Coeff}_{\text{hol}}$. If we even find one for the $\text{Coeff}_{\text{hol}}$, as Mebkhout seems to believe, so much the better. But (if I am not mistaken) the patterns (which I have before anything else) will only give rise to coefficients that are both holonomic and regular.

I come back to question 1, which admits as an obvious variant a “question I” (more modest), with $\text{Coeff}_{\text{where}}$ replaced by $\text{Coeff}_{\text{where reg}}$. Once the full fidelity of the Mebkhout-Grothendieck func-tor has been proven, we are visibly brought back to the following thing: we

gives, on a smooth (not necessarily closed) submanifold Y of $-ci$ (at the $\bar{c}$ a connected fiber points of $Y \rightarrow Y$). The Deligne process (possibly revised by the ancestor to move to the crystalline context) allows us to associate a Coeff $\bar{y}$ object (which by definition will even be “holonome”, or even “regular holonom”). Is this object in the image of the Mebkhout-Grothendieck functor?

Or, which amounts to the same thing, is it that locally on X , the object in question of Coeff $\bar{y}$ can be described by a complex of differential operators on the “formalization” of said complex, interpreted either as a Deligne complex, or as a crystalline complex?

The answer to this question is in any case affirmative (except for error) in the complex analytical case, as well as in the case of smooth relative schemes on a body of zero characteristic, without even having to introduce the regularity condition. This is the “entirely unexpected phenomenon, brought about by Mebkhout's theory” that I took care to underline previously (in (c), page 1011) (*). In the regular case (including “at infinity”), it is essentially God's theorem. In the general case, if I am not mistaken, this must result without tears from what I called the “cohomological criterion of holonomy” (or “reciprocal: to Kashiwara's constructibility theorem”), due to Mebkhout, which is discussed in the following note “Three milestones — or innocence” (n $\bar{y}$ 171 x), see page 1028).

(171(x)) (May 5 and May 23) (*) The philosophy that Mebkhout developed between 1972 and 1980 can be summarized in three major theorems, all three closely linked to the ideas that I had developed in the years fifty and sixty, but of which I (nor anyone) knew

(*) Highlighting such facts has become nowadays, at least in the part of mathematics in question here, a real work of public health, at a time when almost all publications on the cohomological theme, and the totality (I fear) of those which appear under today's prestigious signatures, are written in such a way as to avoid precisely the great key ideas which give life to all these texts, and to blur or eradicate the role and the origin of such a crucial tool (old, or new one that has appeared), of such a neuralgic notion, of such a fruitful idea. There is an intellectual corruption (sign of a deeper corruption...) which is spreading today in our science in full view of all, of which I have not been aware for any other science in any other moment in history.

(*) This sub-note “The three milestones” comes from a footnote to the note The work... (n $\bar{y}$ 171 (ii)). See the reference sign placed towards the end of this note.

provide none (**).

The first great theorem is the main fruit of Mebkhout's work between 1972 and 1976. It concerns the local cohomology sheaves $H^i_Y(\mathcal{O}_X)$ (notion introduced independently by Sato and by me) of the structural sheaf of a complex analytical manifold smooth with supports in a closed analytical subspace Y . The essential observation here, that no one had thought of doing before Mebkhout, is that the operations of the ring $\hat{\mathcal{O}}_X$ of the differential operators of infinite order on also on these cohomology sheaves. On the other hand, in the "Zariskian" framework of algebraic geometry, I had described these sheaves (towards the end of the fifties?) as inductive limits of Ext sheaves. This led Mebkhout, by analogy, to introduce an "algebraic part" of local cohomology, and a canonical arrow

$$(1) \quad H^i_Y(\mathcal{O}_X) \underset{= \lim_{\leftarrow} \hat{\mathcal{O}}_X}{\overset{\text{def}}{\text{alg}}} \underset{\text{Exist}}{\mathcal{O}_X(\mathcal{O}_X^n, \mathcal{O}_X)} \hat{\mathcal{O}}_X H^i_Y(\mathcal{O}_X) \overset{\text{def}}{=} \underset{\text{Exist}}{\mathcal{O}_X}(\mathcal{O}_X^n, \mathcal{O}_X),$$

(**) As I point out in the note "The crazy questions" (n° 171 (vi)), I had known for a long time a variant of Mebkhout's global duality theorem, for a clean and smooth relative diagram X/S , in terms of complexes of relative differential operators. Precisely, if $L \bullet$ are such com- and $L \bullet$ ~~places~~, "adjoint" to other, then $Rf_*(L \bullet)$ and $Rf_*(L \bullet)$, as objects of the derived category $D(S, \mathcal{O}_S)$ are "perfect" complexes (locally representable by complexes of free modules of finite type with bounded degrees), and duals of each other in the usual sense for perfect complexes. In the case where $S = \text{Spec}(C)$, this theorem is more or less equivalent to that of Mebkhout (restricted to the case of an analytical variety which is algebraic and proper), with this important difference however that I was missing a point from a "derived categories" view, to deal with complexes of differential operators. On the other hand and above all, I had none; suspect that these complexes (subject to suitable conditions released by Mebkhout) form a perfect substitute for "discrete coefficients" (or De Rham coefficients). It was clear to me, on the other hand, from the year 1966 at least, that there must exist such a substitute for algebraically constructible C -vector coefficients, having a meaning for schemes relative to any characteristic, and my crystalline ideas were precisely a first approach in this direction. As we will see in [Crystals] (these are the presentations cited in the previous note "The five photos ('crystals and -Modules)", n° 171 (ix)), the internal logic of my crystalline reflections had nevertheless brought again into contact with complexes of differential operators. I was then already very close to Mebkhout's philosophy. My cohomologist students (and especially Deligne, Berthelot, Illusie) must have been blocked by the Burial syndrome, for not having released this philosophy in the following years. (I myself was then fully occupied with other foundational tasks, and had left the crystalline theme to the care of my students.)

(***) for a definition of these operators, whose name is frightening at first glance, but which give rise to a formalism in all respects parallel to that of ordinary differential operators, see part (b) of the previous note "The five photos (crystals and -Modules)" (n° 171 (ix)).

where X_n designates the n th infinitesimal neighborhood of Y in X and C_X, C_Y the constant beam C on X resp. Y (the latter extended by zero on $X \setminus Y$). The second essential observation is that this time the ring of ordinary differential operators on X operates on the first member. It was well known that the kind of beams that we obtained, both the right-hand side of a transcendent nature, and the left-hand side of an "algebraic" nature, were of rather prohibitive dimensions, as $\mathcal{O}_X$ -Modules — nothing of consistent, that's for sure. It is also true that we had the feeling (at least on the algebraic side) that there was still a certain type of "finitude" or "cofinitude" before Mebkhout thought of specifying it. Mebkhout's remarkable theorem is that the first member is a coherent $\mathcal{O}_X$ -Module, and that moreover, the second member (which seemed even more intractable) — in a sense that no one is simply deduced from the first by the change of Rings

$\mathcal{O}_Y \rightarrow \mathcal{O}_X$!

As the second Ring is known to be flat on the first, this also implies that (1) is injective. At the same time, given the consistency result, this can be considered as a very strong finiteness theorem concerning the second member (which no one before Mebkhout understood anything about) — this one is notably of finite presentation as $\mathcal{O}_Y$ -Module (but perhaps not coherent, since we do not know if $\mathcal{O}_Y$ is itself coherent).

The first case treated by Mebkhout, that of a divisor with normal crossings, is the subject of his third cycle thesis/passed in 1974. Already this case is not trivial, and of course, entirely new — the very question resolved by Mebkhout had never been seen. This case, moreover, turns out to be the crucial case, to which Mebkhout manages (by successive approximations, of increasing generality) to reduce (*), through resolution of the singularities.

The result that I have just stated, in itself, appears to me to be of such significance that under somewhat normal conditions, they would have earned their author international notoriety. Also, the first crucial case treated by him already denoted an originality of vision which, "normally", would have earned him the warm encouragement of those among his elders (such as each of my ex-students, without exception) who were able to enjoy the flavor.

Let's move on...

(*) For Mebkhout's theorem on local cohomology, see in particular: Local cohomology of a hypersurface, in Functions of several complex variables III, Lecture Notes in Mathematics n° 670, p. 89–119, Springer-Verlag (1977), and Local Cohomology of analytic spaces, Publ. RIMS Kyoto Universe. 12, p. 247–256 (1977).

In fact, in these four years, Mebkhout arrives at an even more detailed result than the one I have just stated. He proves that the $\mathcal{O}_X$ -Module that he studies is not only coherent, but also holonomic (notion that he found in the Japanese school), and more regular(*) (in a sense that he defines ad hoc, drawing inspiration from my comparison theorem for algebraic-analytic De Rham cohomology). Better yet, it proves that the initial constructible $\mathbb{C}$ -vector bundle $\mathcal{C}_Y$ (which enters into the definition of the second member of (1)) is reconstituted from the complex of $\tilde{Y}$ -Modules $\mathrm{RHom}_{\mathcal{C}_Y}(\mathcal{C}_Y, \mathcal{O}_X) = \mathcal{C}$, by the extraordinary inversion formula:

$$(2) \quad \mathcal{C}_Y \mathrm{RHom}_{\mathcal{C}_Y}(\mathcal{C}_Y, \mathcal{O}_X) = \mathcal{C}.$$

no one had ever dreamed of such a formula - and no one would dream of it until D-day five years later, when the power of philosophy was revealed and at the same time gave the signal for the Burial, alongside the ancestor, the one who brought it... To dream of it, it would have been necessary not to have buried the philosophy of the ancestor (with derived categories, RHom with or without underlines and others “unnecessary details”...); and moreover, know how to appreciate a geometric situation that is completely innocuous and yet full of mystery (local cohomology with supports in a divisor with normal crossings), and to get to the end of the mystery. This “end” is not yet in the splendid 1976 theorem that I have just described — but from this moment, Mebkhout has a clear vision of it: it is the double “theorem of the good Lord”, one for regular holonomic $\mathcal{O}_X$ -Modules, the other for holonomic $\tilde{Y}$ -Modules, and the double inversion formula (or “biduality”) which was discussed previously (**).

It is also the solution, of marvelous simplicity, to the problem of the relationship between discrete coefficients (analytically constructible) and “continuous” coefficients.

But I anticipate. When he demonstrated the theorem which constitutes the first major milestone of his work and his philosophy, the “end”, clearly perceived, still seemed dizzyingly distant to him. If he had found a competent and caring elder nearby, and with a minimum of experience and mathematical flair, he would have disabused him: obviously, he was already very close, and the difficulty to overcome, as so often in the work of discovery (not to say, always...), was more psychological than technical. But before

(*) Mebkhout's original (transcendent) definition of regularity is recalled in the note “The work...” (n° 171 (ii)), note by b. from p. (*) page 950.

(**) In the previous note “The five photos (crystals and $\mathcal{O}_X$ -Modules)” (n° 171 (ix)), part (b).

setting out in pursuit of the infinitely distant, he tackles the global duality theorem — the one which was to “cover” the known duality theorem, both for coherent coefficients and for discrete coefficients. The deep motivation, omnipresent in Mebkhout's work, which links the two problems, that of local cohomology and that of global duality, is the presentiment of an essential unity between discrete coefficients and continuous coefficients. This was also my guiding principle in my crystalline approach of 1966, which attempted to understand the “De Rham coefficients” (of an essentially discrete nature) in “continuous” terms...

This is not the place to return here to the statement of Mebkhout's duality theorem (*). His demonstration encountered serious technical difficulties, due to the transcendent context, which he overcame using techniques of cohomological descent and nuclear EVT (techniques to which I was also no stranger, even if Mebkhout is the only one who still persists in citing the ancestor...). From the point of view of his philosophy of duality, this theorem is an essential milestone. If we keep in mind, with Mebkhout, that applied to the complexes of holonomic modules it contains the global duality for the analytically constructible discrete coefficients (**), in addition to the coherent duality, we can say that it also already contains in germ the entire philosophy of the Mebkhout-Modules.

Its scope, as soon as he spoke to me about it the first time, in 1980 (the year after the defense of his thesis (***), appeared to me as an obvious thing. I don't think I had the honor of inspiring work of comparable scope, to any student working with me (*).

Mebkhout also had great difficulty in having this theorem published, which smacked of “the

(*) This statement is recalled in the note “The work...” (n^o 171 (ii)).

(**) At the time when Mebkhout established his global duality theorem (1976), he had not yet proven that any analytically constructible sheaf of $\mathbb{C}$ -vectors comes from a complex of $\mathbb{C}$ -Modules.

But he had no doubts about it.

(***) See the note “Meetings from beyond the grave” (n^o 78).

(*) I am thinking here especially of students who prepared a thesis with me. The case of Deligne is special, since he completed his thesis after my departure, and without mentioning my name, whereas the initial inspiration for his work (on Hodge-Deligne cohomology) came from my problematic of “coefficients” of all kinds, which also provided for a formalism of “Hodge coefficients”. Deligne's work is a first step in this direction, much more fragmented than that accomplished by Mebkhout, in the direction (closely linked to that of Hodge) of “De Rham coefficients”. It is true that Mebkhout, faced with serious handicaps due to the indifference and disdain of his elders, was on the other hand not afflicted by the burial syndrome which paralyzed my students. (See on this subject the note “... and hindrance”, n^o 171 (viii).)

grothendieckeries" in full view. (The Annals of Mathematics sent it back to him, making him understand that this sort of thing was not of the required standard. It ended up appearing anyway, in *Mathematica Scandinavica*, in 1982 (**).) I believe that This was his favorite theme when he gave lectures on the philosophy of $\mathcal{A}$ -Modules, but in a spirit very different from that of the Japanese. He told me that this theorem had the gift of astonishing listeners, or occasional interlocutors, with the precise exception, in every case, of those who are part of the establishment (***). This is one thing that comforts me. It shows that this spirit of stuffed self-importance, which tarnishes the beauty of everything, however beautiful it may be, has not become general in the mathematical community. It is especially prevalent (if not exclusively) in the higher spheres, where I have had ample opportunity to become acquainted with it over the past ten years. - It is appropriate to complete this theorem of global duality with the already mentioned result of local nature, also deep, saying that the natural dualizing functor for the complexes of $\mathcal{A}$ -Modules, with bundles of coherent cohomology, which transforms holonomic complexes

into holonomic complexes (and itou for regular holonomic complexes), is moreover compatible on these with the De Rham functor DR ("complex of associated differential operators", considered as a complex of $\mathbb{C}$ -vector sheaves with cohomology

(**) Global duality theorems for coherent $\mathcal{A}$ -Modules, *Mathematica Scandinavica* 50 (1982) p. 25–53. See also "Duality of Poincaré" in seminar on the Singularities of Paris VII (Pub. n° 7), 1977–1979, and especially "The Poincaré-Serre-Verdier duality" in *Proceedings of the Conf. of Algebraic Geometry, Copenhagen (1978)*, Lecture Notes in Mathematics n° 732, p. 398–418, Springer Verlag (1979). The introduction to both of these presentations, and particularly to the second, represent a sketch of the philosophy brought by Mebkhout, at a time when he was the only one to be its depositary and advocate.

(***) (May 24) This overlaps well with my own observations. It would seem that the situation of a prominent man predisposes to such complacency, for whom "nothing is beautiful enough for her to deign to rejoice in". I don't know if these provisions are the rule in the scientific world as a whole, today, or even always.

It was my great good fortune to have been welcomed in my early days by an environment where such a spirit of self-importance did not exist — not yet.

It must have come quietly, over the years, settling in one and the other, little by little, without anyone among us (apart from Chevalley only...) being aware of it. see. Everything seemed the same as before — and yet everything was already different. It was already like a fine layer of dust inside us, covering the original freshness of things. I was affected by this dust, like the others. And today, when I find myself again confronted with one of those who were students, or friends, very often I have the impression that this dust has accumulated in thick and dense layers, and which it has formed like a waterproof, impenetrable armor, which calls to me through them...

constructible), for the natural dualizing functor that I had introduced on these (*). This compatibility is obviously an essential ingredient of Mebkhout's duality formalism, for an understanding of the meaning of his global duality theorem. For some reason he calls it "local duality theorem" (**). This profound theorem, just like the famous "correspondence" (called "Riemann-Hilbert", when we deign to name it), is treated by "everyone" (Verdier and Deligne in the lead) as a "well-known" thing which would go without saying, and especially without ever naming a certain stranger (of whom "everyone" knows

(*) This is the duality which has become in the meantime, by the general consensus of my students and former friends, the "Verdier duality" (both in the complex analytical case, as well as in the spread one)... (See on this subject, for example, the note "The good reference", n° 82.)

(**) It is under this name that the result appears in chapter III of Mebkhout's thesis. He told me that he was inspired, for this name (as for that of "biduality theorem"), from the terminology that I had introduced — however, for me the "local duality theorem" was just another name for the "biduality theorem" that I had identified, of which it represents an important aspect, the "geometric" aspect.

This compatibility result (Mebkhout explains to me) was an important step in his demonstration of what he calls, in this same chapter, the "biduality theorem". (See, regarding the latter, the previous note "The five photos", part (b).)

Question of demonstration aside and from the point of view of a "philosophy" or a "yoga", it was certainly an "obvious" thing that the functor of the good God had to commute to the dualizing functors (since there to a good God!). Funny detail, Kashiwara (to whom Mebkhout had the opportunity to speak in person in January 1978) did not believe that this theorem was true 1 This shows to what extent he was out of his depth, while the vision geometric ("six operations" style) was lacking. This did not prevent him, subsequently, after Mebkhout communicated his chapter III to him (in February 1978), from appropriating this result (without mention of course of its author) in his large article with Kawai already cited (see b. de p. note (*) page 1005) (prop. 1.4.6 of par. 4 of loc. cit.). This is the work where the "biduality theorem" (loc. cit. 1.4.9 of par. 4) is also appropriate without further ado (under the name of "reconstruction theorem"). This shows the extent to which the emulators across the Pacific of the great masters of the "new style" born in Paris (in place of a "Grothendieck school" which had vanished without a trace...) , are not left out compared to their French colleagues.

My biduality theorem (for discrete coefficients) also appears in the same inexhaustible par. 4 of the same work by Kashiwara-Kawai (prop. 1.4.2) But while we shamelessly and without thinking twice pillage the posthumous and unknown student, notoriously left behind by the bosses, we carry out the coup de Hats off to the illustrious colleague opposite, duly citing "the good reference" provided by Verdier (himself pillaging a deceased person never named...).

These deceptions are also notorious among well-informed people, and Mebkhout has had several echoes in this direction. But obviously, they are considered appropriate and welcome for the occasion, since it is a question of eliminating the incitable ancestor and his unfortunate successor.

although it should definitely not be cited)...

I finally come to the third major milestone in Mebkhout's work. Technically speaking, we can say that it is constituted by three (or at least two) distinct theorems, but so intimately linked that in Mebkhout's mind, they appear as inseparable. As early as January 1978, he proved the “ $\tilde{Y}$ -Modules” aspect: the fact that the restriction $m_{\tilde{Y}}$ (where “Mebkhout functor”) of the “associated De Rham complex” functor to the complexes of holonomic $\tilde{Y}$ -Modules is an equivalence of categories (with complexes of C -vector sheaves with constructible cohomology). Already knowing that this functor commutes to dualizing functors, it is natural to reformulate this theorem by passing to the associated contravariant functor $\tilde{Y}^*$ given by

$$(3) \quad C \rightarrow R\mathrm{Hom}(C, \mathcal{O}_X), \quad \text{---}$$

and it amounts to the same thing to affirm that this functor is an (anti) equivalence. This theorem can be clarified, then, by the magnificent inversion formula (or “reconstitution”, or “biduality”) of Mebkhout, giving the expression of the quasi-inverse functor as

$$(4) \quad F \rightarrow R\mathrm{Hom}_{\tilde{Y}}(F, \mathcal{O}_X). \quad \text{---}$$

At the same time, Mebkhout also proves a converse of Kashiwara's constructibility theorem, namely this: if a complex of $\tilde{Y}$ -Modules (or $\tilde{Y}$ -Modules) with coherent cohomology is such that the associated De Rham complex (as a complex of bundle of C -vectors) has constructible cohomology, then it is holonomic (cohomological criterion of holonomy). In the case of $\tilde{Y}$ -Module complexes, where there is no question of regularity, this therefore implies that in the derived category (in which no one worked for a long time in 1978 and until 1981...), the complex (or rather its dual) is “reconstituted”, up to a single isomorphism, by the inversion formula.

As I explained elsewhere (*), from this moment, Mebkhout has in hand everything necessary to prove God's theorem also for $\tilde{Y}$ -Modules: the fact that the functor $m_{\tilde{Y}}$, restriction of the functor of De Rham with complexes of regular holonomic modules, is an equivalence of categories. The result inspires him less, because there is, to all appearances, no inversion formula for the key (**). In any case, even his magnificent inversion formula does not make anyone hot or cold - starting with his quasi-director

(*), See note b. from p. (*) p. 952 in the note “The work...” (n° 171 (ii)).

(**) We saw previously that there is still one — and I will return to this point a little further down.

Verdier thesis (which will nevertheless do him the honor of serving as president of the jury). It is not exactly a very encouraging atmosphere to make a new technical effort to prove something of which he feels sure anyway, and of which he feels that he has everything necessary to demonstrate it. He is not*; will only be of concern once the “rush” triggered by the demonstration of the reputedly unaffordable conjecture has started (not that of Weil this time, but that of Kazhdan-Lusztig).

It was, as if by design, just the other side that people suddenly urgently needed. In any case, “everyone” is in such a hurry to use the brand new “fracturing iron”, which had just appeared on the market, and it is so widely understood that it is especially important not to not raise the question of a demonstration - whenever it would appear that the work would already be done by an incitable person - which it seems no one had the idea, apart from the person concerned himself, to copy and put together the pieces of $\tilde{y}$ -theory already written, to demonstrate the theorem needed in $\tilde{y}$ -theory. It seems that the one and only demonstration published to date (***) is indeed that of Mebkhout, published last year (and received in June 1981, the same month of the memorable Colloquy Pervers...).

I explained in the previous note (part (b)) a simple principle, inspired by Deligne's approach to De Rham coefficients, to recover an “inversion formula” (or “biduality”, to use it again). the expression of Mebkhout) in the framework of $\tilde{y}$ -Modules (regular holonomes). I don't know, since we have been holding seminars all over the world on the new “cream pie” of $\tilde{y}$ -Modules, if this very natural approach has been identified - Mebkhout was not aware of it in any case. What is certain is that if Deligne had reflexes that “in my time” we took for granted, it was himself and from the moment he became aware of the beautiful ideas of an unknown person, in June 1979, who would have encouraged him to also write the proof of the $\tilde{y}$ -Modules side (closer to algebraic) of his crucial result, and would have suggested this “pro” variant, all in all quite obvious, of his beautiful inversion formula. Also, from that moment, for Deligne who had paid for the knowledge, it was obvious that Mebkhout's ideas were going to give the De Rham coefficients which were lacking at least in algebraic geometry on a body with zero characteristics; the obvious thing was to encourage him to make the necessary adjustments, to state a theorem of the good Lord (or rather, of Mebkhout

(***) Reference: Another equivalence of categories, *Compositio Mathematicae* 51 (1984), 63–88.

in this case) for complex algebraic varieties (*).

But other times, other customs. It will not be said that a new departure in the cohomology of algebraic varieties was accomplished by the solitary and obstinate efforts of a vague stranger, claiming to be a deceased person of whom no one in the beautiful world has been for a long time. , does not dare to pronounce the name (**). It will not be said that the renewal will come through the kind of mathematics, precisely, that for ten years the heirs of the deceased have buried, while sharing the wealth. Mebkhout the innocent, if he wanted to “survive” and “break through”, just had to follow the clear path of the “new style” (*), like other brilliant young people (and even less young ones) hastened to do so. What a habit also of citing the (unspeakable) source of one's ideas, when it is so simple to drown the fish and only cite those which must be cited. Mebkhout, I think your account is good!

You have landed in a world for which you are not made - and yet I am happy for you, that you are not made for this world - there. You did the work you felt you had to do, without worrying about fashion, without calculating returns, simply trusting your own instinct — even if it meant making your way in solitude. You did your job, rather than watching for the discreet (and not so discreet) signs of those who decide what is good and decent and what is not. You did not tack to please, you did not say “white” when you saw, black, or vice versa — and it is with your eyes that you look.

(*) As I have already had occasion to point out, in the algebraic framework, when we want to paraphrase the algebraically constructible discrete coefficients, it is necessary to impose on the complexes of $\mathcal{A}$ -Modules envisaged, in addition to the condition of local holonomy and regularity, a condition of regularity “à la Deligne — Mebkhout” to infinity.

(**) We have not yet found a way, it is true, to find replacement references for the EGA and the SGA - But these providential acronyms do not contain any allusion to a name which must remain silent. As everyone knows, the acronym SGA designates an algebraic geometry seminar run by Bois Marie, and under the leadership of a number of very good and perfectly nameable mathematicians, such as Mr.

Artin, J.L. Verdier, P. Deligne, L. Illusie, P. Berthelot, N. Katz, P. Jouanolou, and even others less known but just as quotable. Obviously there was a flourishing school of algebraic geometry there, called “du Bois Marie”, whose heart and soul was the most brilliant among the names cited. For further details on the subject of this “Bois-Marie school” and on the acronym SGA which is its expression, see in particular the notes “L’éviction (2)” and “The Funeral Services — “Im Dienste der Wissenschaft” (nos. 1691 and 175). (See also p. 899, paragraph 3, in the note “Double meanings — or the art of the scam”, n° 1697.)

(*) See, about this style (which took the place of a “Grothendieck school” which disappeared without leaving any traces...), the end of the note “Congratulations — or the. new style”/ n° 1699 .

I don't have to congratulate you on that - you didn't seek congratulations, neither mine nor anyone else's. And with all this, I am happy, for you and for everyone.

(171(xi)) (May 5) (**) The natural question here, of course, is whether there exists in algebraic geometry a formalism of “six operations” for $\mathcal{D}$ -Modules (or “crystals”) not necessarily of the DRM type, which would “cover” those that I had introduced in the coherent and discrete cases — assuming first, to fix the ideas, that we are on the body C . A first difficulty comes from the fact that the notion of $\mathcal{D}$ -consistency is not stable by the natural notion of tensor product of crystals, nor by the analogous inverse image operation (***).

To hope to have a formalism of the six operations, we must therefore work with a category even larger than $\text{Cris}(\mathcal{D})$, perhaps that of “quasi-coherent” crystals (in an obvious sense) — but as a result there is little hope of recovering a bi-duality theorem! Moreover, the natural functor of extension of scalars by $\mathcal{O}_X \otimes^L -$ is visibly not to the tensor product - therefore, even if there would be a theory of six

— $\otimes^L$ does not switch

(**) This subnote comes from a footnote to the note “The work...” (n° 171 (ii)). To see the reference to this subnote, placed towards the end of the cited

note (p. 956). (***) (May 22) Mebkhout informed me that he proved that the condition of holonomy and regularity is stable by the operations of total tensor product (on $\mathcal{O}_X$) and by the notion of inverse image, and that the contravariant good God functor γ^* commutes there. (On the other hand, the covariant God functor m does not commute there, and it transforms ordinary inverse image into extraordinary inverse image.) We can show, using this result, that there is no formalism of the six operations for the De Rham — Mebkhout coefficients, which “extends” the two already known fundamental operations of tensor product and inverse image. In particular, the category $\text{DRM}_b(X)$ does not admit an “internal Hom” operation (playing the role of RHom), and for $f: X \rightarrow Y$, the functor f_* does not generally admit an adjoint to right Rf^* . The functor Rf_* for $\mathcal{D}$ introduced now by Mebkhout (Y smooth and for proper) is a left adjoint of f^* . (NB The Rf operation on the coefficients

We therefore see that in terms of the “natural” operations available in the De Rham — Mebkhout context, these do not form as such a “theory of six operations”, but a sort of dual theory. The question that arises, therefore, is to see to what extent this extends to $\mathcal{D}$ -Modules (quasi-coherent let's say) which are no longer supposed to be holonomic and regular (for example, holonomic without more - a condition which is preserved by tensor product and by inverse image). It would seem, in particular, that the global duality formula can be written for complexes of $\mathcal{D}$ -Modules with coherent cohomology (or even only quasi-consistent), and any morphism $f: X \rightarrow Y$ of separate schemas of finite type on a car K body. null (let's say), so as to cover both the theorem of coherent duality, and that of discrete duality, at least in the following form: the dualizing functor “exchanges” the functors Rf^* and Rf_*

operations for crystals, which would extend that (morally known now, thanks to Mebkhout) of De Rham crystals — Mebkhout (obtained by “structure transport” from the “discrete” theory, via the functors of the good God), it would not extend that of coherent $\mathcal{O}_X$ -Modules (*). this perhaps does not exclude, however, that there could exist a “global duality theorem”, quasi-coherent crystal version, for a proper morphism (let's say) of schemas of finite type on a body of characteristic null, which “caps” (in an obvious sense) the “known” duality theorem (morally, by transport of structure into core) for De Rham — Mebkhout crystals, and the known analogous duality theorem (without quotation marks) in the consistent case (**). I was quite amazed that Mebkhout himself did not ask himself at least this last question, from the very moment he arrived at the formulation of his theorem of “absolute” duality (corresponding to the case where the variety but would be reduced to a point) — even recently he didn't seem to “feel” her that much

(***). This makes it striking for me to what extent a certain “philosophy”, which from the first half of the sixties had become second nature for me, and (it seemed to me...) for my students too — to what extent this philosophy has been forgotten by everyone, starting with those who took it upon themselves to become its gravediggers/rather than to pass it on. And I see that this is also the main cause of this astonishing stagnation experienced after my departure by a theory (that of the cohomology of patterns) that I had left in full bloom.

It must be said that Mebkhout placed himself in the complex analytical transcendent context, instead of the schematic context. This introduced considerable technical difficulties, in a way “parasitic”, when it comes to achieving an understanding of the phenomena.

(*) It is appropriate to reformulate this assertion instead in terms of a “dual theory with six operations”, see note to b. from p. former.

(**) We can consider such a duality theorem in three different forms, Either by saying that the dualizing functors at the top and bottom “exchange” the functors Rf and $Rf^\vee$, or by saying that two suitably defined functors Rf and Rf are added to each other, either by writing a “projection formula” (which covers both statements):

$$Rf^\vee (R\mathrm{Hom}(F, Rf^\vee(G))) \cong R\mathrm{Hom}(Rf(F), G).$$

(***) (June 8) Mebkhout assures me, however, that he had indeed asked himself the question for a long time. If I had the impression otherwise, it was surely because this question had remained entirely platonic for him.

of essential variance. Here again, his elders failed in their task, which would have been to put their experience, acquired through my contact, at the disposal of the newcomer (just as I had placed myself at theirs...), and thus guide him (or at least, enlighten it) in the choice of its investments, notably.

But to enlighten and guide is also to serve, even though they had long ago and unquestioningly opted for the role of master.

(171(xii)) (May 5) (*) Mebkhout told me that before I spoke to him about it during our meeting two years ago (**), he had never heard the words spoken before. “six operations” — he was wondering what “operations” I was talking about! Obviously, he had never had the idea (any more than anyone else, it seems, apart from me) of reviewing the main ingredients of a certain very simple cohomological formalism, noting that there were six fundamental functors or bifunctors, grouped into three pairs of adjointed functors, with such arrows and compatibilities etc. These were things that seemed so obvious to me, that I would imagine that any reader would. either from “Residues and Duality” exposing the elements of coherent duality, or from SGA 4 or SGA 5 exposing the elements of discrete duality, with essentially the same form moreover, will have fun (as I did from the fifties, without going all the way I admit...) to put together for its own use a more or less systematic and more or less complete form, of the main iso-morphisms and main compatibilities - because that is how only, and in no other way, that we manage to penetrate the spirit of a new language, to assimilate it intimately, to make it “one's own”, it is like this and not otherwise, surely, what the pioneers of infinitesimal calculus had done, to achieve a delicate and sure intuition of infinitesimals at a time when they lacked the conceptual tools to understand them according to the canons of rigor that appeared (or reappeared) later...

With a hindsight of twenty years, I realize that in the “reference texts” cited, done with the greatest care, even brilliantly – while all the “real work” (following current desiderata) is done, culminating in “the” main duality formula, the addition formula between Rf and Rf (the only one almost deemed worthy of attention and effort, even if it means forgetting it on

(*) (May 22) This sub-note, like the previous one, comes from a note from b. from p. on page “The work...” (n° 171 (ii)). See the reference sign towards the end of this note, p. 957.

(**) This meeting is discussed in the note “Meetings from beyond the grave” (n° 78).

next day, as one forgets the trees when one has not seen the forest...) - that yet in all these texts the main thing is not said and has not passed from the author to the reader (assuming that 'it is well seen and felt by the author himself). "The main thing" is a "yoga", a "philosophy", an unfailing thread through (in this case) the cohomological jungle in algebraic geometry (and elsewhere). It can be developed at length over fifty pages or a hundred, once "everything is done" (so-called); as we can also be content to evoke it in a few pages, and leave it to the reader to develop it for his own guidance as far as he considers it useful for his own needs, or for his own satisfaction.

It is these few pages, whether on the "six operations", or on the motives, or on many other things (*), pages that I felt strongly but for which I did not know how to feel how important it was for me to write them down — they are what was missing, above all, in my written work. Absorbed as I was by the meticulous and endless tasks, at the service of all, of the big "work on pieces", the only one that was supposed to be published — I was unable to sense that there were more essential pages, that I was the only one who could write. The essential thing that I had to say did not pass through the written pages, but only by word of mouth - when it wanted to get through! Or, strictly speaking, it was between the lines, perhaps, interminable volumes of foundations — but is there anyone these days who knows how to read between the lines?

The essential, therefore, is what was entrusted on a day-to-day basis to those who, in my life as a mathematician, were considered "close ones", and first and foremost, to my students. This was something taken for granted, nothing deliberate. The idea would not have occurred to me that in a certain way, I was thus investing them with considerable power. It's not that I didn't feel the strength of what I was designing and transmitting, but this strength, too, was self-evident. For me, surely, in mathematics at least, "strength" and "beauty" were and remain one and the same thing. The idea would never have occurred to me that one could abuse them, these things filled for me with peaceful and intense life, made to live and to generate. When I left, in a way that could not have been more unexpected, I had not the slightest worry about them. These pages that I had never thought of writing — there was no doubt in me that their message

(*) After these lines were written, I was able to see that with regard to the six operations, I am mistaken here - in fact, I allowed myself to be misled by the massacre edition of SGA 5, of which Illusie took care to eradicate any trace of a "yoga of the six operations", which I had developed at length in the oral seminar, with a complete form copiously commented on.

wise had long been welcomed and registered, and that these “loved ones” were going to be so many living pages, who would tell the message and enrich it with the best they had to offer. bring.

Those to whom I had addressed with confidence and respect, as younger brothers and in whom I recognized myself, chose to bury and remain silent. And when the one came, true to himself, in whom they recognized me, they, filled with everything, chose to leave him before their closed doors – a stranger and an intruder. I don't know you ĩ And these unwritten pages, these pages said in vain, become dead pages in these opulent houses with haughty and closed doors, it was necessary as best he could for the challenged brother to find them in himself, in long and groping labors. Alone, he had to make his way through the inextricable jungle of a thousand and a hundred thousand volumes. Anyone who has been there, even if he was lucky enough, like me not long ago, to have the fraternal help of experienced and caring guides, knows well what I am talking about...

He made a path for himself, painfully, over the days and years - a staggering path, without a compass it sometimes seemed to me in hindsight, or without any other compass, at least, than a flair that was still being sought, through painfully and hard-won experience. He did not rewrite for his use these ready-made pages, these compass pages, which had become dead pages in haughty houses - except in scattered scraps. He wrote other pages, his pages, painfully his own. He wrote them staggeringly, stubbornly, to the indifference of everyone. And yet, these often clumsy pages worthy of a cad, which my brilliant and wealthy students of the past (if they had bothered to read them) would certainly have looked at with commiseration and without seeing anything in them - these are pages which had to be written, as a natural, “obvious” continuation of these pages that I had never even thought of writing, as they seemed so self-evident to me...

(1711) (April 15) (*) Taking advantage?. The recent visit to my home of my co-buried

(*) (May 30) The three notes that follow (nÿ s 1711 to 1713) were written between April 15 and 18 (1985), at a time when “L'Apothéose” was still reduced to a note d 'about ten pages. These were considerably expanded during the month of May, following the relaunch of reflection on the Four Operations, sparked by Zoghman Mebkhout's visit to my house. The ten pages have become more than a hundred, almost all of which are from a vintage later than that of the three notes which follow. There follows some partial repetitions, certain facts or episodes being mentioned or described, in different lights, in the previous notes and in those which follow. For the sake of preserving the spontaneity of the writing, I did not want to r

Zoghman Mebkhout himself, I would like to give some hot details about his strange misadventures, as he told me himself, in sparing scraps here and there, during our conversations.

Zoghman had the honor of an “interview” with his “boss” (**) JL Verdier on three occasions. The first takes place in 1975 - he needed a technical result, which was contained (as it subsequently appeared) in the biduality theorem for analytically constructible discrete coefficients - at a time when Zoghman was even unaware of the notion of constructibility. (This is a notion that I had introduced in the 1950s, and which had been taken up again, within the framework of flat topology, in SGA 4.) At that time this notion was in no way “well known” in analysis, as it is today. It turns out that it was exactly the concept he needed for his work. Houzel (who had followed SGA 5 at the same time as Verdier, but who must have somewhat forgotten what I had said there), advised him to go see Verdier. This was the first “interview” with the great man. Verdier then taught him that what he was asking (that two discrete complexes which had isomorphic “duals” were isomorphic) was true under certain technical conditions (the “constructibility”, precisely), which he would find exposed in the manuscript that he was going to give him, it was that of the “good reference” (*), where (among other feats of the same ilk) he pretends to invent the constructible sheaves and to discover the theorem of biduality (and its demonstration), things he had learned from me twelve years earlier (in 1963) (**). There is not a word from me on this subject, neither in this interview nor in the manuscript.

adjustments to eliminate these

repetitions. (**) (May 24) Mebkhout insists that the term “boss” (even with quotation marks) is out of place here. From his beginnings in 1972 until today, he has done his work without a boss, fending for himself. Verdier was simply president of his thesis jury. Apart from that, his role was limited to communicating to Mebkhout “the right reference”, which was very useful, at a time when SGA 5 continued to be sequestered by the combined care of my cohomologist students (and precisely for the needs operations such as that of the “good reference”...).

(*) This is the article JL Verdier, Homology class associated with a cycle. Asterisk n° 36 (SMF), p. 101–151 (1976). It is discussed in detail in the two consecutive notes “The good reference” and “The joke — or “the complex weights”” (n° s 82, 83), and more briefly, in the note “Episodes of a escalation” (n° 169 (iii)), with episode 3.

(**) From the second half of the fifties I was interested in the notions of “constructibility” of all kinds for discrete sheaves (in the algebraic, complex analytical, real analytical, piecewise linear sense — while waiting for the context of the moderate topology...), in addition to notions of coherence, such as

which would be published the following year. Zoghman in any case left satisfied, and full of gratitude for the great man, who provided him with exactly what he needed at that time, and in the following years again, where the notion of constructability would play a crucial role in all his work.

It was at the beginning of 1976 that he began to be interested in duality, and to be intrigued by the analogy of the duality formalisms that I had developed in the coherent case and the discrete “equal” case, and which had been taken up by Verdier in the topological discrete case. It was at a time when, for years, this formalism had fallen into disuse, and where my students had instituted a tacit and rigorous boycott on the derived categories, which constitute its natural language. The notion and the very word “formalism of the six operations”, which had been one of my main guiding ideas since the fifties and throughout the sixties, had become (and has remained until today again) strictly taboo after my departure. (When Zoghman came to see me two years ago (*), he had not yet heard the word “six operations” mentioned, and did not know at first what “operations” I meant by that — although I thought that it had been a notion familiar to everyone for twenty years!) This means that the conditions were unfavorable for embarking in this direction, where he was condemned to work in complete solitude. This did not prevent him from the year 1976 from identifying a duality theorem, on non-singular complex varieties, which “covers” both Serre’s duality theorem, and discrete duality (which he calls “duality — Poincaré-Verdier”), in terms of a duality statement for complexes of $\mathcal{D}$ -modules (which also contains a global duality statement for complexes of differential operators).

The “coefficients” that he takes are moreover of a generality which far exceeds the cases of Serre (limiting himself to locally free sheaves) and Poincaré (limiting himself to sheaves

being the natural notions to express conditions of finiteness in the fascitic framework, and I had raised the question of the stability of these notions by the “six operations”. It is the subsequent development (in 1963 and the years that followed) of étale cohomology, which led me to return to these questions in the étale framework, and to develop the techniques (unscrewing and resolution) which allow them to be resolved. treat by a uniform method, applying equally to the transcendent context of complex algebraic and complex analytical varieties. The theorem of biduality, valid (and with the same demonstration) in the flat framework (provided purity and resolution) and in the transcendent context, had been identified by me in 1963. It also appears in the very first presentation of SGA 5 (in 1965), where he survived the Edition-Illusie massacre of 1977.

(*) This visit is discussed in the note “Meetings from beyond the grave”, n° 78. For comments on the boycott instituted on the “six operations”, see also the note “The Dead Pages”, n° 171 (xii).

discrete locally constant), faithful in this to the spirit that I had introduced into these themes with the then generally repudiated formalism of the “six operations”.

When Zoghman explained this theorem to me two years ago, I felt both its interest, which was obvious to me, and its limitation, because in the spirit of the “six operations” it was also obvious to me. that “the correct” statement had to be a statement on a morphism of analytical spaces $f: X \rightarrow Y$, in the form (for example) of an addition statement between two functions Rf and Rf . It is true that the of placing oneself in a transcendent context introduces considerable additional difficulties, which acted strongly (it seems to me) to obscure for Mebkhout the simplicity of the essential algebraic mechanisms in duality - while no one around him, and especially not among those who were my students, would not have known (or deigned...) to make him feel it. Still, he had put his finger on an important “principle” — one that the theory of $\mathcal{D}$ -modules (which I myself prefer to call “crystalline modules” (**)) provides a “common denominator” for “coating ” phenomena (of duality, in particular) in discrete cohomology, and in coherent cohomology. On this momentum, encouraged by someone who would have been “in the know” and equipped with a minimum of mathematical instinct (*) and benevolence, there is no doubt that he would have developed in the space of three or four following years a complete formalism of the six operations in the framework of algebraic geometry of zero characteristic (at least), providing a purely algebraic “paradigm” faithful to the same formalism (repudiated, it is true) in the transcendent framework, for the algebraically constructible $\mathcal{C}$ -vector sheaves.

Feeling that he had just discovered something important, Zoghman, delighted, requested and obtained an interview with his benefactor, to explain his result to him. It was the answer, very exactly, to the question I had asked Verdier ten or twelve years earlier.

(**) For the (obvious) reason of this “crystalline” terminology, reflecting a more intrinsic vision of the $\mathcal{D}$ -modules (which my students had learned from me and which they have long forgotten). see the comments in the note “My orphans” (n° 46) (notably p. 179) and in the subnote n° 464 (p. 188) (x). On the subject of the “blocking of healthy faculties” against the obvious links of Mebkhout's philosophy with crystalline yoga that I had identified towards the end of the sixties see the note “Mystification” (n° 85, p. 350–351).

(x) (May 24) See also the note “The five photos (crystals and (n° 171 (ix)).

(*) It is not that my former cohomologist students are devoid of a “minimum of mathematical instinct” — otherwise none of them would have been able to do with me the good work that he did. But this instinct is distorted or blocked by the master's burial syndrome.

before, without seeming to be attached to it (**) — there is a chance that he had even forgotten it entirely. In any case, his goodwill towards this young man who came from nowhere and who did things on which he, Verdier, had drawn a long line, was exhausted. He doesn't even want to listen to Zoghman's explanations of the ins and outs and the proof of the theorem. He made him understand in substance (and politely) that he, Verdier, no longer believed in Santa Claus and that the young man had better pack up.

Extraordinarily, no one around Zoghman “clings” to this result (***) — no doubt it was too “grothendieckerie” of the sixties, we have gone beyond that nowadays, fortunately 1 Perhaps I was, two years ago, the first person he met, who felt the importance of the result and of the new “philosophy” that it carries in germ — that of a vast synthesis between the “discrete” aspects and the “differential” (or “analytical”) aspects in the cohomology of varieties of all kinds (algebraic and analytical to begin with). This theorem, which constitutes one of the chapters of his thesis, was eventually published in *Mathématica Scandinavica* in 1982 (t. 50, pp. 25–43). The same article had been submitted to the *Annals of Mathematics*, which made the presumptuous young man understand that he was not of the level required to be published in this prestigious periodical.

Even today, this theorem is generally ignored or despised in the beautiful world, while it already contains the germ of this new philosophy which, via the theorem of the good Lord (alias Mebkhout), has provided the means for a renewal spectacular in the cohomology of algebraic varieties. But “everyone”, including my ex-students, cohomologists (whom one day I knew to be gifted with a healthy mathematical instinct), rushed en masse to the new “cream pie”, know a certain powerful tool (that

(**) (June 5) See on this subject the note “The ancestor” (n^o 171 (i)), in particular the note by b. from p. (*) on page 946. (***) (June 3) There was a misunderstanding there. As was said in the note “Three Milestones — or Innocence” (n^o 171 (x), page 1026), this theorem often had the gift of astonishing a casual interlocutor. But it seems that it has so far remained platonic — the theorem has not become a tool, something that we know and use without even thinking about it. This is surely linked to the fact that never the one who rejoiced in the obvious beauty of the result was one of those who “set the tone” and who decide what is “important”, and what is “beautiful”. . (And it is not uncommon, in these times, for yesterday's “bombing” to become today's “cream pie”...). In his comments of April 22, Zoghman wrote to me: “...there was some discomfort with this theorem. Some secretly envied him. But very few people encouraged him, quite the contrary.”

“everyone” however pretends to name only by allusion or periphrasis, like “the relationship between constructible beams and holonomic differential systems”, or like “what should normally have found its place in these notes” (*). .), and on the “latest cry” (intersection cohomology), while the innovative vision which made it possible to release the tool remains ignored just as much as before, and the father of both The other is treated like a stooge.

The situation here is the same as for my vast unifying vision of topos, derived categories, six operations, cohomological coefficients and, beyond that, that of patterns. It is from this vision that tools such as flat cohomology and crystalline cohomology emerged, which this same “everyone” uses today as if they were turning a crank, while the vision itself, powerfully still alive on the day of my departure, was buried the very next day. And I see clearly that the astonishing stagnation that I observe in a splendid subject (*), fifteen years after having left it in full bloom, is not due to a lack of intellectual means or gifts (which are brilliant in more than one of those whom I have known so well and so poorly), but has the dispositions of a gravedigger, or of unscrupulous nepotism, or both - dispositions the antipodes of the innocence which leads to recognition, and which . makes you find the simple and essential things.

To develop its new philosophy, Mebkhout was inspired by the spirit of the categories

(*) This is a quotation (from memory) of the “memorable article” by BeilinsonBernstein-Deligne (written by Deligne) which was discussed in the note “Le jour deglorie” (n° 171 (iv)). For details on this periphrasis, worthy of passing down to posterity (as a reminder and as a warning...), and for the ins and outs of the context, see the note “The conjurer” (n° 75). The preceding quote (“the relationship between constructible beams and holonomic differential systems”) is taken from the article by BeilinsonBernstein (from the same year, 1981) which will be discussed in the following subnote (“La mafia”, n° 1712), where we will also have the advantage of becoming acquainted with Brylinski-Kashiwara's contribution to the flowering of this type of style, in the service of the same fraud.

(*) I speak for the first time of this impression of “gloomy stagnation” at the end of the note “Refusal of an inheritance - or the price of a contradiction” (following “My orphans”) n° 47 (p. 195). This impression has only been confirmed during the year which has passed since the writing of this note, with the same restriction, essentially, as that which I express in sub-note n° 473 to the note cited: Deligne's work on Weil's conjectures (Weil I and II), and the new departure which followed the “rush” on the theorem of the good God (by eliminating both the good God, and his servant Zoghman) , and on intersection cohomology. But these localized successes appear to me to be out of all proportion to the brilliant, even exceptional, means of those I know who have since “settled” in this “splendid subject” – even though fifteen years have passed since my. departure ; and also without common measure with the richness and vigor of the key ideas that I had bequeathed, and which I find bloodless today...

derivatives and the six operations, at a time when the derived categories were treated in Grothendieckian fu-mistry, and when he had not had the opportunity to even hear the name “six operations” pronounced. Today, with the rush for the new tool that appeared, inseparable from the derived categories, we have exhumed the latter with great fanfare, keeping silent the name both of the one who had released them from nothing during years of solitary work, as well as of the one who was inspired by it, also solitary, to finally hatch a new theory of coefficients linking topology, complex analysis and algebraic geometry.

The Deligne, Verdier and others are rushing towards the brand new products, shouting (with the necessary discretion and good quality, of course) “it’s me, it’s me!”. None of them has yet been able to find within themselves the courage and loyalty to themselves, to mature a vision in solitude, to carry it heavily for months and for years, far from applause, so that they would be the only ones to see and that they would not be able to share what they see with anyone else in the world.

But I digress, it's time I return to my story of the blossoming of a vision. It was in the same year 1976 when Mebkhout demonstrated the duality theorem which “covers” Poincaré duality and Serre duality, that he arrived at the idea of the equivalence of three categories, which respectively embody the aspect “topological”¹, the “algebraic” aspect and the “analytical” (transcendent) aspect of the same reality, of the same type of objects. From the perspective of a general theory of “cohomological coefficients” (*), I will call these objects “De Rham — Mebkhout coefficients” (*). If X is a smooth analytical space (**), there is on the one hand

(*) This idea of various “types of coefficients”, each of which presented itself to me as a particular incarnation of the formalism of the six operations (and of biduality), surrounding more or less closely the “type of coefficients” the most end of all, the “absolute”, or “universal”, or “motive” type — this idea was perhaps the main driving force that guided me throughout the sixties, and especially from 1963, in the development of my cohomological view of algebraic and other varieties. The strength of this idea in me is clearly visible from the very first note that I devote to a retrospective on my work, and on these vicissitudes at the hands of fashion: “The orphans” (n° 46). I return to it with insistence in various places in the reflection on the Burial, and more particularly in “The melody at the tomb - or sufficiency” and “The tour of the construction sites - or tools and vision (n° s 167, 178)”. It is also the very first mathematical theme, among those buried by the care of my ex-cohomologist students and by those of a fashion, which I think of developing following Récoltes et Semailles, to give it the place it deserves. merit in my mathematical thinking.

Strange thing, this central idea-force of my cohomological work, and the algebraic-categorical structure (very simple basically) which expresses it, has never been explained in the literature, not even by me during

the category ("derived") of "constructible" C -vector complexes on

. $\text{Cons}_{\tilde{Y}}(X, C)$

from the sixties (x). It appears between the lines in my written work, and was conveyed mainly at the level of oral communication. In my mind, it stood to reason that one of my students would not fail to devote the few days or weeks it took to present this set of ideas in systematic form, while I myself was fully occupied with the tasks foundations of EGA and SGA.

With hindsight, - I realize better to what extent non-formal texts (even if only a few pages in this case, and without any effort for exact and systematic formulations), making these precisely felt "power ideas" rarely named which are hidden behind texts that often appear technical - how important such texts are to guide researchers, and to bring from time to time a breath of fresh air in a literature which tends to suffocate by its technicality. On this subject, Zoghman also told me that the few passages of this type that he found in the texts from my pen were of great help to him. Among these, he recently highlighted to me the few introductory words that I had attached to Hartshorne's volume "Residues and duality (volume essentially exposing the formalism of the six operations that I had developed in the second mid-fifties, within the coherent framework).

I now realize how much more useful this introduction would have been to him, if I had taken the trouble to include even a non-formal page or two, explaining the "yoga of the six operations" and emphasizing - nating its importance as an omnipresent thread in the construction of cohomological theories which were still waiting to be born...

(x) (May 24 and June 1) After these lines were written, it appeared that from the very beginning of the SGA 5 oral seminar (in my second presentation), I had taken great care to develop at length and broad the "abstract" form of the six operations, which would dominate the entire seminar to come. (See on this subject the note of b. de p. (*) of May 8 in the note "The ancestor" n^o 171 (i), page 942.) Furthermore, throughout the oral seminar, I did not fail to constantly refer to the ubiquity of the cohomological formalism that I developed, valid in principle for all kinds of other types of "coefficients" than " $\text{-adic coefficients}$ ". Illusie took care to extract from the massacre edition both the detailed presentation devoted to the formalism of the six operations, as well as any allusion to a vision of "cohomological coefficients" going beyond the particular context which is the main subject of the seminar.

See also on this subject the note "The Dead Pages" (n^o 171 (xii)), and also "The Useless Details" (n^o 171 (v)), part b) ("Machines for doing

nothing..."). (*) (May 30) In the note (written later) "The five photos (crystals and -Modules)" (n^o 171 (ix)), I follow a slightly different terminology, designating by " $\text{De Rham coefficients}$ " (in short) this "same type of objects", of which we will give here three different descriptions (or three "photos"). Two of these will be called " $\text{De Rham — Mebkhout coefficients}$ " (or simply, " de Mebkhout "), " of infinite order " and " of finite order " respectively. (**)

(May 30) In the initial version of these notes, letting myself be carried away by my predilection for the "algebraic geometry" point of view, I had assumed that framework in which Mebkhout initially placed himself, not to mention that this made me state a variant of the "God's theorem", for the complexes of $\tilde{Y}$ -Modules, which is only true as it stands when we suppose

or simply $\text{Cons}_{\tilde{y}}(X)$ (“topological” aspect), that of the complexes of $\tilde{y}$ -Modules with coherent cohomology bundles (***), generalizing the complexes of differential operators of infinite order, which I note $\text{DRM}_{\tilde{y}}(X)$ (transcendent “analytical” aspect), and finally the category of complexes of $\tilde{y}$ -Modules with coherent cohomology sheaves, generalizing the complexes of ordinary differential operators (of finite order), which I note $\text{DRM}_{\tilde{y}}(X)$ (“algebraic” aspect). There is a tautological functor of extension of the scalars of the coherent Ring towards the Ring $\tilde{y}$

x

$$i : \text{DRM}_{\tilde{y}}(X) \rightarrow \text{DRM}_{\tilde{y}}(\tilde{y}(X)),$$

fitting into a diagram of functors (essentially commutative):

$$(1) \quad \begin{array}{ccc} \text{DRM}_{\tilde{y}}(X) & \xrightarrow{i} & \text{DRM}_{\tilde{y}}(\tilde{y}(X)) \\ & \searrow m & \swarrow m_{\tilde{y}} \\ & \text{Cons}_{\tilde{y}}(X) & \end{array}$$

where the oblique arrows are the “associated De Rham complex” arrows (*), which is none other than $R\text{Hom}_D(\text{Sp}_{\tilde{y}}, \cdot)$, where $D = DX$ or $D\tilde{y}$ of locally free D - X , and where $\text{Sp}_{\tilde{y}}$ is the Spencer” resolution of $\mathcal{O}_X$ by $\tilde{y}$ -modules (*).

The existence of the vertical arrows comes from the “Kashiwara constructibility theorem”, which implies that the De Rham complex associated with a complex of holonomic D -modules has analytically constructible cohomology sheaves. Kashiwara demonstrated this important theorem in 1975 (**), from a completely different perspective, however. He worked with a single holonomic D -module, from which he took the De Rham complex and proved that its cohomology is constructible. Until September 1979 and the subsequent “rush” triggered by the theorem of the good Lord, he no more than anyone else in the beautiful world worked in the spirit of derived categories, and the very idea of writing the vertical arrows in (1) had not occurred to anyone!

X clean. So there were misunderstandings in my mind, and Mebkhout had to kindly call me to order.

By retyping these few pages, I have made the necessary corrections.

(***) Concerning the definitions and the first theoretical facts concerning the theory of Modules and Modules, the reader can refer to the note “The five photos (crystals and $\tilde{y}$ -Modules’ (n° 171 (ix)), and more particularly parts (a) and (b) (“The album “De Rham coefficients”, and “The formula of the good Lord”).

(*) (May 24) See the note already cited “The five photos...” (n° 171 (ix)), part (ai).

(**) Masaki Kashiwara, On the maximally overdetermined System of linear differential equations, I Publ. RIMS, Kyoto university 10 (1975), 563–579.

Once the three arrows (1) are written, as arrows between derived categories (**), the question arises if they are indeed category equivalences. Mebkhout was convinced of this as early as 1976. The conviction came to him by drawing up a table of around ten typical examples (reproduced in his expository article with Lê Dung Trang (*)) of constructible vector bundles which can be called “elementary”, which are also of the type of those which constantly intervene in the “unscrewings” of beams, familiar from the theory of flat cohomology. From this crucial year 1976, for each of these beams, he managed to construct a remarkable holonomic complex, both on DX (“algebra”) and on D^b_Y (“analysis”), having (from the point of view of the six operations) a very simple algebraic or analytical cohomological meaning, and of which the De Rham complex is the sheaf in question. Remarkably, although it started from a constructible bundle and not from a complex of bundles, in a certain number of cases the holonomic complex which gives rise to it is in no way reduced to a single cohomology bundle. This showed him clearly that, in accordance with the spirit of the “six operations” (the name of which he did not know...), if equivalence there was, it could not be deduced from an equivalence between the categories of bundles of modules (on C , or on D) themselves, but it only took on its meaning by passing to derived categories.

For me, it is very clear that the act of creation, in this case, consisted of seeing and writing the two obvious arrows m and m , and that no one had deigned to write down – to ask the question “quite stupid” if it would not, sometimes, be equivalences of categories, therefore providing a differential algebraic interpretation, and another differential analytic, of the topological notion of constructible C -vector sheaf (or complex of sheaves). There was the question, and the clear awareness of the crucial nature of this question, of its scope – and by this very fact, and as a matter of course, an inner attitude which assumed this question, which would bring it to the surface. its term. The preliminary “experimentation” with examples

(**) Strictly speaking, it would undoubtedly be more correct to say that these are full subcategories (defined by conditions of “constructibility”, or coherence, holonomy and regularity) of derived categories in the ordinary sense.

(*) Lê Dung Trang and Zoghman Mebkhout, Introduction to linear differential systems, Proc. of Symposia in Pure Mathematics, Vol. 40 (1983), part 2, pp.31–63. Zoghman recommended this short article to me, as the best introduction that exists in the literature to the philosophy that he has developed since 1976. You will also find, in the bibliography, a (complete?) list of Mebkhout's publications on this theme, at least until 1983.

“typical” or “elementary” was a first step in this direction. That was the childish and

essential step, the one that can only be done by someone who knows how to be alone. Once this step was accomplished, the first of my cohomologist students to come, using the unscrewing and resolution techniques learned from my contact in SGA 4 and SGA 5, was able to prove it in a few days, or in a few weeks - for just a little bit that he gets hooked, of course, that he feels (as Mebkhout had felt and through his guts) the meaning, the substance of the question. But there was not a single one among them, not even Deligne who had given up on coming up with the unifying vision which would go beyond the main idea of the “six operations” (*), and which was still missing for linking continuous coefficients and discrete coefficients - not a single one who was able to see the scope, however obvious, of Mebkhout's ideas, of this vague unknown which still emerged from the spat-out Grothendieck...

As for the “vague unknown”, reduced to his own means and his readings, asking the question of category equivalences must have seemed to him (and with good reason) as the obvious and most childish thing in the world, or arrive at the conviction that these were indeed equivalences. On the other hand, due to lack of experience and encouragement from elders more experienced than himself, he created a world of demonstrations, which for a long time seemed entirely out of reach to him.

However, he managed to find a proof already after a year and a half, first in March 1978. He told me that for the arrow m of ... psychologically, my theorem comparison for the algebraic and transcendent De Rham cohomology, was of great help to him, to put him on the path to the demonstration. For a reason that I did not quite understand, he also considers his theorem (knowing that the functor m says “from the good Lord”,

(*) (June 5) When I reread it, this formulation seems hasty and a little “off” from reality. In fact my “core idea of the six operations” was inseparable from a “philosophy of coefficients”, which predicted (and very clearly at least since 1966) a “theory of De Rham coefficients” (closely linked to my ideas crystallines), having the same essential formal properties as the theory of p -adic coefficients, and forming with these (for variable) as many different “realizations” of the same type of ultimate object, the “pattern”. Mebkhout's work, accomplished between 1972 and 1980, appears to me to be a first big step towards the realization of this intuition - not for which everything was ripe, practically, at least from 1966 with the start of crystalline yoga, when the problem of a theory of De Rham coefficients was clearly posed, at least in my mind. If this step has not been accomplished by any of my cohomologist students since the 1960s, this seems to me to be mainly due to mechanisms blocking spontaneous creativity, which none of them lacked. See on this subject the note “... and hindrance” (n° 171 (viii)).

especially not to say Mebkhout..., is an equivalence), as being a “generalization” of my comparison theorem. From this moment, he also knows that he has the tools he needs (with Hironaka's resolution technique) to also treat the case of m , by far the most interesting for an algebraic geometer like me. He, as an analyst, first focused on the case of the functor m^* , which had his preference (*). He only returned to the question, which seemed a little incidental to him, after the defense of his thesis, and demonstrated the following month (in March 1979) that the functor m (the one that everyone today uses periphrasis without ever writing it, so as not to have to name an unspeakable author...) is indeed an equivalence of categories (**). As a result, it follows that the functor “change

of ring” i , going from “algebraic” (in which he was still only remotely interested) towards

(*) (May 24) Another reason, perhaps stronger, is that in the case of $\tilde{Y}$ -modules he had a magnificent inversion formula — see on this subject the note “The five photos” (n° 171 (ix)), part (b), “The formula of the good Lord”.

(**) Mebkhout only wrote the demonstration in form of the fact that m is an equivalence (demonstration on the same principle as that for the “analytical” good God functor m) two years later, at the end of 1980. This demonstration is exposed in the second of two consecutive articles (the first of which deals with the functor of the analytical good God m by repeating his thesis), “An equivalence of categories” and “Another equivalence of categories”, in *Compositio Mathematica* 51 (1984), pp. 51–62 and 63–88. (Manuscripts received on June 10, 1981.) But from March 1969 and during the following years, he communicated this result (at the same time as that concerning the functor m) wherever the opportunity presented itself, and in particular to Deligne from June of the same year.

I believe that due to his extreme isolation, and through his analyst “glasses”, he did not realize that it was above all the functor of the good algebraic God which was going to interest people like Deligne and others, because it forms a “bridge” between topology and algebraic geometry (while waiting for arithmetic, which I seem to be the first and only to glimpse...), of a scope comparable to that provided by the étale cohomological tool. Otherwise he would have taken care to write it up immediately and publish it immediately - especially given the customs (which he was still ignorant of...) of the strange environment into which he had found himself. However, his first misadventure (with Kashiwara), in March 1980, should have alerted him (x).

It was also in the same month of March that a note appeared in GRAS by Mebkhout “on the Riemann-Hilbert problem” (t. 290, March 3, 1980, series A — 415), where he stated the theorem of equivalence of his thesis (for m^*), and cautiously asserts that “we hope to show, using the method of cohomological descent as for, the 1st duality theorem [7] that the functors S [which I called m] and therefore T [which I called i] are also category equivalences”. In fact, his demonstrations showed that these are equivalences “locally on extension of scalars) induces an equivalence between

“the analytic” (transcendent) was also an equivalence.

* *

*

It was in March 1978 that Mebkhout had his third interview with his “benefactor” Verdier, whom he had not seen for two years. He then explains to him the ins and outs of the (future) “God’s theorem”, which he modestly calls (a shame!) the “Riemann-Hilbert equivalence”. Looking back, Mebkhout says he is convinced that his explanations must have gone over Verdier’s head. What is certain is that Verdier absolutely does not realize that his “protege” had just submitted ideas to him that deserved attention. He doesn’t talk about it to anyone around him, not even to Deligne, who learns the theorem of the good Lord (at the same time as that of duality known as “Poincaré-Serre-Verdier”, in which this same Verdier absolutely did not want to believe three years before...), from the mouth of Mebkhout only more than a year later, at the Bourbaki seminar in June 1979 (four months after the defense).

Still, Verdier gives the green light for Mebkhout to present his results as a state doctoral thesis, for which he agrees to constitute and chair the jury. If the defense was only done a year later, it was because of the administrative delays imposed by the famous “Commission for theses of the Universities of the Paris region” (an institution that Verdier holds dear as the apple of his eye...).

As I said in a previous note (*), the defense takes place in an atmosphere of general indifference. Even though Mebkhout sends his thesis profusely to the right and the left, it continues to go unnoticed - no one even deigns to acknowledge receipt of the letter.

the category of regular holonomic $\mathbb{C}$ -modules, and that of $\mathbb{R}$ -holonomic modules. I note in passing that Mebkhout’s final result is considerably stronger, even when applied to modules (instead of complexes of modules), due to the fact that he asserts at the same time that the canonical arrows

$$\mathrm{Ext}_x^n(M, N) \cong \mathrm{Ext}_{D_X^n}^n(M^\vee, N^\vee)$$

coming from the functor “extension of scalars”, are also isomorphisms (and not only for $n = 0$). (x) (May 25) In a letter

dated April 24, Mebkhout also told me: “I must tell you that after my thesis I blew a little. I had been under great strain for four years.”

(*) See the note “... and the windfall” (n° 171 (iii)).

Mebkhout, however, does not let himself be defeated. Despite evidence to the contrary, he feels part of a “family” — people, after all, who do the same kind of math — those that he learned, in large part, from hanging out with my friends. written, and more, by putting yourself in a position of openness. listening in relation to a certain spirit in these writings (*). He does not yet realize, apparently, not at the conscious level at least, that this spirit has long been repudiated by those very people who form this “family” into which he believes he has entered, and that for these beautiful gentlemen who entered mathematics on high-wool carpets, he is a drag and an intruder.

(1712) (April 15–17)

(a) But friend Zoghman, who does not yet suspect anything, and isolated as he is, is not unhappy. Since 1973 he has been lucky enough to have an assistant position in Orléans, which gives him the freedom to do the maths that interests him in peace, and too bad if for the moment they only interest him. He continues to live in the Paris region, to attend seminars, to keep abreast of literature...

If he had stopped to think about it a little, he would have realized that everything was not for the best, in this “family” which pretended to ignore him, even though he felt like he was part of it. . He had ended up realizing, by reading my writings, that at least a good part of the “good reference” which had been like manna for him, was in no way the work of his “benefactor” Verdier. The notion of constructability was developed at length

(*) One may wonder (or ask me) what is this famous “spirit” so particular in my writings, which would have inspired my “posthumous student” Zoghman Mebkhou, and which would have been “repudiated” by all my other students, Deligne in the lead, and by a fashion that followed suit. If I try to find a connection to this spirit (to the extent that my more than fragmentary knowledge of the history of mathematics allows me), I would say that it is that in the lineage of Galois, Riemann, Hilbert. If I try to define it in terms of a dynamic of the forces at work in the psyche, I would say that it is a spirit which manifests itself through a harmonious balance of creative forces “yin” and “yang”, with a “base” or “dominant” note which is yin, “feminine”. A more detailed description of this approach in mathematics, and in the discovery of the world in general, emerges during the reflection in the notes “The rising sea”, “The nine months and the five minutes”, “The funerals of yin (yang buries yin (4))” (nŷ 122, 123, 124), reflection taken up in the notes “Brothers and spouses — or the double signature”, “Yin the Servant, and the new masters”, “Yin the Servant (2) — or generosity” (nŷ s 134, 135, 136). For a reflection on certain “visceral” mechanisms of rejection in the contemporary world, vis-à-vis this “spirit”, see the two notes “The providential circumstance — or the Apotheosis” and “The disavowal (1) — or the reminder” (nŷ s 151, 152).

and largely in SGA 4 from 1963, twelve years before Verdier pretended to invent it in this article. With the publication of SGA 5 in 1977, even in the form of the Illusie massacre edition, it appeared that this famous “Verdier biduality” for complexes of analytically or algebraically constructible vector sheaves, had been copied purely and simply on the first presentation of SGA 5 (the same one to which it is referred in a volume with the strange name “SGA 4S” by: “various additions are given in SGA 5 I”

(*)!). In this same strange volume, whose author likes to express himself with superb disdain on the subject of the satellite volumes SGA 4 and SGA 5 which surround him, he was able to see a presentation on the cohomology class associated with a cycle, from which the volume of “technical digressions” SGA 5 (supposedly later...) had been relieved (we didn't really know why) ; he was able to realize at the same time that the cohomological aspect (dual of the homological aspect) of the theme which gave its name to the article of his benefactor, had also been copied on SGA 5. for none of these three themes (**) in “the correct reference”, there was no reference to me or to SGA 5...

He could not yet know, of course, that what remained of Verdier's article (apart from three pages out of the fifty) had been “pumped” from my presentations on the formalism of étale homology and associated homology classes. to the algebraic cycles, exposed disappeared (as if by chance), and without even the trace of an allusion to their existence, from the Illusie edition of desolate memory. But the few facts at his disposal were certainly more than sufficient to put an informed and alert man on the alert; it was, in short, a situation very similar to the one in which I had found myself. found ten years earlier, while leafing through Deligne's article on the degeneration of spectral sequences, where he evaded both the initial motivation and the whole yoga of weights (as well as the role of my modest person), as well as the contribution ideas from Blanchard, using the Lefschetz “cow” theorem for fibers (***). Like me before, Zoghman had to silence the lucid perception of an unpleasant reality, by telling himself (in this case) that this must be a common “connivance”.

(*) For this unpayable euphemism, aimed at the appropriation (by him, Deligne, this time) of the same unfortunate theorem of biduality, see note by b. from p. (**) page 872 in the subnote “The Trojan horse” (n° 1693).

(**) These are the “three themes”: constructibility, biduality for constructible sheaves, class of cohomology (and homology) associated with a cycle.

(***) see for details the beginning of the note “The eviction” (n° 63), and the note of b. from p. (**) on page 233 of this note.

between master and students, that the master closes one eye when his students present as their own ideas, techniques, results that they get directly from him (****). as is often the case in such cases, this interpretation (which suited Zoghman well) did not lack an element of reality, what's more. More than once, I had indeed been involved in such situations of ambiguity. (But it is also true that before my departure, things had never yet reached this point, where the work of the master becomes the remains of which we share the pieces without shame...)

Moreover, in the wider family made up of all those interested in the cohomology of varieties, including the Japanese of the Sato school, all was not so much for the best either. This same Kashiwara, whose constructibility theorem of 1975 had been providential in being able to define the “good God functor”, had also pretended to attribute to himself the paternity of these unfortunate constructible beams, which suddenly everyone was snatching away. nearly ! He had renamed them “finitistic sheaves” for the purposes of the case, in s. 2 of his cited article, where he takes up more or less text the developments of SGA 4 on this subject. From what I have heard from various quarters, the Sato school is familiar with my cohomological work, even though they cite me only sparingly (*), and it is difficult to believe that Kashiwara was not not aware of the notion of constructibility at least in the flat context, where it is the notion of central finitude in the whole theory.

It goes without saying that Verdier the following year does not cite Kashiwara for the “finitist” (sic) notion any more than he mentions a certain deceased person or a certain seminar (**). We may both be well-off people, and perhaps from the same “family” why not — but when it comes to the steak of authorial vanity, everyone grabs for themselves.. (***)

(****) (May 30) And while kindly calling him a humbug on top of that...

(*) Mebkhout wrote to me on this subject (April 24, 85): “The only references to you that I saw in the Japanese school by Sato concern chapter 0 of EGA III, while they were shamelessly inspired by your work.”

(**) As by chance, this seminar (SGA 5) was precisely the one (with SGA 4) which, by mutual agreement between my cohomologist students and following the expression of their leader Deligne, was intended to be “forgotten” (thanks to the publication of the digest-coup-de-saw from his pen...). (***)

(May 24) Mebkhout points out to me that I am making the picture a little darker here. Verdier was completely unaware of Kashiwara's article as well as the notion of holonomy, which Mebkhout taught him during his “interview” with Verdier in 1976. (This was before the publication of the good reference (published at the end of 1976 apparently -he), but in good logic we cannot expect him to cite Kashiwara, when he knows that both his colleague and himself are “pumping” on the same unnamed source...) Conversely, Kashiwara was unaware of the “good reference” and my theorem of biduality (which appears there under the authorship of Verdier), it was Mebkhout who gave them to him.

I believe that it was easier for Zoghman to say to himself that a certain Japanese person he had never seen (*) was definitely a “crook”, than to have to see it for prestigious elders, one of whom was for him like a powerful and distant father and a benefactor, elders whom he had the opportunity to meet in seminars, and with whom he even had the honor of being yours and yours (as is customary in the mathematical environment in France, since the times of Bourbaki).

(b) Paradoxically, Zoghman's troubles began the day when a certain world began to realize the power of one of the tools that he had brought in the wake of an entire philosophy (of a kind however which seemed decidedly outdated...). He had shared this with Deligne in June 1979, who had listened attentively to his explanations on the duality theorem, and even more (one suspects) on the God theorem. He even told her very kindly that he had read the introduction to the thesis, and that he found that there must be some beautiful mathematics in this work (**). Life was good for Zoghman that day — but not for long.

made known in January 1978, at the same time as the results of chapter III of his thesis. These were subsequently shamelessly appropriated (and practically without demonstration) in the already cited article by Kashiwara-Kawai — see on this subject the note “The five photos (crystals and -Modules)” (n^o 171 (ix)), notably page 1005. The fact that Kashiwara ignored the biduality theorem for discrete coefficients shows, among many other signs noted here and there, how far he was from Mebkhout's philosophy of duality, directly inspired of

my work.

(*) (May 24) He had nevertheless glimpsed them once, these famous Japanese! Mebkhout wrote to me on this subject (April 22, 85):

“The Sato school came in full force in 1972 for a conference on hyperfunctions. They hid their methods well. For a long time their results remained unaffordable. There was a certain mythology around this school, which means that now Kashiwara can get away with what he does.”

(June 4) It must be said that if it is indeed true (as Mebkhout seems to suggest here) that the Sato school would have initiated the method of surrounding oneself with darkness in order to dominate, this process has found emulators on this side of the Pacific, who are now not outdone by their masters! And it is indeed them, and in no way the Kashiwara and others, who set up the incredible mystification of the Perverse Colloquium, in which Kashiwara was used as a convenient “pawn” to prepare the ground - and then be dumped...

(**) (June 3) Mebkhout had already been entitled to an equally free compliment, the previous year and from the mouth of Illusie, at the P-adic Analysis Conference in Rennes. See on this subject the note “Carte blanche pour le pillage” (n^o 174), page 1091 (and in particular the note by b. de p. (**)) same page).

The same year, in September 1979, he participated in the Colloquy of Les Houches (*), where he gave a presentation “On the Hilbert-Riemann problem”, presenting his equivalence theorem. His presentation seems to go completely unnoticed. One of the “highlights” of the Conference, on the other hand, was a conference by Kawai a few days before, announcing a remarkable and unexpected result, obtained in collaboration with Mr. Kashiwara. in a somewhat convoluted and incomprehensible form at pleasure (in accordance with the particular style developed by the school of Sato (**)), this theorem asserted that on a complex (smooth) analytical variety, the functor “change of scalars” of towards $\tilde{Y}$ induces an equivalence between the category of holonomic -Modules “with regular singularities”, and that of holonomic -Modules. Their demonstration would be the subject of a very long article of more than one hundred and fifty pages, which has since been published (***).

Mebkhout at the time, like all the other listeners, he was a little disappointed. This theorem, presented as sensational and where no one really understood what exactly it was about, nevertheless had a familiar “je ne sais quoi” to it. In the days that

(*) The Proceedings of the Colloque des Houches September 1–13, 1979) appeared in Lecture Notes in $\tilde{Y}^n$ Physics 126 (1980), Springer Verlag. In these Proceedings there is also Mebkhout's presentation “On the Hilbert - Riemann problem”, exposing his entire philosophy (which I would call that of “De Rham coefficients”) in a perfectly clear manner and with references to support for the demonstrations, and the presentation given by Kashiwara and Kawai. Any reader in good faith will be able to verify, by comparing the two articles, that there is no beginning of a philosophy of this kind, nor the slightest allusion to something like the “good God theorem”, in the article by these two authors.

(June 4) In his comment letter of April 22, Mebkhout expresses himself along the same lines about the International Congress of Mathematicians in Helsinki which took place the previous year (August 1978):

“I must say that I attended the lecture of Kashiwara who was keynote speaker at the Helsinki Congress (August 1978). There was no philosophy remotely or closely related to the comparison between discrete and continuous coefficients. I took care to immediately write up my Copenhagen conference which had taken place a week before and make it available to the mathematical community which is supposed to be a judge. The conference of this same Kashiwara is published in the Proceedings of the [Helsinki] Congress.

(**) (June 4) See a previous footnote on this subject (note (*) page 1052). It is especially in the wake of the Colloquium Pervers, it seems to me, that the style of deliberate obscurity was perfected, on this side of the Pacific, into a method of systematic mystification and appropriation to confusion.

(***) M. Kashiwara, T. Kawai, On holonomic Systems of microdifferential equations III, System with regular singularities. Pub. RIMS 15, 813–979 (1981).

followed, he mulled it over, slowly but surely, as usual. I can imagine that in the turmoil of the Conference, it must have taken him a day or two just to put the theorem into a form understandable to a non-Japanese person. From there, it was a win!

I bet that not one of the Westerners present had the slightest idea of what these “regular singularities” are. But Mebkhout, he had clearly defined a few years before, for the needs of a “philosophy of coefficients” which was still being sought, a notion of a regular holonomic module (*). This one, at least, had a very precise meaning for him - and, taking the appropriate derived category and also passing “on the other side of the mirror”, he knew how to interpret this category in terms of the corresponding derived category of the “constructible discrete coefficients”. At least, he had demonstrated at length in his thesis the analogous interpretation, in terms of this same category of discrete coefficients “on the other side”, of the category of $\mathcal{D}$ -holonomic modules - and he knew well that he had in his hands everything he needed to prove the analog also in the case “-Regular holonomic modules”.

This is what he did in his thesis, practically, in the form of a local result on X which was already sufficient to imply the “sensational result” of Kashiwara-Kawai. Thus, the point of view of the derived categories, and that of the play between continuous coefficients, discrete coefficients, gave a result of the Kashiwara-Kawai type, but in principle much stronger still, since it gave at the same time an isomorphism between Exti superiors, and not only at the level of Hom (which was all that one obtained, by working with the $\mathcal{D}$ -Modules nothing more, instead of the derived categories formed with such Modules). This seen, it would be damned if this Japanese notion of “regular singularities” was not equivalent to his own — so that the prestigious result would in fact be a pure and simple corollary of his philosophy of coefficients, which until then no one had deigned to take an interest in.

When the entire Conference came to honor with its presence the presentation of a vague stranger, planned in the program we did not really know why, and at the end of the conference (**) with arrows and diagrams (the kind of things that were done in the sixties and which have long since ceased to be appropriate between serious people), which anyone announces

(*) For Mebkhout's definition of the regularity of a holonomic complex of $\mathcal{D}$ -Modules (along a divisor Y), see the note “The work...” (n° 171 (ii)), note of b. from p. (*) page 950. “Regular” quite simply means: regular along any divider (on any open).

(**) (June 4) In fact, Mebkhout had taken care to allude to it from the start of his conference, naively thinking that it would have the gift of hooking his listeners.

without laughing that the famous “highlight” of the Colloquium (the statement of which no one would have known how to repeat, which only made it more impressive...) — that this “highlight”, therefore, was an immediate corollary of a theorem of equivalence of categories (we ask you a little 1) which he would have obtained between the corresponding derived categories (what are these animals?), and another which had not does not seem to have much to do with them, a theorem which would appear in a thesis (that's the bouquet!) which he swears he has had for a long time sent to Mr. Kashiwara and to many others among the eminent colleagues in the large audience, it seems like a bad joke. There is an awkward silence, knowing smiles. It is (no doubt) to dispel the embarrassment caused by the young clumsy man that Mr. Kashiwara himself asks the usual question. He still looks a little stunned, it must be said, he must be wondering if he's dreaming (*)... The ordinary person doesn't let himself be taken aback though. It's just that he's not going to start a second conference on top of the first - we'll have

seen it all!

The next minute, our fellow Zoghman finds himself all alone in front of the blackboard, with its beautiful diagrams in front of a deserted room... No one that day or the following days deigned to inquire about the ins and outs of results of the so-called “results” of the malotru, who had been wrong to invite to such a distinguished conference.

(May 15, 1986) When writing this report last year, from what I had learned from Mebkhout, I was of course convinced that Kashiwara, at the time of the Conference, was completely unaware of the double equivalence of categories, one in the framework of $\mathcal{A}$ -Modules, the other in that of $\mathcal{B}$ -Modules. However, the mere fact that the first of these equivalences had already been explained almost two years before by Ramis (see b. de p. note (*) p. 950), in the form of a conjecture attributed to Kashiwara, removes the slightest credibility to the Mebkhout version of the events of the Conference, which version now resembles pure fabrication for me; And

(*) (June 4) Mebkhout writes to me to this effect (April 22):

“After the Houches conference someone told me that this same Kashiwara found that his article with Kawai was empty. But he spared no effort to dishonestly catch up. It had been five years [since his 1975 article proving his constructibility theorem] since he last touched discrete coefficients. His sudden fame [through this article] due to a whole other problem allowed him to take care of more “serious” things — especially not bombing! Between 1975 and 1980 I was the only one, in the midst of general hostility (something I understood later) to develop this childish philosophy that I learned in your writings.”

this even independently of the question whether the attribution of paternity made by Remis was founded or not (something of which I am for my part convinced). That said, it is not excluded, precisely given the little importance that had been given until then to the one and the other equivalence of categories, that Kawai and Kashiwara did not see the geometric reason of a marvelous simplicity for the validity of a theorem that they attacked with analyst glasses, and that it was indeed Mebkhout who drew their attention to this fact. I will probably never know what it really is. Still, it seems to me that [?] Houches as well as Kashiwara and Mebkhout understood for the first time the power hidden behind these "stupid" categorical statements, to which neither one nor the other until then do not seem to have paid much attention. It is not surprising, therefore, that Kashiwara took the first opportunity that presented itself to assert his authorship of a statement that he had left aside until then.

This "first opportunity" presented itself on April 22, 1980, seven months after the Les Houches Conference, in an oral presentation by Kashiwara at the Goulaouic-Schwartz seminar, "Constructible beams and holonomic systems of linear partial differential equations with regular singular points". I have deleted here a page and a half of comments on this episode, which I wrote in April last year (following the report of the Colloquium in Les Houches).

It was therefore at a time when I had no doubt, in accordance with the version given to me by Mebkhout, that it had been an act of pure and simple banditry on the part of Kashiwara.

So my report was made with a sarcastic verve worthy of a better cause, and for which Kashiwara paid the price. In retrospect, I am convinced on the contrary that Kashiwara cannot be blamed for the slightest error in this case. In his presentation, he gives the statement and a first sketch of the demonstration of a theorem, which he had indeed been the first to conjecture in 1975. He does not even take the trouble to recall it, since it This was something that must have seemed incidental to him, and moreover "well known" among well-informed people (with the sole exception of Mebkhout, one must believe). In addition, he has the correction to specify, from page 2:

"Let us note that the Theorem is also demonstrated by Mebkhout, by a different way."

It was even "lending to the rich", because the previous month, in his note to the CRAS of March 3, 1980, Mebkhout had expressed himself in hypothetical form "we hope to show

that... ", and without making the slightest allusion to a role that Kashiwara would have played in the Riemann-Hilbert problem (except by a reference to the eternal constructibility theorem of Kashiwara, from 1975). Obviously, Mebkhout's note, limited in short to recalling some of the results of his thesis, was a way (just like Kashiwara's presentation) of "taking (or resuming) the date", and asserting his claims of authorship. We can say that on this occasion, he received less correction than Kashiwara, who (it seems) gave him more than his due, while Mebkhout pretends to simply ignore him.

This does not prevent the fact that it is totally [?] (it would seem) that it was he who taught Kashiwara the whole problem of Riemann-Hilbert, during the Colloquy of Les Houches. It is with this unshakeable conviction that he makes an "outburst" at the end of Kashiwara's presentation, which he attended. On this subject, see my report and my comments from last year, in the note of June 2 "Carte blanche pour le pillage — ou les Hautes Oeuvres" (note written, I remind you, at a time when bad faith of Kashiwara left no doubt for me).

This unshakeable conviction of Mebkhout of his right (with respect to Kashiwara, at least), which does not yet seem to have been undermined one iota even as I write these lines, is surprising! It does not seem impossible to me, moreover, that he did indeed arrive at the relevant conjecture, called Riemann-Hilbert, in 1976 following his reflections on the global duality theorem. This does not prevent the fact that in comments to his thesis, written in his own hand on October 25, 1978 (in response to certain criticisms of the Verdier report on his thesis (*), which Houzel had shared with him orally), Mebkhout specifies (top of the last page):

"The author learned the connection with the Riemann-Hilbert problem from B. Malgrange, in a discussion during the Bourbaki seminar session of November 1976, in which M. Kashiwara took part."

It was a way of not saying that it was from Kashiwara in person that he learned of this "link", which Malgrange himself attributes to said Kashiwara (without in any way thinking of claiming a share of paternity). In a "normal" atmosphere and disposition, it would have gone without saying that Mebkhout would admit Kashiwara's priority for this conjecture, even if he had stumbled upon it independently a year later. But in the comment cited he tries

(*) See the note "The report — or the good-natured massacre", n

visibly to avoid the role of Kashiwara (who would have limited himself, one would say, to “taking part” in a conversation between Mebkhout and Malgrange!). And a year and a half later, at Kashiwara's famous presentation, he completely and “in the best faith in the world” forgot that Kashiwara had anything to do with the Riemann-Hilbert problem.

It must have still worked in Mr. Kashiwara's head, once the hype of the big occasion had passed. Still, just a few months later, at the Goulaouic-Schwartz 1979–80 seminar, in an oral presentation on April 22 (**), he announced this same theorem as being his own, which had had the gift of putting a damper on a certain Conference! However, he has the “kindness” to add, on page 2:

“Note that the Theorem is also demonstrated by Mebkhout by a different way”
(my emphasis) (*).

This “also demonstrates” is worth its weight in Kashiwara, even though it is a theorem that neither he nor anyone suspected, and that he had just learned (a few months before) from the person concerned. himself/ not having deigned to read the thesis that he had sent him almost a year ago¹ If he had known this theorem before, it is certain that he would not have taken the trouble to give a demonstration of 167 tight pages, to demonstrate a “crazy” analysis result which was an immediate corollary, and even the corollary of a corollary.

“By a different route” is also unpayable. In the presentation in question there is not the slightest trace of a demonstration, nor in any of the subsequent works of Kashiwara or one of his Japanese colleagues; Zoghman assures me that he does not. There is no proof of his theorem in the literature other than his own, and I very much doubt (given the type of demonstration, which is very familiar to me and for good reason) that one will ever be found. It is a demonstration which corresponds to a geometric approach to things, using the resolution of singularities à la Hironaka — a tool which has become for me (and

(**) (June 4) Goulaouic-Schwartz seminar 1979–80, presentation by M. Kashiwara on April 22, 1980, “Faisceaux constructibles et holonomiques des systèmes d'équations différentielles linéaires à points singuliers réguliers”.

For details on this memorable seminar session, where Mebkhout was present, see the note “Carte blanche pour le pillage”, n° 1714.

(*) I quote here the text of the written presentation, which was written by Kashiwara a year after the oral presentation. For details, see the note cited in the previous note by b. from p.

for my students) a second nature, and which analysts (and in particular those of the Sato school) ignore. So much so that Kashiwara obviously did not feel capable of even copying Mebkhout's demonstration...

This kind of (very large) white thread scam can work, as long as there is a general consensus that covers it, at the expense (here) of a vague unknown. All these beautiful people (**) would be wrong to be embarrassed, while visibly the said stranger is left behind by those even best placed to know the facts first hand, and who have a personal and direct responsibility towards -vis of the person concerned: JL Verdier (president of the thesis jury) and P. Deligne (the first who felt the significance of the result that he had learned from Mebkhout the previous year).

Since I'm on the cross-Pacific boss Kashiwara, I might as well end on this chapter, with the epilogue of the total elimination of the unknown person on duty, following on from the brilliant example given three years before during the Pervers Colloquium in June 1981. This is an article by R. Hotta and M. Kashiwara "The invariant holonomic System on a semi-simple Lie algebra"

(*Inventiones Mathematicae* 75, 327–358), published in 1984 (received 2.3.1983). This article, as it appears from line 6 of the introduction, is one of the numerous applications of the endless "Riemann-Hilbert correspondence" known as the good Lord (or the unknown official).

In this article, the name of the said unknown person is no longer mentioned, and he does not appear in the bibliography. Already knowing the mentality of the second author, but not being able to prejudge the bad faith of the first, Zoghman wrote to him to inform him that he was the author of the theorem used there in a crucial way, and to object to the fact that he was not cited in this capacity. Instead, the reference is to the already cited paper by Kawai-Kashiwara (167 pages), in which the said theorem does not appear at all (*). Hotta replied that he did not have them

(**) (June 4) For a "parade" of the actors who participated directly and actively in the mystification-fraud surrounding the work of Zoghman Mebkhout (or at least, those of whom I was aware), see the note "The mafia" (n° 171), part (f) "The parade of actors — or the mafia". This parade is not complete — for a more complete list (aligning the names of thirteen mathematicians of international fame), see the note "The day of glory" (n° 171 (iv)), note by b. from p. (*) page 962. It is still missing the name of R. Remmert, who has appeared in the meantime (see the note already cited "La mafia", part (c1) "Failing memories — or the New History") — and fourteen! (Not counting one referral who remained anonymous - and fifteen...)

(*) (May 25) As has already been explained elsewhere (in "The five photos (crystals and -Modules)" note n° 171 (ix), see in particular page 1005), the work in question contains a "half" only from the good Lord's theorem, half looted from chap. III of Mebkhout's thesis.

seemed necessary to cite it, since in any case it was well known that the correspondence in question was due to Kashiwara and Mebkhout. Curtain...

(c) But Japan is far away, and if my friend Zoghman struggled for years to break spears against distant Japanese, it is undoubtedly because it was much more painful for him to accept the reality of 'a mafia which is in no way confined to continents at the antipodes, but which has the upper hand as much in the posh seminaries of Paris as in Moscow or Tokyo. It is time to return to the sweet country of France, and to the "little family" formed by my dear ex-cohomologist students, and (the one, a little larger) which was formed around them since the distant days of my "death".

News travels fast sometimes. During 1979 and 1980, with the help of Deligne and the Colloquy of Les Houches, "we" must have ended up realizing that a theorem had just appeared on the mathematical market, which was, in my opinion, promising, alas a vague, belated Grothendieckian; but that there was a ready-made substitute for this unenthusiastic authorship, in the person of the well-known Japanese analyst Kashiwara, who only asks to play the fathers of the famous "Riemann-Hilbert correspondence".

In January 1980, Mebkhout gave a presentation on his unfortunate theorem at the "singularities seminar" of Le Dung Trang, in Paris VII. Jean-Louis Brylinski did not attend the presentation, but Le Dung Trang spoke to him about it and made him read his notes. According to what he himself reported to Mebkhout, as soon as Brylinski became aware of Mebkhout's theorem, he exclaimed: but with that, we are going to prove the Kazhdan-Lusztig conjecture! (Conjecture which was considered "unaffordable", as expected, by the omens.)

One might believe that Brylinski would approach the person concerned, to have him explain in more detail the mysteries of the conditions of holonomy and regularity, giving a precise meaning to the theorem he needed. But according to what he himself candidly explained to Mebkhout, "he" would have been advised not to address himself, but to the Eminence Kashiwara. He did not specify who this "we" was. But obviously he had a keen ear (in addition to a lively mind), and he was as unknown at the time as Mebkhout is still today. He didn't have to be told twice, and he went to inquire with Kashiwara, who must still be around, that was his strictest right. The result was a joint article with Kashiwara, published in *Inventiones Mathematicae* (64, 387–410) in 1981 (received December 19, 1980), with the title "Kazhdan-Lusztig conjecture and holonomic

Systems". Brylinski found himself a star overnight, which was only deserved, and Kashiwara added one more jewel to an already loaded list of achievements (*).

Everything would be for the best in the best of all worlds, but... It must be believed that the same "we" must have also suggested that the less we talk about a certain vague unknown, the better it would be. Still, in the manuscript sent to *Inventiones*, the name of Mebkhout did not appear, either in the text or in the bibliography.

Mebkhout was aware of the preprint of the article, and he complained about the process to Brylinski, and wrote to R. Remmert, editor of *Inventiones*. Brylinski reacted "flexibly" (in a style which is now very familiar to me...), by adding on proofs at the end of the bibliography (out of alphabetical order) three thumb-references to Mebkhout (as long as we is I), without making the slightest allusion in the text to the so-called Mebkhout (*). A reader of this article, if by chance he sees the name of a famous unknown person added at the end of the bibliography, God knows why, will say to himself that we must have put it there to please a friend...

Brylinski rose to fame through a scam. The truth is that the conjecture he demonstrates was unaffordable as long as a new tool had not appeared.

Regardless of the authorship of this tool, nothing in this article highlights this new tool, the role of which is evaded from the beginning (lines 6 to 8) by the "explanation" (sic) neither flesh nor fish :

"The method employed here is to associate holonomic Systems of linear differential equations with R. s. on the flag manifold with Verma modules, and to

(*) To associate the celebrity Kashiwara with the demonstration that he had just found, and in which Kashiwara had had no part, while ignoring the crucial role played by his young unknown colleague, was the "price of entrance" that Brylinski paid, without being asked, for his entry into a certain "environment" of famous people — the environment which gives its name to the present note "The mafia"...

(*) The introduction to Brylinski-Kashiwara's article ends with thanks expressed to various authors, including Jean-Louis Verdier and without mention of the unknown person on duty, needless to say). She continues with a par. 1 dedicated to a summary on "holonomic differential systems with regular singularities" (this is the name in Japanese, for -regular holonomic modules). In the first lines of said paragraph, we read: "For the details and proofs, we refer the reader to 6, 15–173." Reference [6] is Kashiwara's 1975 article establishing his constructibility theorem, while [15-17] (added on proofs) is the "thumb reference" to Mebkhout. Honor is safe, whatever happens, for the "young man with a future" Jean-Louis Brylinski...

use the correspondence of holonomic Systems and constructible sheaves.”

(emphasis mine). There is not the slightest reference or explanation about this famous unspecified “correspondence”. “We” had to make the young leader understand that this “correspondence” was henceforth supposed to be part of things well known to all, for which it was in no way necessary to invoke a particular theorem, and thereby raise questions of authorship accessories and (especially) premature. And Brylinski, who is a young man with a future, has not been told this twice...

As for Remmert, he forwarded the letter from the unknown complainant to the summary of Brylinski-Kashiwara's article. The summary dismisses the complaint, expressing the opinion that “the result was known independently, and probably earlier, by Kawai and Kashiwara”, referring to the “Reconstruction theorem” which he attributes to these authors (referring to p. 116 in the article by the cited authors, in the “Seminar on Micro-local Analysis” Guillemin, *Annals of Math; Studies*, n° 93).

This assessment of the referee, who is supposed to know what he is talking about, is scandalous on two counts, and shows that he is part of the same scam, in collusion with (for the moment) Kashiwara and Brylinski. It would already be scandalous, on a simple presumption (*) of anteriority of results obtained independently (according to the opinion itself expressed

(*) (June 4) I am even ignoring here the fact that this presumption was unfounded. Remmert's letter (of 26.1.1981) transmitting the summary's response does not mention the date of the Guillemin seminar (cited in the letter) and of Kashiwara's presentation. I have just contacted Mebkhout in Italy at the last minute (by telephone...) to ask him for details on this reference, and its date. I learned that Kashiwara's presentation took place in 1978, a few months after Mebkhout communicated to him Chap. III of his thesis (in January 1978) — Mr. Kashiwara did not waste his time 1 As the defense of the thesis did not take place until February 1979 (due to the slowness of the apparatus represented by the Theses Commission of Parisian Universities, so dear to JL Verdier...), this could give a plausible basis to the “presumption” of anteriority of the summary, with regard to the “Reconstruction Theorem” at least. But if the referee (in addition to being in good faith, which is already clearly not the case) had done his job conscientiously, he would have noticed that there is nothing resembling a demonstration of the “Reconstruction Theorem”, in the cited talk by Kashiwara.

Mebkhout also returned to the charge, in a letter of 25.3.1981 where he underlines 1^y) that the theorem invoked by the summary judge was “one of the most important results of his doctoral thesis” and that he had communicated this result, with its demonstration, to Kashiwara (but he forgets to say when - Zoghman never makes others!), and 2^y) that this theorem was “largely insufficient to establish the equivalence of categories

by the summary proceedings), to admit that the presumed later author (coincidentally the one who is unknown...) is not cited at all; such practices, obviously, open the door (and have long since opened the door...) to the most serious abuses (*). But there is

in question". R. Remmert did not deign to respond to this letter, coming from an unnamed and unsupported complainant.

Zoghman told me earlier (I will end up knowing everything, by insisting...) that he became aware of the Kashiwara scam at the Guillemin seminar the following year, in 1979, the year of his thesis defense. This is therefore his very first confrontation with the kind of procedures used in "the mafia". At the time of the Colloque des Houches, in September of that same year, he already knew what to expect about the great star Kashiwara. But as his philosophy and its results were written in black and white and published, demonstration and all, he would not have imagined that there could ever be a question of ignoring his work purely and simply, once its importance was recognized. And the first sign of the power of his approach appeared precisely at the Colloquy of Les Houches, regarding the Kashiwara-Kawai theorem.

Of course, in January 1978, Mebkhout (who still had no reason to be suspicious) had spoken to Kashiwara not only about what he called the "biduality theorem" (later renamed "reconstruction theorem" for the needs of a scam), but also of the complete God theorem, of which it was in short a "half" (the shallower "half" of the two). He told me that for the biduality theorem, Kashiwara had really "hung on", one would say that he must have already asked himself questions like that; but obviously he didn't have the slightest idea how to demonstrate it. (However, Mebkhout's proof does not use the resolution of singularities.) As for the God's theorem, it went completely over his head - so much so that he had completely forgotten about it during the Les Houches Conference. . However, Mebkhout had sent him, like everyone else, his complete thesis at the beginning of the same year (1979) (at a time when he had not yet realized the Guillemin seminar scam, the year before). Another thing which shows that the theorem of the good Lord had completely escaped the boss is that he did not even think of pocketing it as well and for the sake of conscience, so to speak (even if he did not understand what was going on...), in this same presentation at the Guillemin seminar.

Not having had the advantage until now of holding this presentation by Kashiwara) in my hands, I wondered if it was not likely to give rise to the impression, in an uninformed reader, that the philosophy developed by Mebkhout would have been known to Kashiwara (and by his own means, as he says) from 1978 at least. Zoghman promised to send me a copy of the presentation in question, which, he assures me, will allow me to disabuse myself. There is there (he says) an accumulation of technical statements, more or less (in) comprehensible (Kashiwara could not have done less...), without demonstration and without apparent common thread, nor anything (no more than in his conference in Helsinki the same year, or in that of the Colloque des Houches the year after) which resembles a "philosophy of coefficients" linking continuous coefficients and discrete coefficients.

(x) (June 16) Mebkhout tells me that the presentation was in fact presented by Kawai, as a joint work with Kashiwara.

more. The “reconstruction theorem” that he cites (and which is also plundered in the thesis of Mebkhout (*), where it appears under the (improper) name of “theorem of biduality”) is still far from the equivalence of categories (known as “Riemann-Hilbert”) used in the demonstration of the incriminated article by Brylinski-Kashiwara, an equivalence due to Mebkhout alone, and which in no way implies (**).

For me, the bad faith of the accused, relying on the connivance of the co-homologist establishment to boycott the name and work of a vague unknown for the “benefit” of famous people, can leave no doubt. Everyone provided with a minimum of cohomological-analyst culture, and a minimum of interest in a fascinating theme, can convince themselves of the reality of the facts, and notice a gross deception, to which the anonymous referee comes to compete (***).

(*) This is exactly the same attitude as that, expressed three years later with the same cynicism, of R. Hotta (in the response to Mebkhout cited above): the new “rule”, or better said “the law of the environment”, is to cite people in a position of power (even outside of the place) and not to cite the unknown (even though their contributions are decisive and attested by undeniable publications).

I do not question the good faith of R. Remmert on this occasion. I nevertheless note that as publisher of *Inventiones*, his responsibility in this fraud is directly engaged, even independently of the fact (of which he could not have suspected) that he was misled by a dishonest referral. The referee had expressed “the hope” (cynical, given the circumstances) “that as a courtesy, Brylinski and Kashiwara would mention the result of Mebkhout”. It was the role of R. Remmert, as editor, to ensure that Mebkhout’s result was duly mentioned in the text, not as a “courtesy”, but out of respect for the elementary rules of ethics of the mathematician profession. (May 30) Since these lines were written, I have become aware of a new fact, which sheds unexpected

light on the role of R. Remmert in the fraud surrounding the work of Zoghman Mebkhout, by showing his active participation in the scam surrounding mine. Suddenly the presumption of good faith that I had towards him (out of old habit, and in the absence of irrefutable signs to the contrary) vanished for me. The interested reader will find details on this “new fact” in the part (c1) (of the note “La maffia”) which follows, under the name “Failing memories — or the New History”.

(*) On the subject of this looting, see the note “The five photos (crystals and -Modules)” (n° 171 (ix)), end of part (b) (“The formula of the good Lord”), p. 1005.

(**) See the note already cited (part (b) also) for the relationship between the “biduality theorem” of Mebkhout, and the “good God” theorem of which it constitutes one half – the shallower of the two. It does not call on resolution, while the complete theorem uses all the strength of the resolution of Hironaka’s singularities (which constitutes a typically “geometric” tool, which was ignored by the Japanese school at least until the early 1980s).

(***) (May 30) And to which R. Remmert, as editor of *Inventiones*, contributes without

The situation is all the less ambiguous since in Kashiwara nor in any other Japanese or other specialists in differential systems, the word “derived category” is not pronounced until 1981 (****), and even less since then. Is there the slightest reflection in the sense of a “philosophy” linking discrete and continuous coefficients — which philosophy is just as absent, in fact, from the vague references to confusion subsequent to a certain “correspondence (sic) between holonomic systems (resic) and constructible sheaves (reresic)”. None of these fine gentlemen has had this honesty until today, of only explaining in black and white (as I did earlier) the categories present, and the arrows from one to the other which establish their equivalence — On the other hand, a whole series of seminar presentations, notes and articles by Mebkhout since 1977 attest to his pioneering work, accomplished since 1972 in complete solitude (*).

I must admit that before having been confronted with the thing, and having looked at and examined it at length and in all its aspects (**), I would never have suspected, even in a dream, that a collective spoliation also shameless can ever take place in the world of scientists - And it is a strange thing to have to tell myself that this iniquitous mystification was staged above all by the combined efforts of two of my closest students of yesteryear; and moreover, that the signal was given by the appearance of a successor of my work - of a work in which I had invested myself with passion, putting into it the best I had to give (* **). After my departure, this work became the target and prey of lust

reservation... (****) (May 25) Mebkhout points out to me that there is reason to qualify this sweeping statement somewhat. While derived categories were practically taboo in France after my departure, the Japanese school continued to make parsimonious use of them. This was a convenient technical means (to avoid the use of spectral sequences, in particular), but in no way the “custom-made” language for an intrinsic geometric vision of “coefficients”, in cohomology of varieties and spaces of all kinds.

(*) For a list of these articles, which I do not need to review here or even enumerate, I refer to the already cited article by Mebkhout and Le Dung Trang (in *Proceedings of Symposia in Pure Mathematics*, 40 (1983) part 2).

(May 25) See also the bibliographical references given throughout the pages in the note “Three milestones — or innocence” (n° 171 (x)).

(**) (June 1) I did it first last year, in the week of May 2 to 9 (writing “Cortège VII”, called “The Colloquy — or bundles of Mebkhout and Perversity”), and again for almost two months, writing “L’Apothéose”

(***) While retyping this page (quite heavily crossed out), the thought occurred to me that if my investment in this work bore (among others) such unforeseen and unwelcome fruits, it is undoubtedly that in

of those very people who were closest to me, and of a secret violence which, beyond my person and my work, comes to strike those who openly were inspired by it...

(c1) (May 30) six weeks after having written the previous pages, I open here a parenthesis in the story of the misadventures of my friend Zoghman, to dwell a little on the "new fact" to which reference is made in a previous footnote (note (*) page 1061). We can read the pages which follow as an interesting complement to the flowering of the "new style" which has been discussed elsewhere (*), which style excels in the art of writing (to the satisfaction of all...) a "New History" (of a certain theme of contemporary mathematics, in this case...). The reader eager to know the continuation of the misadventures of my friend Zoghman (lost in a circus that he could not have predicted) can continue directly with "The General Rehearsal (before Apotheosis)" (part (d) which follows, dated April 16).

I read the introduction and the bibliography of the book "Non Archimedian Analysis" by S. Bosch, U. Guntzer and R. Remmert (**). This book sets out the theory of rigid-analytic spaces, rightly presenting J. Tate's 1962 ("private") notes, "Rigid-analytic spaces," as the starting point for the theory. It is specified in the introduction that R. Remmert "was able to obtain a copy" of this rare document, which had represented

this investment itself and in the spirit that animated me, there was not only this "best of myself" that I like to emphasize here, but that there was also "worse". This is something that appeared quite clearly, certainly, in Fatuity and Renewal (the first part of Récoltes et Semailles), but also something that very strong ego mechanisms constantly push me to forget! I am beginning to realize that this "worst" was only glimpsed during last year's reflection, that I did not do a really in-depth examination of it, or a "tour" that reveals its various sides in truly detailed detail.

This is why the knowledge I have of it remains superficial, just like the action of this knowledge (in my relationship to the Burial, in particular).

This fourth part "The Four Operations" of Seed Harvests represents above all a work of meticulous collection of raw facts linked to the Burial. This "stewardship" work has, however, contributed to making me feel that a deeper understanding of the Burial will come to me not so much from the kind of work I have been doing for almost three months, but from a deeper of the work done in Fatuity and Renewal, that is also to say: of a deepening of my knowledge of who I was, in those distant days "before my departure"...

(*) See the note "Congratulations — or the new style", n° 1699 .

(**) Fundamentals of Mathematics, n° 261 (1984).

in a way the Act of Birth of a new arrival in the aeropagus of notions of “varieties” (analytical, in this case).

Remmert must have forgotten that it was I who had taken care to have this document multigraphed by IHES (which was just starting up) and to send a copy to him, as well as to other space specialists. complex analytics — just to draw their attention to this unexpected broadening of their favorite theme. It was at a time when none of them yet pretended to be interested in basic bodies other than that of real or complex ones - but you never knew...

Remmert must also have forgotten that if I was then so interested in spreading among my friends this text attesting to the emergence of a new geometric “universe”, it was (among other things) because I had been associated with close to this birth. The very name rigid-analytic space had been coined by me, before Remmert nor anyone (not even Tate!) had heard the name or even dreamed of what the name was meant to express. I was the first to see Tate's “loxodromic” theory of elliptic curves as having to be a “transition to the quotient” for a kind of “analytic” varieties which did not yet exist, and which should give rise to theorems algebraic-analytic comparison of the “GAGA” type of Serre. There was another motivation which showed me the way towards this same type of new objects: the need to be able to define a “generic fiber” for formal schemas of finite type above a ring of discrete valuation. As a third indication going in the same direction: I had heard that Krasner (well known in the 1950s and 1960s in Parisian mathematical circles, as an original who hosted an army of cats in his home, and who walked in all the seminars with his big Russian-style coat and his always hilarious air...) — that this Krasner was therefore “doing analytical extension” on non-Archimedean value bodies. I didn't know any more, and I'm not sure I've ever met anyone who had read Krasner's work on this theme — but it was intriguing. It must be said that the term “analytic continuation” did not in itself have the virtue of making my heart beat faster (on the contrary, it brought back unstimulating memories from my student years...); but once we saw the need for a new type of geometric object, it was bound to click...

to return to Remmert - if his memory is so failing, Tate's original text (which he prides himself on possessing) could nevertheless refresh it for him. In his notes, Tate makes no secret of the role I played in the conception of the theory (*), writing between

others (I quote here from memory) that he followed “completely faithfully” a master builder (for a process of constructing the notion by “putting together pieces”) that he got from me. I had also provided him with a certain type of “building blocks” (or “localization process” in algebras of restricted formal series), for the needs of the fibers of the formal diagrams. He had completed these first “pieces” (or “processes”) with those of a second type, in some way complementary.

This new notion would probably not have seen the light of day (any more than flat cohomology, nor crystalline cohomology, nor many other things that followed in its wake, including even the last “cream pie”), the famous -Modules...) if I had not had the common thread of “generalized spaces” (later to become topos), the theory of which remained to be developed, but had already been anticipated for four years. It was this intuition which showed me the way towards a type of “manifolds” which, precisely, went out of the context of ordinary (locally ringed) topological spaces.

From the moment when the local theory of rigid-analytic spaces had been started by John Tate, it was also me who posed and popularized the statements of the first crucial “global” theorems to be proven about these new varieties, statements which had been present in my mind even before the first foundational work was accomplished: algebraic-analytic comparison theorems for proper relative schemes on a rigid-analytic space, finiteness theorem for R_f^* , for a morphism of rigid-analytic spaces — problems solved by Kiehl in the years

(*) More than twenty years have passed since those distant days, when a close friendship linked Tate and me, and his family and mine. It's been years since I received any sign of life from him. Nor did I know that he was moved, any more than any other among those of my students and friends of yesteryear who could not have failed to become aware of this book, of the evasion of my person which is done in the introduction. Other times, other manners...

which followed (**) (***). But it is true that following the wind that blows these days, it is considered as an unimportant thing, and at the limit, simply humbug, to foresee new notions, to identify project managers, and to ask the questions that real mathematicians are responsible for solving...

Anyway, my name is not mentioned in this introduction, as having anything to do with rigid-analytic spaces. Nor does Krasner's theory, moreover - quite the contrary, Tate's theory is presented as introducing "a structure rich enough to make the impossible possible: analytical continuation on totally discontinuous bodies" - whereas in 1962 said analytical continuation ("impossible") had already been for ten years, if not twenty or thirty (I cannot say), the official "corporate name" (so to speak) of Krasner. No trace of Krasner or me in the abundant bibliography either. My name, however, appears in passing towards the end of the introduction, in the name "Grothendieck topologies"; for this notion we refer to Artin's notes (from 1962), superbly ignoring (following the example given by the entire cohort of my ex-students...) the meticulous work of development done in SGA 4 (since 1963 and throughout the sixties, but under a visibly undesirable authorship...). No allusion either, as one suspects, to the role that I assigned to rigid-analytic spaces in the

(**) I point out that from the moment Tate laid the first foundations of a theory of rigid-analytic spaces, it was clear to me that the context in which he placed himself was still provisional, and in no way exhausted the content intuitive that I had tried to express by the name "rigid-analytical space" — any more than finite type diagrams on a body exhaust the intuition associated with the word "schema". A common thread toward a substantial expansion of Tate's context (which I put forward to anyone who would listen...) was provided by Tate himself, who had written a "universal Tate elliptic curve" on a certain topological ring (the subring of the ring of formal series $\mathbb{Z}[[t]]$ which are convergent for t in the open unit disk of the complex plane, if I remember correctly), which ring obviously had to be considered as "the ring of affine coordinates" of a rigid-analytic space, of a type which did not fit into the panoply proposed by Tate. Given the general contempt into which all questions of foundations fell, immediately after my departure, it is not surprising that the conceptual apparatus set up by Tate in 1962 has not moved a bit since then.

(***) (June 4) I was also the first to insist on the need to introduce, for rigid-analytic spaces, more general "points" than those envisaged by Tate (with values in finite extensions only of the base body). This necessity was suggested both by the analogy with algebraic geometry, and by the desire to find a concrete interpretation of the "points" of the topos associated with the rigid-analytic space envisaged.

development of crystal cohomology, at a time (in 1966) when Remmert (nor any of his eminent complex analyst colleagues) still showed the slightest inclination to be interested in these strange (so-called) “varieties”, called “rigid-analytical” we ask you a little...), which certain algebraic geometers had concocted in their corner - as if complex analytical spaces were not sufficient to occupy the leisure time of analysts and geometers serious...

It is enough to be informed first hand about the true history of the genesis of the theory presented in the book, to see how the same cynicism is displayed in this introduction which was also expressed in the response made by an anonymous referee to an unknown complainant (with the blessing of this *meine R. Remmert*): obviously, in the minds of the authors, it is a simple question of “courtesy” again, of a “kindness” in short that they are free to grant or refuse, whether or not they will include, in their “history” (sic), the name of such and such who had played a crucial role in the genesis of the new theory. For them (as also, one must believe, for almost the entire mathematical establishment, which accepts this type of falsification without flinching...), “History” is not what actually took place. , but is a thing which can be decided sovereignly by the one who arrogates to himself the right to write it, or by the consensus of a handful of people who decide what has place to be, as well as what takes place to have been.

These people like to make hot comments about what happened; t's still happening in the Soviet Union, and they won't miss an opportunity (I know what I'm talking about) to sign manifestos for the “defense of freedoms” (of thought and all that...) among others, while exercising the same dictatorship of lies, where it is they who have the power.

(June 3) While mentioning in the preceding pages, just a few days ago, the picturesque and endearing figure of Krasner, the question came to me if he was still alive. He was a generation or two older than me, and it had been ages (well, fifteen years, if not twenty) since I had heard his name mentioned. While I vividly remembered the character, it took me a few seconds before his name came back to me.

(It's true that this is the kind of thing that often happens to me now, with age helping...) Krasner had a reputation for being very hospitable, and his Russian origins were another commonality that could have brought us together. But I was too immersed in my math to have the availability to make friends just “for fun”. Our ways of approaching mathematics

tick must surely be poles apart from each other. We must have chatted together once or twice, between two sessions of a Bourbaki seminar perhaps, but certainly not about maths. And it was only maths that really hooked me...

Still, today I received a little note from Deligne, just a few lines on a practical question of no consequence, perhaps just to remind myself of my good memories (it must have been a few months since no exchange of letters between us); or also to place a postscript, which I take the liberty of reproducing here (presuming his agreement):

“PS I was sad to learn that Krasner had died about two weeks ago. I always remember a long talk that he gave in Brussels, about twenty years ago, which of course went over my head, but in which I remained one of the few last listeners, II It struck me that he does not appear in your painting of the fifties (*), where he did beautiful things - even if foreign to the mind of Bourbaki, and with a genius for poorly executed definitions.

So here is another Eulogy, this time for one of my co-buried people. In this one I think I see a feeling of sympathy shining through, or perhaps the reflection of such a feeling which had been alive in the past. But no more than in my Funeral Eulogy, my friend Pierre will not grit his teeth to say, this time in honor of someone who has disappeared without return, what were these “beautiful things” to which he likes to allude without naming them. However, he knows like me that these “things” prepared the advent of a theory that is now in full bloom - and that for reasons that he perhaps knows, the New Masters are more likely to be buried prematurely (and at my side) this good-natured, messy and “badly polished” precursor who has just disappeared; one, surely, who was “doing analytical continuation” on ultrametric bodies, at a time when Tate, Remmert or I were still

(*) There is here a clear misunderstanding of what I said in the first part of *Récoltes et Semailles*, “Fatuité et Renouveau”. At no time was this intention to paint a mathematical “picture of the fifties”, even if only that of the Parisian environment or that formed around Bourbaki. My main purpose was to discover my past as a mathematician. This is what led me to talk about my relationship to such colleagues or students, when it seemed important in my life, or when it could enlighten me about myself.

case of equality of triangles and the Pythagorean theorem, and where friend Pierre was still getting his nose blown (and wiped...) by his mother!

(d) (April 16) But I must return to the series of "misadventures" not peppered with worms of my posthumous student Zoghman Mebkhout.

I have no idea what went through Deligne's head in June 1979, when he learned from the lips of a vague stranger, claiming to be Grothendieck's ideas, the elegant solution to a crucial problem. (*), on which he had labored ten years earlier for a year without arriving at an answer that satisfied him. Given his long-standing dispositions, we suspect that he was not going to congratulate the young man for having succeeded where he, Deligne, had failed - But I have the impression that his dispositions as a gravedigger make such a failure of his flair (which I had experienced astonishingly), that he too did not grasp, even now (six years later), the true scope of the ideas and the vision of the vague unknown. Like everyone else, he ultimately only saw "the pie in the cream", the unexpected tool that everyone was waiting for, the fracture iron of "proverbial difficulty problems". One day, however, he had made his own a vast vision that another had communicated to him - to bury both the vision and the one in whom it was born, and to seize yet another tool, also transformed into a "iron". fracture"...

The first trace known to me of any reaction by Deligne to Mebkhout's theorem is a short undated handwritten letter to Mebkhout, letter received on October 10, 1980 (**).

"Cher Mebkhout,

I sent Bernstein and Beilinson my copy of your thesis: they need your results for their proof of the Kashdan-Lusztig conjecture (I have a summary, in Russian, of their work, which I will send to you if you want). Could you send me another one?

THANKS.

(*) (May 25) It is possible that Deligne had long since lost the sense for this "crucial" character. See on this subject the note "... and hindrance" (n^o 171 (viii)).

(**) this is the document "communicated under the seal of secrecy, and of which I will not say another word here...", which was discussed in the note "The victim" (page 309). With the hindsight of a year since, Zoghman kindly allowed me to reproduce it here.

P. Deligne"

I presume, from this letter, that Deligne must have informed the two Soviet mathematicians about the God's theorem, perhaps suggesting to them that it could be used to prove the conjecture in question; either he realized it himself, or it was already rumored that Brylinski had ideas on the subject. The presentation by Mebkhout which had "triggered" Brylinski was already from January 1980. The articles of Brylinski-Kashiwara on the one hand, and of Beilinson-Bernstein on the other, proving the famous conjecture using the unnamed theorem of an even less named unknown, were received, one on December 19, 80, the other on December 8, 1980, therefore eleven days apart. Just a coincidence?

The thought even occurred to me why Deligne, who had knowledge of the new tool before all the others, as early as June 1979 (since no one, including Deligne, had taken the trouble to read the vague unknown) — why didn't Deligne himself think of applying it to this conjecture, and thus reap new laurels instead of helping his Soviet colleagues to reap them? He doesn't have a less lively mind than Brylinski? It could be that from that moment, he saw the possibility of recovering through the band a paternity on the theorem of the good God himself, which (so he must have felt) should have been his for ten years already; that it was through a sort of unacceptable misdeed that this presumptuous young man had arrogated to himself the right to prove things on which he, Deligne, had already studied at length and without conclusive success. In the end, he was just a hair short of getting there, it wasn't fair that someone else was harvesting where he had sweated in vain... But if he wanted to get back what, deep down, was his of right (following the unwritten law which ended up imposing itself in a certain high-flying environment of which he feels himself the center and the kingpin...), he had to maneuver with a completely different tact, and that he does not try to swallow too much at once (*).

(*) It is of course a simple presumption that the idea of appropriation of the famous "correspondence" was present from the time when Deligne became aware of it. For my part, I am convinced of it. It is true that the letter cited above would seem to give a presumption to the contrary. For my part, I see it as yet another sign of a challenge - that he, Deligne, absolutely did not have to pay any attention whatsoever, as long as it was a question of a vague unknown, which did not wouldn't move, in any case, when he was alone against everyone; that he, Deligne, could allow himself to "compromise himself", just as he could also allow himself, through the provocative term "perverse bundles", to proclaim, in a symbolic and yet striking way, the true nature of his dispositions. See on this subject the note "La Perversité" (n° 76), and (in a rather analogous, but less extreme, psychological context) the note "The joke — or the "weight complexes" (n° 83).

Still, Zoghman, already burned by the strange episodes with Kashiwara and with Brylinski, judges it prudent to go and inform MM himself. Beilinson and Bernstein of the theorem which Deligne said they needed - times that such a great gentleman as Deligne would have forgotten to remind, when speaking to them of the theorem, who was its modest author. It was good news: the following month, on November 24 or 28, 1980, there was the "Conference on Generalized Functions and their Applications in Mathematical Physics" in Moscow. Mebkhout gives a presentation on his theorem, published under the title "The Riemann-Hilbert Problem in higher dimension", and he takes care to speak to Beilinson and Bernstein in person to explain to them in detail the ins and outs. of its result.

He arrived at exactly the right time. It was barely ten days after the conference that the two authors sent their work on Kazhdan-Lusztig, in the form of a note to the CRAS (t. 292, Jan. 5, 1981, series I — 15), "Theory of Groups — Localization of g -modules". Note from Alexandre Beilinson and Joseph Bernstein, transmitted by Pierre Deligne. As expected, Mebkhout's name was not mentioned on their manuscript - apparently Deligne had completely forgotten to tell them about the vague unknown, whose thesis he had nevertheless communicated to them, precisely for the purpose...? Understand who can 1 Mebkhout manages with great difficulty to convince Beilinson ("the more honest of the two", he assures me with the greatest seriousness in the world) that in the article by Kashiwara-Kawai that they cited in the bibliography, there is everything except the "construction" (replacing here the eternal "correspondence") of which they too, like everyone else, only speak by allusion, (surely Deligne, while communicating to them the thesis of the unknown where the desired result was indeed found (*), must have suggested to them that it was perhaps more reasonable, if they wanted to give a reference, to cite an article by Kashiwara and it really did not matter which one, since no one would look at it so closely*) We still promise said stranger, who appeared there in person, that we would think of him and that we would rectify the situation for Kashiwara.

Sorry — the story of my friend Zoghman's misadventures is decidedly repetitive! In the note from these brilliant authors, transmitted by Deligne (whose letter I have just reproduced, written barely a month before), the name of Mebkhout is not mentioned. Kashi's-

(*) (April 17) At least in the thesis there was a very similar result, even if the version in the form used by Beilinson-Bernstein (and by BrylinskiKashiwara) did not appear there in full. See note by b. from p. of that same day (note (**)) page 1047) for details.

wara either (and I can already see a hint of an ear there...). On the other hand, there is a double reference to the rescue, in the last part of the note (proving Kazhdan-Lusztig), to a “construction exposed in [4], [5]...” (**), “construction” which (you guessed it!) is none other than the never named functor of the unknown service, even less named. The reference [4] is to an article by Kashiwara (the father of provisional substitution). In this article of course (no more than in that of Kawai-Kashiwara, which turns to profits and losses), there is nothing that closely or remotely resembles the “construction” reported by these authors; this article is also from 1975 (*), so almost five years before the presentation of a vague stranger at a Colloquium in Les Houches gave this same Kashiwara the idea that it would not be so stupid after all to pronounce the word “derived category” and thus appropriate, following the simple right of the strongest, the credit for the work done by others. As for reference [5], it is Mebkhout's presentation at the Colloquium des Houches in September 1979 - the same one where Kashiwara

(**) We will admire for its value the vagueness of the expression “the construction exposed in...”, leaving entirely open the question to whom this “construction” (or “correspondence”, or “relation”) is due. .); which question will be resolved with the virtuosity that we know barely six months later, during the famous Colloquium (see the note “The conjurer”, n° 75): we will learn, in the Beilinson-Bernstein-Deligne article, that the laconic reference [4] [5] (in two places where, surely, the construction must have been (by chance) “exposed”) was pure courtesy, and that the brilliant father of “correspondence” is indeed the one we guess...

But even apart from the conjuring trick that I have just recalled, it is already a fraud in itself to refer to a new, profound and difficult theorem by the term “the construction exposed in...”, as if it was precisely a simple “construction”, which would have been lying there by the greatest chance and which the authors would have chosen, also by the greatest chance, to use here for their brilliant demonstration. I recognize here the same spirit as that of the operation “SGA 4 1/2—SGA 5”, which consisted of recalling (in passing) “the construction exposed” in SGA 4 and SGA 5 of a formalism of equal cohomology (as well as the “web of nonsense” from which the brilliant author had been obliged to extract it), before pretending to roll up his sleeves and start doing “real maths...”. (May 25) See, regarding this “new style”, the note “Congratulations — the new style” (n° 1699)

(*) Verification made, it is the article by Kashiwara already cited, where he demonstrates his theorem of constructibility, which of course plays a crucial role in defining the “good God functors” (functors to which no one, however, except Mebkhout had never dreamed before the rush of 1980). It is a gross fraud to pretend to confuse this theorem of Kashiwara (which no one thinks of contesting) with the theorem of the good Lord, incomparably deeper, and of a completely different scope. From the demonstration point of view, this theorem uses all the power of the resolution of singularities à la Hironaka. From the “philosophical” point of view, much more importantly, it establishes bridges which were missing, in the cohomological formalism, between topology, algebra and analysis (while waiting for arithmetic, if some that I see gravely end up by regaining the use of their healthy faculties...).

learned that derived categories could be useful, and for something other than scamming a stranger left behind by their bosses and elders...

No more than in Brylinski-Kashiwara's article, there is nothing that could give the slightest suspicion, to a reader who is not really "in the know", that this brilliant note would not have seen the light of day, without the appearance of a new and providential tool, hidden under the euphemism "the construction exposed in...". I also recognize the proven method (*) of drowning a fish, known as "by dilution", by "coupling" the person to be hidden (while we want to be "thumb" yet and to be able to say if necessary that it was cited...) with another, which has nothing to do with the question or whose role is minimal, as if to say here (between the lines, and yet clearly clearly): this vague unknown that we put there (out of pure courtesy and in view of his insistence) has no more to do with this famous "construction" (of which the new consensus requires us to speak only by allusions and as something well known to everyone...), that such an article appeared in 1975, at a time when no one in the great world still deigned to pronounce the word "derived category" (except just in joke...).

(e) I do not regret having taken the trouble, for my own information as well as for that of a mathematician reader who would be interested in the matter, to have reviewed here the three preliminary scams around the unknown service theorem, these scams are the work of Kashiwara, Brylinski-Kashiwara (with the assistance of a referee who remains anonymous), and Beilinson-Bernstein, with a Deligne behind the scenes (**). They demonstrate a striking uniformity of style, on which there is no point in dwelling further. This is the style of which I have become acquainted with throughout my long investigation into the Burial (***), and which is strikingly foreshadowed in the 1968 article by my most brilliantly gifted student, this same Pierre Deligne (****). And this circumstance is also enough to remind us

(*) For other examples of this method known as "dilution by assimilation", see the subnote "The real maths..." n° 1695), note de b. from p. (*) page 885.

(**) (June 5) Deligne's role "behind the scenes" is clear at least in the third episode, and there are strong presumptions in the same direction for the second. But it seems that Kashiwara "opened fire" (for the scams surrounding Mebkhout's work) for his own account as early as 1978, at a time when (it seems) Deligne was not yet aware of Nothing. See on this subject part c) of this note ("The price of entry — or a young man with a future"), note b. from p. (*) page 1060. (***) see on the subject of this style, in particular, the end of the note already cited "Congratulations — or the new style", n° 1699 .

my good memory that through an attitude of ambiguity and complacency towards Deligne and others, whom I saw as brilliantly gifted, I am not without having contributed my part to the corruption that I see spreading everywhere today today.

It also becomes clear that the apotheosis of the Pervers Colloquium of June 1981, barely six months after the third episode that we have just reviewed, did not come from the clouds. Strange thing, this conference was (to my knowledge) the first and only one after my departure, which was dedicated (without saying it of course, and yet unequivocally) to exhuming a certain aspect of "Grothendieckian mathematics", by the unexpected opportunity of a new tool suddenly appearing, which proved irreplaceable. This tool was only usable in an approach to things that fashion consensus had long ago classified as obsolete and vaguely ridiculous (*). And by a strange turn of events, due to the particular genius of my brilliant ex-student, this resounding confirmation in the facts, and under the pressure of needs, of an approach disavowed by him and by everyone, was also the opportunity, through this same conference, the total and definitive burial of the deceased and unnamed master, in the company of the posthumous student (also unnamed) who had the good fortune (or misfortune...) to get all these beautiful people moving around.

This conference was not unexpected, no. One particularity among others of my friend Pierre Deligne is that he knows how to wait and seize the right moment. The three episodes around the "cream pie", with the almost complete elimination already of any mention of the stranger on duty, clearly showed him that the moment was ripe, to pick up discreetly and naturally smiling and affable which characterizes him, which in any case was supposed to be his right. I presume that there was careful consultation with Verdier, who had to be made to understand that the time had come to exhume with great fanfare the derived categories and a "paternity" long since repudiated; at the same time, to bury in the limelight and the vague unknown, and the long deceased master (sometimes someone would have the bad idea to remember that he had had something to do with all these beautiful things which suddenly seemed like the "latest cry"...).

Kashiwara as the father-on-the-rescue of a certain theorem-of-the-good-God-never-named,

(****) See the beginning of the note "The eviction" (n° 63).

(*) For the psychological mechanisms at work behind these "fashion consensuses", which cover with a certain "visceral reaction" of rejection before a certain style of approach to mathematics, see the notes already cited "The circumstance providential — or the Apotheosis" and "The disavowal — or the recall" (n° s 151, 152).

Things were going well for a while, just as long as it was understood that we were neither going to name nor write down the theorem in question. Kashiwara himself must not have cared too much about this theorem, which he understood even less, if it turns out, than Verdier himself - he must have pocketed it in passing, as if inadvertently, the opportunity and the helping habit. Deligne, who knows how to wait, knew well that this theorem was not going to remain forever the theorem without address and without name. It was, in short, a theorem in search of a father worthy of him, and who would only be able to appear in the full light of day once "real" paternity, the one which normally should have been his (and for twelve years already...), would be the object of a general and untangible consensus. The "perverse" article, the jewel of the Col-loque of the same name, was a first milestone in this direction, laid down by the main person concerned with his customary skill.

I have the impression that Beilinson and Bernstein, no doubt flattered to see themselves unexpectedly associated with authorship on the so-called bundles, also (but wrongly) perverse, and with such a prestigious boss, were in fact manipulated by Deligne, to be able to serve as alibis "just in case...". As the article is written, any reader who is not very well informed will only be able to think that it is none other than Deligne, of course, who is the author of the providential "correspondence", although never named or stated clearly (since everyone is supposed to already know it...).

There's barely any left. that shadow of (carefully calculated) ambiguity, in that brilliant turn of phrase, about "the relationship" no. named which "should have found its place in" (*). This was the "thumb I" way of making it these notes... understood delicately and clearly, without saying it in full, that the said relationship (in the absence of any mention to the contrary) was due at least to one of the three authors. of the brilliant article, or (ultimately) all three jointly. But it was also clear that when the time came (for those who know how to wait...), it would be neither Beilinson nor Bernstein who was going to compete with Deligne for paternity that had already practically been acquired. There must have been a deal (**), tacit if not expressly

(*) See on this subject the note already cited "The conjuror" (n^o 75).

(**) The presumption of such a "market" came to me by association with two analogous situations. On the one hand the market (perhaps tacit, but clearly apparent) between Deligne and Verdier, the latter "sacrificing" the Lefschetz-Verdier formula which shifts to profits and losses for the needs of the "SGA operation 4 1/2 — SGA 5", but "picking up" in return all the "duality" inheritance of the deceased, and the derived categories (discounted item) as a bonus. (For the detailed history, see the group of subnotes "The Formula" n^o s 1695 — 169g.) On the other hand, there is the "deal" concluded by Deligne with a master declared deceased, who had in all cases disappeared from circulation

formulated: to Beilinson and Bernstein the Kazhdan-Lusztig conjecture and (for good weight, since there was already Brylinski-Kashiwara on it) the co-authorship on the so-called fascicles (by mutual agreement, I imagine) "pervert" (*) ; to Deligne the famous "relation" without a name, while waiting for the day which cannot be delayed and without his modesty having to be disturbed, when everyone will call it "Deligne's theorem". And the future "father" had a nose sharp enough to know at least this, about this child (whom he had recently repudiated rather than agree to give birth...): that he had concluded there a good deal" (**).

As for Kashiwara, his role was over, and there is no more mention of him in the brilliant article, about the providential "relationship", than of the unknown person on duty. All against one when it's a vague stranger, all right - but once the place is cleared of an intruder, every man for himself...

(f) The "family album", opened barely three weeks ago (***), has unexpectedly been enriched with a few new faces. The "family" has grown a lot, visibly, and the crumbling person that I am has difficulty recognizing myself in it, especially since times have changed.

This time and in order of entry on stage, it was M. Kashiwara, R. Hotta (*), JL Brylinski, and

culation and was not likely to react, on the subject of the SGA 7 seminar held jointly during the two years 1967/69, which was "shared" three years later by half and half, one for the deceased, the other for Deligne and a makeshift teammate. (For details, see e.g. "Episodes of an Escalation", note n° 169 (iii), episode 2.) It is also associated with the "market" with this same deceased (suspecting nothing) for the so-called conjecture (Mac Pherson dixit) "de Deligne-Grothendieck" (see episode 1 in the same note already cited): the first half for "the factor" Deligne who had informed Mac Pherson of a conjecture (maintained secret until then by the care of my cohomologist students), and the second for the deceased, in his capacity as "collaborator" of the first...

(*) See the note "Perversity", n° 76.

(**) It's a "good deal" which seems to me at the same time to be a very bad deal; and this even (and above all...) in the case where everything goes as desired for the person concerned, wasting precious gifts and creative force playing gangster.

(***) See the note of the same name of March 22, n° 173.

(*) An attentive reader will perhaps be surprised not to find in this "parade of actors" (in the fraud-mystification around the work of Zoghman Mebkhout) the name of Kawai, co-author with Kashiwara of the often cited article, including para. 4 shamelessly plunders chapter III of Mebkhout's thesis. (See on this subject the note "The five photos (crystals and -Modules)" n° 171 (ix), and in particular page 1005,) Mebkhout insists that we cannot put Kawai in "the same bag" with Kashiwara (who 'he would just follow, eyes closed...). He described him to me as a guy who was a bit jilted, and I had the impression that he almost took a liking to him - it's in short, his "good Japanese", and there is no question of me touching it. This is also why, no doubt, he

the anonymous reference to Brylinski-Kashiwara's article in *Inventiones*. A group of "tough guys", that's for sure, with well-honed reflexes, and moreover in agreement when it comes to scamming a particular wave, on a discreet sign from the Great Chef behind the scenes (or even, without waiting for a sign...).

And once again I find the appearance of a mafia (**), reigning as masters over their uncontested fiefdom, the heart of which is the cohomological theory of algebraic and other varieties. Brilliant and tough people, with impeccable brains, whom I saw at work again throughout the four successive episodes of the so-called "unknown service" operation, culminating with the Perverse Colloquy. In addition to the four bosses that I have just mentioned (including one anonymous), I recall to good memory the five other members of the "hard core"; That makes nine who mobilized to bury the Intruder, the one who is not one of them.

There is the Great Chef, Pierre Deligne — the one who always knows how to "get wet" the least, while pocketing the most. There is his second, Jean-Louis Verdier, known as "the benefactor" - the same one who chaired the jury of a certain thesis of a certain unknown, and the one who was one of the two organizers of a memorable Colloquy shamelessly despoiling this same unknown person. There is the other main organizer, B. Teissier, who jointly signed with him the memorable Introduction to the memorable Proceedings of the memorable Colloquium, unlike the others, it would seem that he simply acted as a sidekick and a nominee, when he had nothing to gain for himself - except the sole pleasure of being pleasant to people he knew to be prestigious and unscrupulous. And finally there is (*) A. Beilinson and J. Bernstein (whom I have just become more acquainted with here), delicately moved by invisible strings...

And I await, without impatience and without illusions, what other Pervers l'avenir conferences will give us

refrained from writing to him (as he had written to Hotta, another teammate of Kashiwara), to point out the scams in his article with Kashiwara and thereby place him under the obligation to explicitly show solidarity with his teammate and boss.

(**) This unusual impression had already imposed itself on me last year, in the note "The Colloquium" (n° 75) (we can guess which one...), given a racketeering atmosphere such as it seemed as if we were dreaming, or watching "a film about the reign of the mafia in the underbelly of some distant megapolis...". This impression accompanied me again, step by step, throughout this present wandering through the misadventures of the vague unknown of service...

(*) (May 25) This "finally" turned out to be premature — other members of the gang came to my attention. Since. See on this subject the note by b. from p. (*) page 962, in the note "The day of glory" (n° 171 (iv)).

(May 30) Latest news: yet another member, R. Remmert, has just been identified. See part (c) of this note ("Failing Memories — or the New History").

reservation with the unreserved acquiescence of the entire Congregation/ for the greater Glory of "Science" and for "the honor of the human spirit".

(1713) (April 18) At the end of this fourth day spent following step by step the misadventures of my friend Zoghman, I understand better than last year the attitudes and dispositions, particularly towards me, which seemed strange to me again last year. In short, with his work, the scope of which he clearly felt, he believed he was entering "a big family", a bit like that of the deceased master of whom no one ever spoke, it is true, and yet present even without anyone mentioning it. speak. And now he found himself in a world of sharks with polite, even affable demeanors, and pitiless teeth - stripped in the blink of an eye of what he had brought, the fruit of eight long years of solitary work; after which we make him understand that we have seen enough of him: an intruder and an intruder. There aren't many in his place who wouldn't have been traumatized. I don't know if he opened up to anyone living about his disappointments, except through bitter allusions, and so vague that they pretend to still testify against him, like an embittered person, a little associated with the edges.

Even though I was not named, I was nevertheless the "father" of this world without scruples and without quarter, and there was really no reason for him to trust me. Our first meeting, it is true, in 1980, when he was still a thousand miles from suspecting what awaited him, had laid the foundation of trust, and I clearly felt that against all odds this foundation has been preserved until today. Deep down, he knew well, as "father" of sharks as I am, that I was not going to do like them. But there was a grudge, that's for sure, and it liked to take on the appearance of a distrust that was intended to be visceral, and which nevertheless (at least that's how I felt) was "veneered".

It's easy to "fight" for what you believe to be your right, when you are part of a group, however small, with which you feel in unison. But he who is alone against all, the excluded, the unwelcome stranger, is like a tree deprived of its soil. The strength that is in him is of no help to him, it becomes bitterness which turns against himself, as if to join forces with the whole world, which rejects him.

When I held in my hands this book which dedicated the exhumation of the motifs at the same time as the burial of the worker who had revealed them, this book signed by four of the most brilliant authors of a brilliant generation (that I helped to form) — when I finally became aware of it, by the greatest chance (since no one until now

there had not noted anything in particular that was worth pointing out to me...) — at that moment I knew, for the first time in thirty-six years that I had become acquainted with the world of mathematicians, that I was alone against everyone. Many things that had happened over the past eight years suddenly came together and made sense. It's a strange feeling when you suddenly rediscover this solitude. I had to catch my breath that day, and throughout the weeks that followed, becoming aware day after day of the full dimension of the Burial — a Burial commensurate with the work.

But that has nothing in common with Zoghman, “left behind” by his people before he could even really take root. On me, fate had smiled. Thanks to the elders who welcomed me (and it really didn't matter whether they were dead or retired and perhaps no longer involved in math for a long time) — thanks to the fraternal welcome found in my younger years, I was able to “take root” in the soil that I myself had chosen. These roots dipped and grew, and over the years they became deep and powerful. These roots are firmly planted in a soil, which is not that of “consensus” nor that of any fashion - more deeply undoubtedly than in any of those who find satisfaction in creating fashions and to follow them (*).

I can allow myself, in short, to be “alone against all” — to say what I have to say, and to go my way.

(May 25) (*) It does not take much imagination to understand the frustration of Mebkhout, who suddenly feels “swept away” (**) like a straw, once the strength of his central result is recognized. He writes to me (in a letter dated April 24, after his recent

(*) If I have never cared about following or being fashionable, whether in mathematics or elsewhere, I know that this is precisely one of the manifestations of strong roots that I was lucky enough to be able to develop in my early childhood. Having had strong roots in myself from the start, the energy mobilized in my major investments is not dispersed by compensatory urges, such as the urge to set the tone, or to be and appear consistent with “tone” of rigor.

I express myself in a concrete way about my childhood and about these “roots” (without pronouncing this word, I believe) in the note “Innocence (the marriages of yin and yang)” (nŷ 107).

(*) The following two pages come from what was initially planned as a b grade. from p. to the note “... and the windfall” (nŷ 171 (iii)). I had some hesitations about where to insert them, and finally decided to include them in this note “Roots and Solitude”. This is the only note in “The Apotheosis”, in fact, where I tried, from my own experience, to understand as best I could the way in which Zoghman himself experienced the events and situations in which I made myself the chronicler.

(**) The expression “swept” is borrowed from a letter from Mebkhout (from the day before that cited in the

visit to my home): "It took me eight years to put together the results used in Kazhdan-Lusztig's demonstration. It took them a week to demonstrate it." A modesty held him back, this time again, from going to the end of what he really felt, surely, and I take it upon myself here to add the "unsaid": and once the thing is done, "they " proudly strutted between them with the brand new tool that another had fashioned in solitude, making it clear to the worker that we had seen enough of him...

The thing is so enormous, however, that at the time Zoghman does not yet completely believe the testimony of his healthy faculties - just as I myself had difficulty believing the testimony of mine , on May 2 last year, by reading the Proceedings of the Luminy Conference (*). It was by reading these same Acts in January last year, three years after the Kazhdan-Lusztig "Dress Rehearsal", that Zoghman finished

main text), of which I reproduce the relevant passage here:

"It is true that [Kashiwara's] constructibility theorem... allowed me to trigger myself. Besides, from that moment on, someone like Deligne would have found all my results in the blink of an eye, including the God's theorem in all its forms, with demonstrations in four strokes of the spoon, as you say. This explains why all this was swept away in a few days."

It seems to me that Mebkhout has explained there, very precisely, the tacit "reasoning" of a Deligne, appropriating the fruit of the labors of others because he could (and should have) found them, himself (with his means, baggage and all) "in four spoonfuls". The only problem in this reasoning (which very often we can be tempted to do, in similar situations), is that it was all about thinking about it - and it is Mebkhout, and not Deligne or anyone else, who actually "thought" about it. Creation is not of the order of technique, which, once something that no one had been able to see has finally been seen, "sweeps away" a situation in less time than it takes to write it down. . Creation is not in "scanning", but in the act of seeing what no one has been able to see; to see through your own eyes, without "following" anyone. And it is part of probity in the exercise of the profession of mathematician, to make the distinction between one and the other - between the act of creation, and the turning of a crank which turns round.

(*) See the note "L" regarding this Colloquium (June 1981). iniquity — or the sense of a return" or "The days of glory" (n^o s 75, 171(iv)). To tell the truth, the writing, during the first week of May last year, of "Cortège VII: The Colloquium — or bundles of Mebkhout and perversity" (n^o s 75–80) did not has not yet been sufficient to overcome this almost insurmountable inertia "according to the testimony of my healthy faculties", in a situation where we are strictly alone in using it. It was only five months later, when I finally saw myself confronted with reality "in the flesh" so to speak, in the person of my friend Pierre (Deligne) who came to see me in my retreat, that a disbelief secret and tenacious finally faded away. On this subject, see the note "Duty accomplished — or the moment of truth" (n^o 163), in particular pages 782 to 784.

by finally realizing as best I can what really happened.

The shock was terrible, I thought I understood — Zoghman at the time, he thought he was going to die. Fortunately, he's a strong man - Zoghman is still alive today, and he even got married in the meantime and became the father of a child... But I believe that even at this time still, when he held these "Acts" in his hands, he still couldn't completely believe it. Something must be "blocking". If so, he still doesn't completely believe it, even now as I write. It must be said that already in simply "rational" or "objective" terms, the thing is so incredible, so enormous, that even today no one except me (except him perhaps, and even ...) has not yet dared to believe his eyes and see it, even though it is bigger than a cathedral!

But for the one who is hit head-on by iniquity, cynical and gratuitous, at the hands of his admired elders, filled with everything - surely this thing is one of those that we can never completely believe, of those which "beyond understanding"... And these are also those which, thereby, can devastate a man's life. What gives them this destructive power is the obscure perception, desperately repressed and yet irrefutable, of the intention to devastate, like that, for nothing, "for pleasure" — for the pleasure of crushing with a gesture neglect what is valuable to you, the very thing (if possible) which is the substance and salt of your life. It is this perverse pleasure in malevolence "for nothing", which truly "beyond understanding"...

I believe that Zoghman never really spoke about it to anyone, neither before the big blow nor after - except in monosyllables, indecipherable to anyone other than himself. The Kazhdan-Lusztig episode alone was already too huge, too improbable for him to hope that anyone would believe it. Well-established consensuses sweep aside the most obvious, the most patent, the most indisputable facts like straws. And here it was a matter of something so painfully close, so "alive" in his being, that the only risk that the one to whom he would reveal it would reject the unwelcome message, that his distress in the face of "what "beyond comprehension" is not welcomed - this risk or this probability took on the dimension of the intolerable, something to which we will not expose ourselves at any price - even if it means dying on the spot, if we have to die.. .

To me, two years ago, he spoke about it "in monosyllables". Perhaps deep down he hoped that I would understand them, these monosyllables, not in their only

literal sense, but that I would also hear everything that he did not dare to say out loud (perhaps not even to himself...). It was a completely crazy hope, certainly (in a situation where everything seemed crazy I); I was a thousand miles from imagining what I have learned since, of sure knowledge. It could not be otherwise, in the absence of meticulous and detailed information (*). And Zoghamn, for his part, was also a thousand miles from daring to give me this information. It was crazy, and that didn't stop him from being mad at me. He had to be angry with someone, someone close enough, tangible in short, on whom to report at least part of what had been triggered in him by "what goes beyond understanding". ", and free himself, however little, from what was gnawing at him.

(1714) (June 2) It will be two months since I had the satisfaction of putting the "final point" under the Burial, with the final note "De Profundis" (of April 7) — and it has been two months also that I am working hard to put "the final touches" to the last part of the Funeral I It is the reissue, more or less, of what happened last year around the same time — while I was still putting the finishing touches to what was going to be the first part of the Funeral. It was, like now, the "last minute" that dragged on — so much so that I forgot to eat and drink and, above all, to sleep. It continued like this until my body gave up, at the end of its rope. It was exactly a year ago (give or take a few days), and I had to give up everything for more than three months, fully occupied in getting myself out of a state of acute exhaustion (*). But this time I'm wary, and I'm careful not to take the same path again. I care about my skin...

This time again, it was "the investigation" which never stopped bouncing around. I was planning a note of around ten pages long, which would be called "The four operations" and which would summarize, by "putting them in order", the results of last year's brief investigation. And now it's been four months since the investigation has resumed with a vengeance, the ten pages have become three hundred or so, and still it's not yet (completely) finished! I don't dare no longer make predictions — it's been the ninth month, since returning to work at the end of September, that I

(*) (June 1) It would be more accurate to say that it "could not be otherwise" in the state of limited openness and presence that is mine, except on very rare occasions. However, I believe that we are all equipped with an "ear, in the ear", perfectly capable of hearing the unsaid - but most often we take care to exclude the messages received from the field of conscious attention. through that ear...

(*) See for this episode the note "The incident — or the body and the mind" (nř 98).

am “about to finish” 1 I will know that it is really finished only the day when the last packet of notes has been typed, reread and corrected, and handed over for duplication.

(After that, the rest is no longer my job.) All I know is that I long to be there, as I long to see the end of a long and exhausting illness; and that I must go to the end, as best as I can, without letting myself be pushed around by imaginary deadlines. I will not stop to breathe until the end, when everything that was to be seen and said now, has been seen and said.

It's this damn “Apotheosis” that gave me the most trouble — I can't say why. These “four operations” are the only part of *Récoltes et Semailles* which came together piecemeal, in bits and pieces and with difficulty - whereas in principle it should have been completely finished, a simple “putting in order” yes; nothing that engages or calls into question my person in a “neuralgic” way, so as to mobilize forces of resistance, a “friction”. And yet God knows if there was any friction, and with the Apotheosis more than with anything else! Where is he from ?

Already with “Les maneuvers” it was laborious. That's when it started to stretch to infinity. It ended up being eighty packed pages just for that one operation — and now, a month later, . the Apotheosis came to do well double. And yet, except perhaps a few pages (a bit very “detective” around the edges...) in “Les maneuvers” (where I enter, perhaps, more than would have been essential into the stringy details of a certain “scam” not possible...) — apart from this detailed “work on pieces” and a bit of a headache no doubt for a reader who is not “in the know”, I I don't have the impression that these hundred-page packages that I ended up lining up there are superfluous, or even rehashing, splitting hairs. What kept me in suspense was precisely the abundance of new and unexpected substance which was flooding towards me, and which I absolutely had to cram in, whether I wanted to or not — even including, but yes, substance mathematical ! At times I felt overwhelmed, there were so many things at once that I had to put in black and white, things that were all hot, even burning, and yet we were obliged to take care of them. one after the other...

Such richness, however, is in itself a powerful stimulation in work, it is in no way likely to cause “friction”, quite the contrary. This friction, it is certain, does not come from the substance itself, but from the force of my ego investment in the work undertaken. Something that may seem paradoxical is my impatience

even to “put an end to it”, to “throw on the carpet” what I have to say, about such and such things which are happening at this very moment and which concern me and affect me closely — it is this impatience (I think) which creates friction, dispersion of energy. Friction is the sign of a division, of forces pulling in opposite directions, each exasperated by the resistance opposed by the other: there is the haste to “get it over with”, to “let go” of the piece since that I fine-tune it - and there is the requirement to go to the end of what the present moment gives me a glimpse of, not to be satisfied with just about everything, not to let myself be pushed around, nor let it be locked into a “program” to be completed, in an “agenda” fixed in advance. I know very well that from the moment I exclude the unexpected, this obstacle to going in circles, my work loses its quality and its meaning. He becomes “a paper pusher”. I have become very sensitive, over the years, to this “little difference” which seems like nothing, and which is everything. It still happens, rarely, that such a shift begins, in moments of great gravity — but never for long.

When it goes this way, the kid sends everything packing — it's not even worth trying to continue. The desire mimics work, this desire which is something other than the urge to accumulate pages or to place an end point - desire and sudden desire have disappeared, and you find yourself stupidly blackening paper, it's really more. It's worth it then - all I have to do is rectify the situation, and immediately!

There is always a certain impatience in work (an old acquaintance of mine...), which constantly pulls me forward. It seems to me that it is not the same as that which has begun to weigh heavily on me since I have been grappling with these “Four Operations”.

The other impatience is not a weight that weighs, but rather a force that pulls. It is the sign of an appetite, not that of weariness or fatigue, or satiety. It is not the impatience to accumulate, or to have finished, to “complete” a program, but that of knowing the unknown in front of me, on the verge of surrendering. It is the impatience of the naked child, alone before the infinite sea, to dive into it to know it... (*)

But it is time to return to the story of the misadventures of my friend Zoghman, in this note intended as the final end of the Apotheosis. As I have already said, Zoghman himself only gives me this story in scattered fragments, here and there, through random letters, phone calls, and meetings. Surely, the progression of the reflection and the writing of the Funeral were affected, in the part, at least, devoted to the vicissitudes of my friend. I now feel better the meaning of this reluctance, while any attachment to a “victim” role (that

(*) This is the image that already appeared in the note “The child and the sea — or faith and doubt” (n° 103).

I thought I detected last year) has vanished (assuming that he was indeed present). There must also have been a certain saturation in me at certain times, expressed in an attitude like “don't throw any more away, please 1”. That shouldn't have encouraged him. I was annoyed, it must be said, by a refrain about “the Japanese” here and “Kashiwara” there, which Zoghman must have been singing for four or five years, and he had seen it with them, it's true. But I knew very well that if he had seen it, and if his work was thus given over to pillage, in an almost official way: “Go ahead, good people, help yourselves galore, don't be shy.. . !”, it was not because of some distant Japanese. It was because of “his people”: those of the “little family” (*) — good people from our area and whom he never named except to cite their work with all the respect due to their high reputation.

I didn't want to hear any more about it, the Kashiwara and others! Obviously things were stuck, and Zoghman then had the wisdom and patience to let it go, without losing his interest in my work, and without ceasing to provide me with discreet and effective assistance here and there.

It was during his last visit to me, at the beginning of April, that I finally became aware of it, of the “Japanese package”. It was a bit reluctant, at first. I thought I was going to get bogged down in inextricable ultra-technical stories and illegible papers (and in Japanese again, if that happens...), which I would never read anyway — and then no 1 It was as simple as pie — a bit of a “pick-pocket story” in the Parisian (or rather, Tokyo) metros. Even amusing, to be honest (at least, as long as it's the other person who gets their wallet stolen...).

And suddenly the situation was resolved between Zoghman and me, and I was treated to bits and pieces of his misadventures, in flashes, here and there. Episodes that I had recorded in a bit of a “technical information sheet” style were fleshed out by on-the-spot reminiscences; the kind of things that seem to be forever banned from scientific texts, in their impassive “attention to you”, and even from letters between colleagues — you wouldn't want to! I even had to shake myself up, in “The Four Operations”, so as not to fall back into precisely this style, the “conclusions of investigation” style (or even, “sheet of recriminations”...). These “bits” delivered by Zoghman helped me get out of it and keep in touch with a living substance.

(*) (June 16) Mebkhout wishes to emphasize, on this subject, that he has completely ceased to identify with the “little family” in question.

I knew I was back at the Apotheosis the very day Zoghman left my house, just to make another sub-note or two, while what he had told me was still hot. That gave the notes (or sub-notes, I don't know anymore...) "Eclosion of a vision - or the intruder", "The mafia" (which I subsequently subdivided into seven parts, each with a name), and "Roots and solitude". I sent it all to him quickly, so that he could give me his comments before I gave it to typing. There I had the impression of expressing myself a little on his behalf, and I wanted to be sure that everything I reported, based on what he had told me, had his unreserved approval. He sent me his detailed comments by return (letter of April 22 and 24). In these comments there are quite a few of these "snippets", putting living flesh on a framework of facts which appears a little skeletal at times, in

mes notes.

This is also how I knew that Zoghman had been there, on that memorable April 22, 1980 at the Goulaouic-Schwartz seminary. This is the day when Kashiwara announced as a theorem of his own the theorem of the good Lord, which he had learned from the mouth of Mebkhout a few months earlier, at the Colloquy of Les Houches (*)! It's so big, and with Mebkhout still in the room, that it may seem unbelievable. Mebkhout nk did not burst out on the spot (I wonder how he did it...), he politely waited until the end of the presentation "to publicly protest these methods, reminding him of the Les Houches conference and his question (**). Goulaouic asked me to resolve my issues in private. The room suddenly emptied in a few seconds".

So here is one of the "snippets", delivered by this laconic description. I subsequently received some details over the phone. The incident deserves attention. It says a lot about the state of morals in the mathematical world in the 1980s. This is about the mentality, not about this long-toothed "big boss", an extreme symptom of the decomposition of traditional values in the scientific world, nor even of the "establishment" of people in sight and good in all respects, among whom the class reflex plays in favor of one of "their own". Here the whole room empties in the blink of an eye - suddenly no one left (***)! Make arrangements between yourselves - we don't want to know anything about it...

(*) On the subject of the Colloquium des Houches and the episode of the GoulaouicSchwartz seminar, see the note "The maf-fia" (n° 171), part (b) "First troubles — or the bigwigs from across the Pacific".

(**) This is the question asked by Kashiwara, at the end of Mebkhout's presentation at the Colloque des Houches in September 1979. See on this subject the note cited in note by b. from p. who is before. (***)

this evocation irresistibly arouses in my mind the association of ideas with the whole situation

I wonder what could have been going on in the heads of Goulaouic and the other peaceful listeners at this seminar, where a distinguished foreign speaker was speaking (on a theme which, I believe, none of them was familiar with). elsewhere too familiar). This incident, after all, was food for thought. I doubt, moreover, that any of them took this trouble, and rather suppose that all of them with one accord hastened to forget the painful incident. But anyway, as long as we take the trouble to think about it instead of running away, there was still one thing that was clear in this dark story. The tone and terms of Mebkhout (someone they knew, having met him in seminars at least), left little doubt about this fact, that there must be a crook in history — either Mebkhout, or Kashiwara. It is possible of course that deep down, they have already decided in advance: Mebkhout is making up, how could one imagine the distinguished visitor plundering the anonymous listener! This would therefore mean that vis-à-vis an unknown person, the famous man, whatever he does, is above all suspicion: it is carte blanche for looting, given to the man of notoriety. against one who has no recourse. What he has to say will not be heard: “work things out between yourselves!”

Or, they have buried themselves in a state of doubt: how can we know who is telling the truth and who is false? (And above all, if we cover our ears!) It's true that the brutal nerve of a Kashiwara, publicly pillaging a vague stranger in the presence of the person concerned, seems hardly credible. But it would be an even more incredible thing after all, if a vague stranger (whom they all know, and who had not yet come to their attention by tricks of a crook or by his nerve...) dared in public to accuse a Kashiwara of gross plagiarism, if what he has to say is pure fabrication... And supposing that what he asserts is perhaps founded, to send him to the rosés with a “work things out between yourselves!”, this time again it is carte blanche for looting. It's as if we were shouting to the person who is being robbed in the middle — “make arrangements between yourselves

street by thugs in tuxedos shouting “thief!
!”.

It also seems that this is how it has been happening for a long time, in the slums of New York and other large American cities, where no one wants to have trouble with the mafia which makes the law there. In any case, that's how it happens

analogous that I had experienced three years previously, at the end of a Bourbaki seminar where they were kind enough to give me ten minutes to talk about a certain villainous law affecting foreigners. See on this subject the section “My farewells, or: strangers”, n° 24.

nowadays (I can't say since when), in the mathematical world and in what passes for "fine neighborhoods", such as the Gaulaouic-Schwartz seminar (*), or among all these prestigious people who "do" cohomology algebraic varieties.

In rational terms and taken literally, this "work it out between yourselves" borders on stupidity, in a situation where it is clear in any case that one of the two parties must be in bad faith. ON a psychological level, this stupid formula reflects a resignation of responsibilities, faced with a situation felt to be "embarrassing". It is also the deliberate ignorance of this obvious fact: the question of respect for the elementary rules of ethics of the profession of math-ematician is in no way a purely "private" matter, to be settled between the one who claims to be right to despise them, and whoever pays the price, it is a public affair, an affair which concerns every mathematician.

It is thanks to general indifference, the panic of everyone to assume their personal responsibility, that a gangster mentality and operations as shameless as that of the Conference can flourish with impunity in the scientific world. Pervert. The panic of some and the impudence of others are like the other side and the reverse side of the same corruption.

Those who fled by running and covering their ears, on April 22, 1980, contributed to the Apotheosis of the memorable Conference the following year, just as much as the bosses who staged the grandiose mystification from scratch. and who went to strut there proudly.

(June 3) It was during Mebkhout's last visit to me, too, that I received edifying details from him about some of the participants in this same brilliant Colloquium, and about the "new style" which is flourishing among one and the other, who better the better. I had the opportunity to leaf through the report of the work, in the second volume of the Actes, where there are articles by Verdier and Brylinski-Malgrange, and to take a look at Laumon's thesis (with a more informed and less distracted eye than the day I first received it). This thesis is in fact a work in collaboration with N. Katz. I give some comments about the "new style" followed in these works, in the long note by b. from p. in the note "The Day of Glory" (God knows she deserved this name...), page 962. In this note I refer, for further details, to this note (not yet written at this time). Promised thing,

(*) I am happy to be able to specify here that Laurent Schwartz was not in the room on the day of the memorable incident at "his" seminar. I don't know if he was informed of it afterwards.

chose due !

Mebkhout told me how he had the honor and the advantage of speaking twice to N. Katz about his ideas on duality and on the links between continuous coefficients and discrete coefficients. The first time was at the P-adic Analysis Conference in Rennes, in July 1978. He then explained “in a small group” his theorem of global duality for D-Modules, on a complex analytical space — the theorem which covers the duality of Serre and that of Poincaré” (*). There were Katz and Illusie, the same people who have already been mentioned more than once in the Funeral. Illusie, friendly and kind as is his habit, thought it was really very pretty — something like that (**). As for Katz, who I imagine was hearing about -Modules for the first time in his life (at a time when it was far from being the big fashion, like after the memorable Conference), he was content to sharply declared “It’s known that 1”, only to turn around just as abruptly. As long as it was a vague Mr. Nobody who spoke to him, to him N. Katz (who again this year was going to give a speech in front of thousands of distinguished colleagues, in honor of the new Fields laureate Pierre Deligne...) , it could in fact only be “known”.

The second time was shortly after the Colloquium des Houches in September 1979 (***). Katz was then at IHES. Given his notorious competence in p-adic differential systems, which Mebkhout clearly felt had something to do with the God's theorem which he had just spoken about at Les Houches, Mebkhout went to IHES on purpose to bring him his article in Les Houches, and talk to him about his ideas and results. After the welcome he received in Rennes, we can say that he had a lot of ideas and never got tired of it! Still, it was a bit of the same scenario. Katz once again received from very high this vague unknown, who allowed himself to come and relaunch him a second time, and without announcing himself yet if that happens. When you are an important man, you sometimes no longer know how to protect yourself from unwelcome people...

It will have been enough, a year later, for these same ideas, long held and matured in the

(*) This theorem is discussed in the two notes “The work...” and “Three milestones — or innocence” (n° 171 (ii), (x)).

(**) This was, moreover, a completely gratuitous “kindness”. While the style of reaction was different from one to the other (in “yin” with Illusie, in “yang” with Katz) , the bottom line was the same: as long as it comes from Mr. Nobody, it goes in one ear and comes out the other! See on this subject the note “Mystification” (n° 85), in particular my observations about Illusia, on page 351.

(***) About the Les Houches Conference and the Kashiwara scam at the Goulaouic Séminaire-Schwartz, see the note “The mafia” (n° 1713), part (b), “First troubles — or the bigwigs from across the Pacific”.

solitude by a vague unknown, are trumpeted everywhere like the latest of the discoveries of a Deligne (or a Kashiwara, we were no longer sure...), in the wake of such a brilliant Colloquium that Katz unfortunately did not have able to honor with his presence, so that they suddenly take on importance and weight for the great man. It was surely Laumon who had to explain the ins and outs to him – one of Deligne's most brilliant disciples. this same Laumon also knew, first hand, the origin of these ideas, having been informed of them by the vague stranger himself. But the disciple is honored to follow in the footsteps of the Master, and the latter had shown quite clearly, and without the slightest equivocation, what conduct it was appropriate to adopt towards one dedicated to silence and the darkness.

To the Delignes and Verdiers the honors of the limelight, and to the Brylinskis, the Katzs and the Laumons, rushing at the right time to get their share! To them the music and the flons-flons, and the ovations of a grateful crowd, rushing in jubilation to celebrate these High Works, in the hands of their New Masters.

¹⁷¹ () (June 14) Until a month ago, it seemed to me that the spirit of the Funeral was limited to what I happen to call "le beau monde" or "le grand mathematical world, and more particularly, the environments of this world that I used to haunt and of which I myself was a part. I had not perceived at the USTL (University of Sciences and Technology of Languedoc, Montpellier), which has been my home institution for twelve years, any signs of ostracism, or those of an affectation of disesteem or a discourtesy, even those of a rudeness, going in the direction of this Funeral which has been in full swing for fifteen years (*).

A new fact has just burst into this peaceful picture, and drastically transformed said picture, and my own relationship with my home institution.

In accordance with inveterate mechanisms, I did not initially think of including in my testimony "Harvest and Sowing" this recent incident, which, at first glance, seemed to me to come there "like hair in soup". It was against serious resistance that I ended up admitting that it would fail in the spirit of my testimony to pass over this episode in silence. It's still a very fresh episode, of course, and one more that I "dealt with" quite hard - which also gives additional strength to these "inveterate mechanisms" to which I have just alluded. But the very vivacity with which I absorbed, this time, the eloquent and unwelcome lessons of this incident, is also a sign that it affects me very closely - and this at the level of my professional activity and my links with the professional environment of which I am part. This is therefore, typically, the kind of thing on which Récoltes et Semailles would like to provide an in-depth testimony, without a "reserved corner" which I would refrain from touching, whether through a misplaced "discretion" regarding -towards myself, or towards anyone.

Furthermore, in the more specific context of my reflection on the Burial, I feel it is obvious that there are direct links between it and the incident in question. It is possible that these links are not those of a simple cause and effect relationship: that certain colleagues on site would have ended up taking note of the Funeral, and would have concluded that they too could now "give it to oneself." Even if there were such a cause and effect link, it would, it seems to me, only affect an accessory, accidental aspect of the situation. A more essential aspect on the other hand, and which especially struck me, common to what happens in "the big world" of Science (with capital S), or in a modest provincial university, is a certain degradation, without precedent perhaps, in scientific circles and

(*) I express myself to this effect in note no. 93 (page 396, 3rd paragraph)

academic: degradation at the level of the quality of relationships and elementary forms of courtesy and respect for others, as well as at the level of scientific ethics, itself indissolubly linked to respect for others and oneself. We can therefore consider the following pages as a contribution (among the many others already provided throughout the reflection on the Burial) to the "picture of morals of an era", or of an end of era no doubt. , in a mathematical environment.

Rather than resuming here a more or less detailed account of the events, I prefer to reproduce four documents, which will describe them equally well. It's about :

1 ỹ) of a "letter to my fellow mathematics teachers at the USTL", dated May 28, where I inform them of a certain situation and express the wish for a discussion in General Meeting; 2 ỹ)

of the "response" from Ms. Charles, responsible for the premises in the mathematics building at the USTL, in the form of a circular letter of May 30 addressed by name to me, and in fact, to all the teachers mathematics; 3 ỹ) of the resolution voted by the EBU General Meeting 5, held on

June 6 on the Agenda: "Information and discussions regarding the relocation of the professor's office

Grothendieck"; and finally

4 ỹ) of a "Letter to my ex-colleagues at the Mathematics building", dated the following day, June 7.

I refrained from including among the documents my letter to Ms. Charles of May 21 (which is mentioned in the first document cited) and my letter to Mr. R. Cano, Provisional Administrator of the USTL (of whom he is question in this same document, and in the or "Epilogue of a misunderstanding"); These letters do not seem to me to provide document 4ỹ . any new information, compared to those contained in the documents reproduced below.

As the only comment on Ms. Charles's letter ("it is in fact very difficult to contact him" - "the" meaning here my modest person, to whom the letter is supposed to be addressed), I specify here that the letters from Montpellier to my home takes a day to reach me, and for years I have only been away from home when I go to the USTL.

UNIVERSITY OF SCIENCES AND TECHNIQUES OF LANGUEDOC

Institute of Mathematics

A SACKING IN THE MATHEMATICS BUILDING

Letter to my fellow mathematics teachers at USTL by Alexandre GROTHENDIECK

Montpellier, 05.28.1985

Dear Colleague,

I was informed last week, by an EBU secretary whom I had instructed to take a job in my office on the fourth floor, that it had been emptied of all my belongings - something that I was able to check today: only the bare ground remains. I had not been informed that my office would be requisitioned without further ado, and I had therefore not been able to agree to the operation, much less authorize anyone to enter my office in my absence and touch my stuff. The same day I telephoned Mr Lefranc, director of the EBU, to inform him of the situation, which (it seemed) was the result of an initiative by Mrs Charles, something which seemed to be confirmed by this phone call. I clarified to Mr. Lefranc that I was shocked by the process, that there was no question of me giving my consent to a transfer of offices being carried out in such brutal forms, and that I expected that my belongings be put back in their place as soon as possible.

He assured me that he would do what was necessary. That same day again, Tuesday May 21, I wrote to Madame Charles, to tell her that I considered the untimely "emptying" of my office as an abuse of power, and felt it as violence; that I expected detailed explanations from him, and an unreserved apology. Otherwise, I would submit the question to the University Council, which would decide whether this type of behavior towards a teacher at the USTL should be considered acceptable.

Coming to the USTL today, I was able to see that Madame Charles did not consider it useful to respond to my letter (a copy of which I also sent to Messrs. Cano and Lefranc). Mr. Lefranc also did not consider it useful to send me any explanation on the fact that my office is still empty of my belongings, a week after he assured me that he would do what was necessary for their return to my office. desk. Neither he nor Madame Charles considered it useful to inform me where

find the things that have been raided. I learned through secretaries that these things would be stored in the office of one of them. Furthermore, having had the opportunity to meet Madame Charles in the meeting room, she assured me that she only followed the instructions of the director of the EBU, Mr. Lefranc, and told me invited me to contact him about this matter, which did not concern her. While waiting for the situation to resolve, Mr. Nguiffo Boyom was kind enough to share his office with me.

Perhaps I am the only one who thinks there is something wrong — violence and contempt; It is true that I am also the only one who seems to be thrown out without further ado. (If there is anyone other than me who thinks that this is not the kind of atmosphere in which they want to work at the USTL, I would really be happy if they made themselves known to me...(*)) For my part, I consider that it would not be a luxury for there to be, following this “misunderstanding” (to use the charming euphemism of one of my colleagues), a meeting of the EBU, to give the director, Mr. Lefranc, and Madame Charles, the opportunity to explain their intentions and their motivations, and to the teachers of the UJSR, to say whether they consider these processes to be normal (when they are applied to others...).

In the twelve years that I have been at the USTL, I have often had the opportunity to appreciate the benevolent dispositions, the dedication and the efficiency of Mr. Lefranc whenever it came to providing service — and — I am grateful to him. It is with all the more regret that I would withdraw my trust in him, seeing that he makes himself an instrument in the hands of others and allows an atmosphere to be established arbitrary and contemptuous. From now on, I urge him to assume his responsibilities as director of the EBU, or to resign from his position. And I ask Mrs Charles to resign from her position as “premises manager” of the EBU, positions which she has been happy to abuse.

Waiting for your (or your) response

Alexandre GROTHENDIECK

(*) It goes without saying that such a gesture only has meaning for me if it is understood that it commits the signatory, who authorizes me to state it publicly.

PS both of a temperament inclined to be of service, I had last year, at the request of Mr. Lefranc, given his agreement for an exchange of offices with Mr. Lapscher, which (it was said *pou* afterwards) then changed his plans.
It goes without saying that my agreement did not mean that I authorized the ransacking of my office, at this time, or at any other.

UNIVERSITY OF TECHNICAL SCIENCES. FROM LANGUEDOC
MATHEMATICS

Thursday May 30,

1985 Mrs. J. CHARLES "responsible for the premises at the Institute of Mathematics"
to Mr. A. GROTHENDIECK, Professor of Mathematics.

Dear Colleague,

(1) Where does the "work" of the "responsible for the premises at the Institute of Mathematics" begin and end?

This "manager" receives requests from Mathematics teachers — either to accommodate a new teacher (or researcher) — or to accommodate elsewhere a teacher (or researcher) already housed. In this second case, the requests are generally motivated by a work objective: grouping of members of the same group.

This "manager" then studies the possibilities first and foremost with the director of the UER5 who is officially the manager designated by the President of the UST L* for the premises of the Mathematical Research building. He then seeks possible solutions with the people concerned; the modification takes place after everyone's agreement. (2) What has been achieved in recent years:

— grouping of members of the geometry group — grouping
of members of the mechanics group (3) The difficulties encountered in this "work":

— almost every person contacted feels "owner" of their office — it seems impossible
to force anyone to "change" their office. (4) The last request received by me and the evolution
of the search for "solutions" to the problem posed: — the request formulated by Mr. LAPSCHER,

professor: group together in the same
level Mr. LAPSCHER, the office of his secretary, Mr. MICALI,

— the first solution envisaged: exchange of offices between third and fourth floors so that the “applicants” are grouped together on the fourth floor. Mr. GROTHENDIECK and Mr. THEROND were particularly concerned by this exchange. Sir GROTHENDIECK, contacted by the director of EBU 5, told him that THE LOCATION OF HIS OFFICE WAS NOT IMPORTANT TO HIM PROVIDED THAT ONE HAD ONE. By against Mr. THERONO having at one point his agreement then refused any travel.

— the second solution envisaged. : I then asked Mr. LAPSCHER to contact his colleagues himself to propose another solution; this was confirmed to him by the director of EBU 5. He kept us informed of his efforts: the “occupants” of 5 offices were agreement to carry out a permutation, the agreement of Mr. GROTHENDIECK resulting from his conversation with the director of EBU 5.

— the realization of this second solution: after having read this agreement the director of EBU 5 gave the “green light” for the proposed office modification.

Mr. LAPSCHER having spoken to me about a key problem during the period when the moving would be discussed but not completed, I pointed out to him that — no new key was probably available, — it did not seem desirable to me to prolong this move which could be done in a few hours with the participation of all interested.

Mr. LAPSCHER then informed me that the equipment in Mr. LAPSCHER's office GROTHENDIECK had been transported to his future office; this had been achieved without having been able to contact Mr. GROTHENDIECK in advance.

It should be noted that Mr. GROTHENDIECK is domiciled far from Mont-pellier and is currently on secondment to the CNRS; it is in fact very difficult to contact him. (5) My impression of being “responsible” for what appears to be able to be called a “conflict”: — I had the opportunity to clarify to Mr. GROTHENDIECK that acting on behalf of the EBU 5 I myself could not give a response to his letter; he must therefore ask for a response from the director of the EBU 5. Following this 2nd letter addressed to I all consider that I must break away from the “obligation of reserve” that I had imposed on myself. - he would have seemed desirable to me at least to inform the people concerned before moving their equipment — it would also have seemed desirable to me to do the move in one hour to the maximum. — the solution envisaged seemed valid to me, it did not modify the rate in any way

office occupancy of each person concerned.

I don't expect a response.

Please accept, Sir and dear colleague, the expression of my best regards.

NB Copy of this letter sent for information to — all Mathematics teachers who received the letter from Mr. GROTHENDIECK dated 05.28.85. — the director of EBU 5 having also received a copy of the letter sent to me by Mr GROTHENDIECK on 05/21/85. — the provisional administrator of the USTL, who had a copy of the letter of 05.21.85 and to whom I attach a copy of the letter of 05.28.85. UNIVERSITY OF

SCIENCES AND TECHNIQUES OF LANGUEDOC

Institute of Mathematics

INSTITUTE OF MATHEMATICS Minutes

of the meeting of Thursday June 6, 1985 at 6 p.m.

Etalent present : Mr. AUBERSON, Mrs. CHARLES, MM. CIULLI, CONTOU CAR-RERE, MM. LEATHER, OF LIME, DELOBEL, OF ROBERT, GROTHENDIECK, HOC-QUEMILLER, ESCAMILLA, Mr. HUBERT COULIN, Mr. LEFRANC, Mr. LOUPIAS, Mrs. MEDEN, Mr. MILL, Mrs. PIERROT, Mr. PINCHARD, Mr. SAINT PIERRE, Mrs. VOISIN

After discussion, those present (19) adopted by 16 yes — and 3 abst. the following text: "The Mathematics teachers apologize to Mr. GROTHENDIECK regarding the unacceptable conditions in which his belongings were moved. They undertake to collectively ensure that these regrettable events do not happen again. In particular, it must be clear that the key to an office cannot be used by anyone without the explicit consent of the occupant."

M. LEFRANC

Director

UNIVERSITY OF SCIENCES AND TECHNIQUES OF LANGUEDOC

Institute of Mathematics

Epilogue of a "misunderstanding"

Letter to my former work colleagues (teaching and technical staff, 3rd year students cycle) in the Mathematics building by

Alexandre Grothendieck

... on 7.6.1985

Dear Colleague, I am

writing here as an epilogue to the affair of the ransacking of my office, mentioned in my letter of May 28. This letter was addressed only to mathematics teachers, although it also concerns all those who occupy an office in the mathematics building. It was by inadvertence and lack of discernment that I had neglected to address my letter also to the technical staff and to the 3rd cycle students, judging (hastily) that this would give the incident an extension which did not come back to him. I sincerely apologize to those concerned, and all the more so since I received expressions of sympathy from several of them (supposedly uninformed...), which touch. It is also following this inadvertence, no doubt, that** the General Meeting of the EBU, devoted yesterday to the incident, was limited only to "members of EBU 5".

Among many other things, this incident made me learn that this is not the first of its kind to happen at EBU 5 — it is only the first time that it is an "A-rank teacher" which is targeted. I don't know if the pious resolution passed yesterday will prevent this type of incident from happening again, amid general indifference (as before), towards non-tenured teachers or 3rd cycle students in particular. I will take care to check with Ms. Mori and Ms. Moure whether they have received instructions from the director of the EBU, no longer under any pretext to entrust the key to one of the offices to anyone or make use for anyone, except with the express authorization of one of

ses occupants.

My previous letter ended with the words "waiting for your (or your) response". In response to this expectation, I received three expressions of sympathy and solidarity. They come to me from Louis Pinchard, Pierre Molino and Christine Voisin. Also, I received a testimony to the same effect from Philippe Delobel, a 3rd cycle student who (like Christine Voisin) had done a DEA with me. It was on his initiative that some postgraduate students attended the General Meeting yesterday. To him, as to all those I have just spoken about, who have (without ambiguity or evasion) shown me their solidarity, I am happy to express here my esteem and my gratitude. It is one of the fruits of "hard" experiences like this, to have your friends recognized, when you are lucky enough to have them...

I received yet another letter responding to mine, from a colleague visibly delighted by what was happening, and taking this opportunity to gently make fun of me. It is

the only echo in this sense that I have received. Among all the others, a lot of total indifference from some, embarrassment from others (where more than once I felt the unexpressed fear of being seen badly and thus compromising one's chances of promotion, or a precarious situation) .

Among all those, among those, who were moved to the point of bothering to attend this General Meeting (convened on the sly at the last minute, even though it had been planned for a week...), I have felt above all the deliberate intention of drowning a fish, to the tune of "everyone is nice, everyone is cute". We finally got into a fight (after three quarters of an hour of talking) about the designated "villain", the absent one (as if by chance). Mr. Lapscher — the one who had taken (according to what had just been hinted) the initiative for the helping hand. There was no question of going so far as to implicate him by name, the poor man - no more than anyone else, it goes without saying.

On the part of those "responsible" involved in one capacity or another in the ransacking incident I was shocked by the shameless brutality of a Lapscher, by the crudeness "for the sake of it" of a Mrs. Charles (who covered the coup de main, once faced with a *fait accompli*, by adding insolence of her own), and by the discourtesy of a Mr.

Cano, Provisional Administrator of the USTL, dispensing with any response to the letter in which I informed him of the situation and asked him to refer it to the University Council. But more than anything, I was disconcerted and saddened by the ambiguous attitude of Mr. Lefranc, director of EBU 5. Since Monday May 20 (when I informed him of the situation that I had just discovered and my feelings on this subject) until yesterday, he had not considered it appropriate either to inform me about what had happened, nor to dissociate himself unequivocally from the act of banditry of a Lapscher or the rudeness of a Mrs. Charles. By doing his best, from start to finish, to maintain the fiction of the unfortunate "misunderstanding", he succeeded in giving an innocuous or even respectable appearance to behavior that, for my part, I feel is intolerable. To avoid hurting anyone, surely, he chose to spare (a lot) the goat and (a little) the cabbage.

I also took note, among other signs, of the silence of many of those whom I had thought were among my friends (including three who were my students); of the ostentatious indifference of one, the embarrassment of another, and the honeyed jubilation of yet another.

And also from the silence of a Micali (co-beneficiary of the helping hand, and who had ample opportunity to convince himself, a few years ago, of the disadvantages of attracting the bad graces of Mr. and Mrs. Charles...) , and the complacency of Miss Brun, taking orders from a Lapscher

to play the mercenary locksmith-movers (without a word of regret, once the nature of the operation could no longer be in doubt).

Against the background of all this, and finding yesterday what, for twelve years, had been my office, transformed this time into a battlefield - my belongings (plus the furniture) re-piled up in disaster (a good fifteen days after a sudden attack). hand — lightning...) — I no longer have the heart to move there again. It is unlikely, I am assured, that the same incident will recur with regard to me, and I can also take the lead, by taking from me the second key, entrusted until present to Mrs Mori and Mrs Moure. But to the extent that this will be materially possible, and in particular during the entire duration of my secondment to the CNRS, I prefer to give up the use of an office at the USTL, and give up the place, without a struggle, to the Lapscher, to Charles and others.

If I can avoid it, I will not return to teaching at USTL. I would have passed through it, that's for sure, like a foreigner - one whose homeland is elsewhere - as much through my approach to mathematics, as through that of teaching or through my way of life. What the mid-university cocosm had to teach me, I believe I learned it, with as the last "part", the lessons of this incident, which has just ended to general satisfaction. There is a chance that this EBU 5 meeting in which I have just participated will be the last, that this letter will also be the last that I will have the opportunity to write to you (or to write to you). And this time, I'm not waiting for a response.

Alexandre Grothendieck

(172) (March 22) I thought I would have a day or two and a dozen pages to spare, with these famous "four operations" that I had been planning to review since October already. And I've been working on it for more than three weeks, during which I have lined up well over a hundred pages — and I still haven't quite finished 1 The first draft, from February 26 to March 1, took me four days already. He just provided me with the canvas, on which to embroider (despite everything) a "story", and not just investigative conclusions — Rereading this first draft, the day after March 1, it gave an unfortunate impression of "sheet of grievances" which was never-ending, and as it was, no doubt incomprehensible to anyone, except three or four truly expert experts (assuming they have the patience to read it...). I understood that I had to at least explain roughly what it was about,

so at least provide a context - otherwise there was no point (*).

This necessarily led me to some repetitions, in relation to the first part of the Burial - but there are cases where repetitions are not only useful, but even essential (in mathematics as much as elsewhere) In In these cases, moreover, we quickly realize that the so-called “restatements” are not really, because what is “restated” is in reality reviewed, seen anew and in a light which changed. By situating, as a “context” for the four operations, certain aspects of my work, I have the impression of having learned something about it, of better situating this work. Perhaps I learned nothing really new about myself or about others in doing so, but I do not regret the trouble I took to rewrite this first draft of complaints in this way, over several days. I had put into this work the best I had to give, and it deserves that, with the hindsight that maturity gives me, I should read it again and in a different light. At the very moment when I was preparing to make a detailed assessment of what this work had to undergo since I left it (in good hands, I had no doubt...), it was good that I reflect a little on it, on its place and on this unity which makes its beauty, if only for the duration of a few pages, as a way once again of showing my respect for what I have seen flouted.

But that wasn't all, far from it! Abandoning the “sheet of grievances” style, with numbered references to the meatier notes of the first part of the Burial, I understood that these notes that I included, like all the other sections and notes in *Récoltes et Semailles*, had to be intelligible and restore all the essence of what they had to say, even independently of these references to notes forming part of another moment of reflection. Here again, this led me to numerous “repetitions” which are not, that is to say to review in a new light, what I had noted day by day almost a year ago. a year, in the fresh emotion of discovery. Moreover, I had been assailed by so many unexpected and sometimes incredible facts that there could have been no question of a real “investigation”, even the slightest bit methodical. At that moment, I was content to try my best to absorb what was thrown at me, and to “fit” it in as best I could, without looking too hard for details. Most of my energy was absorbed then in facing what the pots-

(*) The only other moments of the *Récoltes et Semailles* reflection where I made such a departure (on a lesser scale, it is true) from the “spontaneous” mode of writing, was in the section “The note — or the new ethics” (n^o 33) and in the note “Iniquity — or the meaning of a return” (n^o 75).

to the roses that I discovered were crazy, incredible (like in this tale of the dress of the Emperor of China... (*)), and above all, to take on this “breath” of violence, of cynicism and contempt which suddenly came back to me, “under those good-looking looks...” which I recognized only too well; the breath of other times, which I had lived and which I have not forgotten...

These last three weeks, on the other hand, have become an opportunity to complete this stormy investigation of last year, by delving a little more closely into certain texts (SGA 5 and especially, the so-called “SGA 4 1/2”). This gave rise to a series (which seemed never to end at times 1) of (more or less) detailed footnotes, some of which became subnotes, and one of the latter (in the name planned “The Formula”) occupying me over four consecutive days and splitting into four others (**)... at times it seemed to me that I was never going to finish — and then no, it ended up converging (* **). I am leaving behind for the moment about ten pages that are decidedly too crossed out, which need to be redone, and the footnotes of the last two notes (“Partition” and “Apotheosis”) which I will add later. For now, that’s enough! Even if it means coming back to “stewardship” later, I can't wait to finish it, and to say without further delay what I still see of substance to be said, on the chapter of the “four operations”.

I distinguish in the Burial two “aspects” or “levels” which are intimately related, but nevertheless distinct. They are quite clearly separated (in my eyes at least) by a threshold.

On the one hand, there is the “wind of fashion” aspect (sometimes going as far as this “breath of derision” which I have had occasion to speak of more than once in *Récoltes et Semailles*). It manifests itself above all by what I have called elsewhere (*) “automatic attitudes of rejection — attitudes that often cut short the simple reflexes of mathematical common sense, and are exercised against certain and their mathematical contributions. In this case it concerns me, and a few others who are classified (sometimes despite all the efforts of the person concerned to distance themselves from me) as having a “related party” to me. In my case, it was certainly not possible to “reject” (or “bury”) everything I brought, while a good part had already entered the common domain of daily use, before I left the stage

(*) See the note of the same name, n°

77 (**) (June 1) Which have become six since... (***)

(June 1) A very provisional “convergence” moreover, since the note “The Apotheosis” ended up bursting in around thirty notes, sub-notes etc. distinct, doing well in 150 pages alone!

(*) In the note “The Gravedigger — or the entire Congregation”, n° 97.

mathematics in 1970 (**). However, it is true (and I noted this for the first time in the note "My orphans" from a year ago (note n° 46)) that by far the greater part of my work, whether written or not written on the cohomological theme was buried, first and foremost by my students, the day after my departure. (Some of the themes that I had introduced were exhumed four, seven or twelve years later without mention of me - but here we are already touching the "second level"...))

We can certainly regret such automatic rejection, sometimes going against simple delicacy and the respect due to others, and in all cases foreign to common sense and mathematical discernment. We can regret it all the more, when it strikes young mathematicians with sometimes brilliant means, when the "bite of disdain" extinguishes a joy and distorts what had been a beautiful passion, in the bitterness of investments which appear as wasted (following the consensus that governs...). And we can also regret it, when this rejection hits simple and fruitful ideas which have amply proven themselves, to bring out of nothing powerful tools that nowadays "everyone" uses without thinking twice. In the first case (that of a devastated vocation) the damage is likely to be irreversible, but not in the second - because sooner or later, the simple and essential ideas, those which "are on the path", end up appear or reappear, and become part of the common heritage. Whatever the case, we cannot reasonably want to force anyone to think well of a person, or a work, or an idea, of which (for a reason which concerns only them) they want to think. wrong, or to completely forget it. This type of question concerns, certainly, and in a delicate and essential way, personal "ethics", but we cannot make it, it seems to me, a question of collective "scientific ethics"; or if we tried, it is to be feared that the remedy would be worse than the disease...

The second "aspect" or "level", on the other hand, to which I was referring, is precisely the one where such a collective ethic is found to be infringed. The threshold I was talking about is a consensus that, as far as I know, has been universally accepted in all sciences, since

(**) It is true, however, that even some of the ideas and techniques which had already entered into "everyday" use (at least within the limited circle of my students and close collaborators) were buried? as soon as I leave. We can say that this was particularly the case with the p -adic cohomological tool, which I had developed in great detail in SGA 5 (based on the key results of SGA 4). It was kept under a bushel by my cohomologist students, led by Deligne, to be exhumed in the form and spirit that I know in

1977.

that these are the subject of written testimonies. This is the consensus which stipulates that no one is supposed to present as their own the ideas (*) that they have taken from others. This consensus obliges us, consequently, to indicate the origin of the ideas that we present, use or develop, each time, at least, that these ideas are not of our creation nor of the common heritage, already known (not by three or four initiates, but) by "all".

I don't remember ever hearing anyone question this consensus. From the time when I was part of the mathematical community, between 1948 (a young beginner of twenty

(*) When I speak here of "ideas", it is clearly understood that in mathematics it is by no means only "results". Often, a simple question well asked, and which touches a crucial point that no one before had been able to see, is more important than a "result", even a difficult one. This is still the case, even if this question has not yet condensed into a precise statement, which would constitute an embryonic hypothetical answer, or even a more or less complete (still conjectural) answer. It is understood that extracting such a statement from an initially vague question is an essential and creative part of mathematical work. Presenting the elaborate version of a question (perhaps profound) while hiding the origin of it (even though the elaboration would be the work of the presenter-conjurer), just like keeping silent about the origin of a statement in the form profound, under the pretext that one is presenting a demonstration of it, is plagiarism just as much as presenting as one's own a demonstration taken from someone else.

The same thing goes for the introduction of fruitful notions, even more crucial, often, than good statements - because the question of "good statements" only arises when we have already been able to identify the right notions. Here again, taking the pretext that one has modified, or even improved a notion taken from someone else, to hide its origin, is as much dishonesty as if one "borrows" the notion *rie varietur*. Most often, it is the first step: raising a question (even vague), proposing a statement or a notion (even imperfect and provisional), which is the crucial step, and not the improvements (in precision, in extent, depth) that we bring there. But even if this were not the case, it cannot be taken as a "reason" for someone who would do original work by improving what he received, to hide what he received. (or, which can amount to the same thing, to "unbind" it...).

As I have already pointed out elsewhere (in subnote n° 106 of the note "The muscle and the guts (yang buries yin (1))", n° 106), the "value" of a conjectural statement does not depend on its presumed difficulty, nor on its more or less "plausible" character, nor on whether this statement will turn out to be true or false. In any case, the "value" that we are willing to give to a mathematical idea (whether it is expressed in a question, in a statement, in a notion, or in a demonstration) or to a set of ideas, is to a large extent subjective and can hardly be the subject of a consensus of scientific ethics. This is why an honest scientist will indicate the provenance of all the ideas he uses (explicitly or tacitly) and which do not are not part of the "well known", without letting oneself go down the slope which consists of keeping silent about the origin of such an idea which he would have decided in his heart of hearts (and for the needs perhaps of a doubtful cause...) that it was in any case "obvious", "trivial", "unimportant" (or other qualifiers of the same water).

coming to attend Cartan's classes at the École Normale Supérieure) and 1970 (when I left the mathematical scene), I only had the opportunity very rarely, and with only one colleague and friend who was a little careless on this chapter (*), to witness or only to be informed of a patent departure from this consensus, or principle. As I point out in the first part of *Récoltes et Semailles* (in the section "A well-kept open secret", n° 21), respect for this principle is by no means something that would go without saying. , in anyone with a minimum of honesty and self-respect. On the contrary, it requires great vigilance, because inveterate reflexes since childhood push us quite naturally to rely on our own merits, and to confuse the work of assimilating within ourselves ideas coming from others, with the conception - even of these ideas - something which is however absolutely not of the same order. When writing the section cited more than a year ago, I was clearly not yet clear with myself about the importance that should be given to this consensus.

There was then a certain vagueness in my mind (which I was not clearly aware of at this stage of reflection in relation to this diffuse feeling that a strict requirement towards others (for example towards -vis my own students) for respecting this principle in their relationship to me, was the sign of a lack of generosity, of a smallness unworthy of me. There was therefore at that moment an ambiguity in me, that I only detected clearly in the reflection of the note of June 1, of the same name (n° 63). This reflection completely dissipated this ambiguity, which I then realized) had weighed heavily on my relationship to my students, from the beginning (at the beginning of the sixties) until last year. I understood that rigor in the exercise of the profession of mathematician (or, more generally, of scientist), means above all great vigilance towards oneself, in respect of this consensus crucial among all, but also an equal requirement towards others, and even more so, towards those whom we are responsible for introducing to the profession which is ours.

With each year that passes, I understand better to what extent this profession is something other than just a certain technical know-how, nor even the ability to use imagination to solve problems deemed difficult. In a way, I knew it well and always — but I underestimated the "ethical", or even collective, aspect

(*) The case of this colleague is mentioned in passing, in the first part of R and S, in the section cited in the following sentence. With the hindsight of more than a year, this "case" takes on a weight that I had not given it before.

(*), as something that was supposed to “go without saying” between people of good faith and good company. In this way, I was ready for the “ambiguity” of which I spoke, and which was also (under the cover of a false “generosity”) a complacency towards my students and the like, and even more hidden way, a self-indulgence.

I left this environment of “people of good faith and good company”, which had also been my world, with which I had been happy to identify. Risking a somewhat circumstantial glance (in the weeks following April 19 last year) I found there, less than fifteen years after leaving it, a corruption like I would never have known imagine it even in a dream. It is a mystery to me what meaning it can still have to “do math” as a member of this world — if it is not only as a means of power, or (for modest statuses) that of ensuring a living under material conditions, my word, comfortably (when you are lucky enough to already be “settled” as best you can...).

(173) (*) a. (March 22) To put it more bluntly, in the Funeral there is the “fashion” level, and the “fraud” level. Perhaps I am simply delaying, and that what was considered a fraud “in my time” has nowadays become something perfectly accepted and honorable, as long as those who practice it are part of the good people. Perhaps the “threshold” has disappeared a long time ago?

The “second level” consists of a single and vast fraud operation, targeting the entirety of my work on the cohomological theme, and after it, that of Zoghamn Mebkhou,

(*) I do not intend to say here that the “ethical” aspect of a situation is always, at the same time, a “collective” aspect, affecting the relationship of a person to a group (in this case , a group of “colleagues” or “congeners”). However, this is indeed the case in the case of the “consensus” that I am currently examining.

In accordance with the particular conditionings which have shaped my vision of things since childhood, I had a tendency, until last year, to underestimate (or even ignore) what is collective, in favor of what is personal. The “collective adventure” aspect in my personal “mathematical adventure” became clear to me last year, first of all in the section “The legacy of Galois” (n° 7), but especially in the sections of the end of the first part of R and S, “The solitary adventure” and “The weight of a past” (n° s 47, 50).

(*) This note “The Family Album” initially formed the immediate continuation of the previous note “The Threshold”, written on the same day (March 22). This part now forms part a. (“A deceased well surrounded”), to which two other parts were added on June 10 and 11, b. (“New faces — or vocalizations”) and c. (“He among all — or acquiescence”). The following note “Escalation (2)” (n° 174), from March 22 again, continues directly with part a. (of the same day) of this note. The notes of b. from p. to parts b. etc. are June 13 and 14. Finally, a last part d. (“The last minute — or end of a taboo”) was added on June 18.

the imprudent continuator, posthumous, obscure and obstinate student of the buried master. The great conductor of the operation was another student, in no way posthumous but on the other hand occult, yes, playing on a tacit role of "heir" of my work, while disavowing and debunking and the work, and the worker. It's my friend Pierre Deligne. His zealous lieutenants were none other than the four students who, with him, had opted for the "cohomology" course.

: JL Verdier, L. Illusie, P. Berthelot, JP Jouanolou. The deceased is definitely well surrounded, both by the co-deceased (**) sharing with him the honors of the Burial, and by those who, during his "lifetime", were his loved ones - As extra undertakers, coming to lend a helping hand in the double Funeral, staged by the Grand Chef, I see seven other "world-renowned" mathematicians (to use the terms of a certain advertising poster (*)), appearing episodically during the Funeral ceremony reviewed in the family album (also known as "The four operations"). They are (in order of importance in the Ceremony) B. Teissier, AA Beilinson, J. Bernstein, JS Milne, A. Ogus, KY Shih, N. Katz.

There I toured the mathematicians who are known to me to have actively participated in the "Burial" operation in one capacity or another. There are twelve (**). For the last four named, I cannot prejudge their bad faith, based on the facts known to me. I consider that their responsibility is no less engaged than that of others.

Because if they no longer ignored what they were doing, that was a choice, which in no way relieves them of their responsibility for their actions.

As for the participants by direct collusion, I would certainly be unable to draw up even an incomplete list, or to make an estimate of their number, surely of a completely different magnitude. Let it suffice for me to recall that among these there are all

(**) To tell the truth, there is not one, but four "co-deceased" of which I am aware, who are the subject of the four coffin notes (coffins 1 to 4) n° s 93-96.

(*) This is the IHES jubilee brochure published in 1983 for the twenty-fifth anniversary of its foundation. See on this subject the notes Funeral Eulogies (1)(2 (n° s 104, 105) and more particularly page 454.

(**) The same "twelve" as in the section (of the first part of R and s) "Jesus and the twelve apostles", reviewing all the students who worked with me up to the level of a thesis state doctorate. It is true that among the active participants in my Funeral, but this time on the corporate side of Pompes Funèbres Springer GmbH (instead of the Congregation of the Faithful), there is still Dr. KF Springer (co-director of the esteemed establishment) and Drs K. Peters and M. Byrne, who will be discussed in a later note (n° 175). And fifteen!

participants in the “memorable Colloquium” in Luminy in June 1981 (known as Colloque Pervers), and also all those, among the readers of the volume called “SGA 4 1/2”, who were even slightly aware of the meaning of the acronym SGA — and who “let it run”.

I see two written texts, which testify above all to a disgrace in the mathematics of the seventies and eighties, as there has undoubtedly been no such thing in the history of our science. In one of these texts, disgrace appears in the name he has already given himself, which is in itself an imposture (of genius...): the text called “SGA 4 1/2” (as a common reference acronym), and also “Standard Cohomology” — by p. Deligne, with the “collaboration” (among others and in addition to L. Illusie and JL Verdier) of A. Grothendieck (**). The second text consists of the Proceedings of the Luminy Colloquium of June 1981, and more particularly and above all, by the first volume, constituted by the Introduction to the Colloquium (signed B. Teissier and JL Verdier) and by the main article of the Conference (signed AA

Beilinson, J. Bernstein, P. Deligne).

It would surely be a beneficial thing for all, and to the honor of the generation of mathematicians who tolerated such disgraces, if at least one of those who directly contributed to it, in one capacity or another, finds in himself the simplicity and courage to make a public apology - or better yet, to explain publicly what happened, as far as he is concerned. But that is probably too much to hope for.

As it is also undoubtedly too much to hope, that JL Verdier will cease to occupy, at the École Normale Supérieure, the place which had been that of Henri Cartan. This is surely the key position in France, for the training of the “next generation” in mathematics. When I learned, a long time ago, that Verdier had been promoted to this position, he who had been one of my students and whom I was fond of, I myself felt honored (and at the same time, secretly flattered). I was not touched by the slightest doubt, then, that Verdier would perfectly fulfill the role that had been that of Cartan, vis-à-vis the young people most motivated for mathematics, who would learn their profession perfectly from him. contact. If I see today (and for years already, but never before with such brutal evidence) that I was wrong and if I say it here clearly, it is not to heap opprobrium on him or anyone else. I believe he has disqualified himself from leading research. In saying this, I do not deny my share of responsibility for having taught poorly (to him as to all my other students)

(**) Regarding the meaning of this “collaboration”, which is part of the mystification created by Deligne, see the note “The reversal” (n° 68).

this job that I loved, and that I continue to love. b.

(June 10) Two and a half months have passed since I wrote the beginning of this note “The family album”. I certainly did not suspect that I would have to come back to it again, following new twists and turns in the investigation into the Burial. It was above all the explosion of the modest “apotheosis” in five or ten pages that I had just written, into a grandiose Apotheosis in capital letters, of one hundred and fifty tightly packed pages, which made me discover, in the process, “new faces”, who must have their place in the family album. There were also already familiar faces, who it appeared were also part of the legion of those who actively participated, at the “fraud” level, in “Operation Burial”. I am reviewing them here “for the record”, and also to be sure that each of those concerned feels in good company (but this is surely something that has been done for a long time...), I am inserting the new photos in the order in which they came to my attention.

First of all, from Springer Verlag GmbH, there are KF Springer (one of the co-editors of the company), K. Peters, and Ms. CM Byrne. I give details in the note below “Les Pompes Funèbres — “irri Dienste der Wissenschaft” “(n° 175). At the time of writing the beginning of this note, on March 22, I had just received a few days ago the letter from KF Springer (dated March 15) which dispelled my last doubts about the spirit which reigns in the estimable funeral home, faithful to its motto “In the service of Science”.

On the Apotheosis side (via the burial of the unknown person on duty), I was aware of the contributions of M. Kashiwara, R. Hotta, JL Brylinski, B. Malgrange, G. Laumon, and R. Remmert, not to mention an anonymous referral whose bad faith cannot be doubted; but it is true that if we start to count the complacent references to corrupt articles or books, directly or indirectly linked to the Funeral, there would surely be a need for a new album. Also, there is a reappearance of my old friend N. Katz, this time in a context such that the presumption of good faith (relative, at least) that I had towards him, vanished. This brings to fourteen (and fifteen, counting the famous anonymous referral) the number of mathematicians, all of international notoriety, who are known to me to have actively participated in one capacity or another in the mystification-scam known as “the Colloquium Pervers”. For duly documented details on this subject, I refer to the Apotheosis, and more particularly to the notes “... and the windfall”, “The day of glory”, “The mafia”, “carte blanche pour le

pillage — or the High Works” (n^o s 171 (iiii (iv), 1712 , 1714).

Finally, on the side of operation “Motifs”, effect appeared (better late than never), a little away from the big platoon, another of those who were my students. Afterwards I saw myself almost forced to count him (as sixth) among the number of my “cohomologist” students, even if “in my time” he did not have the slightest idea of what cohomology is. .

This is Neantro Saavedra Rivano, who, obviously, was used (of his own free will, certainly) as a “pawn” in the hands of others, rather than acting on his own behalf. His adventures, battling with Monsieur Verdoux (disguised as a “servant rider”), have been reconstituted over the pages in the series of notes “The sixth nail (in the coffin)” (n^o s 1761 to 1767), from April 19 and 20 (except the last one, which still remains to be written). Of. suddenly, this also brings to six (out of twelve) the number of those among my “before” students who actively participated in the Master's Funeral. The part taken in this Burial by Saavedra stands out in this, that the operation “Tannakian Categories (sic)” of which he was involved, is the first large-scale operation, aimed at concealing the paternity of a part important aspect of my work and the philosophy that I had developed (in the wake and on the occasion of that of motifs, in this case).

Taking into account the new arrivals in the album, and putting aside the Springer-pompes-Funèbres contribution, to retain only those coming from the Congregation of the Faithful, this brings the number of mathematicians to nineteen (*) notorious people who are known to me for having actively participated in the Funeral, at the level of what was called in my time a fraud operation. Among these participants, there are only three, namely the three co-signatories with P. Deligne of the “memorable volume” Lecture Notes 900, whose bad faith does not seem to me to be a given.

This list is far from exhausting all of my colleagues and/or former students or friends, who in one capacity or another and more or less actively participated in my funeral, without going as far as to be associated with a blatant fraud. I noted around thirty of them, most of which have already been mentioned during my reflection on the Burial; counting the previous ones, that's a good fifty - and these are, again, only those of which I became aware, despite myself, even in my distant retirement, during the last eight or nine years, or those which are imposed on my attention during

(*) Twenty, counting the famous anonymous referral.

of an investigation which, deliberately, remained very limited.

These figures alone are already eloquent, and come to support in an unexpected way the impression that was already imposed on me last year, namely, that the Burial of my work and of my modest person is not not the enterprise of a single person, nor of a strictly limited group (such as that of my students before my departure, or that of my “co-homologous students”), but rather a collective enterprise, at the level of “the entire Congregation”; or at least, at the level of the mathematical establishment which had witnessed and participated in the growth and development of my work as a geometer between 1955 and 1970. My departure in 1970 was the signal, in this part of mathematics at least, of a reaction of immediate and draconian rejection towards “Grothendieckian” mathematics, felt as a symbol and as an incarnation of “feminine mathematics” (*): that where the vision constantly precedes and inspires the technical aspect, where difficulties are constantly resolved instead of being resolved, where constant contact with the deep unity in the apparent disparity of things, allows at each moment to detect what is essential in the amorphous mass of the accidental and the accessory. At the same time, my departure was also the signal of a spectacular cessation of all conceptual work, or to put it better, of an outlawing of all such work, suddenly hit with derision, under the pretext of “deepening”.

Thus, mutilating the work of mathematical creation of one of its essential “sides”, the “yin” or “feminine” side, it is an astonishing “verflachung”, a “flattening”, a “drying” of the mathematical work that we have completed (**). The thing was done (it seemed to me*) by a brutal and drastic shift, practically overnight, it is a thing so strange, so unheard of, that it seems incredible. . It took me more than a year of intensive reflection on the Burial to finally understand what happened.

(*) On the subject of these reactions of rejection towards a certain style of approach to mathematics, see the notes “The muscle and the guts (yang buries yin (1))”, “The funeral of yin (yang buries yin (4))”, “The providential circumstance – or the Apotheosis”, “The disavowal (1) – or the reminder”, “The disavowal (2) – or the metamorphosis” (n° s 106 , 124, 151, 152, 153). I try to identify some of the salient features of “feminine mathematics”, alongside the complementary “masculine” features, in the notes “The Rising Sea...”, “The Nine Months and the Five Minutes”, “The arrow and the wave”, “Brother and husband - or the double signature”, “Yin the Servant, and the new masters”, “Yin the Servant - or generosity” (n° s 122, 123, 130, 134, 135 , 136).

(**) For an initial observation on the subject of this “flattening”, see the note “Useless details” part (c), “Things that look like nothing – or drying out” (note n° 171 (v)).

past and face the facts. I do not know if there has been a comparable shift, in recent years or decades, or at any other time, in any branch of science, or any other human activity involving (among other forces) our creative capacities .

But I come back to my album. It seemed useful to me to include here the names of those, apart from those already named earlier, whose participation in the Burial leaves me in no doubt. I am not convinced that any of them wish me harm, and there is certainly more than one among them who even feels feelings of sympathy, even affection, towards me. (responding to similar feelings in myself). There will perhaps not be a single one among them who will not be sincerely surprised to hear about a "Burial" which would have taken place of my person and my work, and even more, to learn that He is supposed to have participated in one way or another. The fact that he is named here will already have the effect (welcome for me) of informing him on this subject, and (if he himself is interested) of thus giving the opportunity for an explanation between us . I am of course at the entire disposal of those interested, to give any details about what I perceived (rightly or wrongly) as participation in my burial, directly or through "co-buried" intermediaries. There is no question for me of calling into question the good faith and professional honesty of any of them (*), and for more than one I can even add that their complete good faith and honesty are for me above all suspicion.

(**) (June 16) Following new information which has just reached me, this presumption of good faith disappears in the case of A. Borel. According to a correspondence between him and Z. Mebkhout last year, on the occasion of a seminar on the theory of $\mathcal{D}$ -Modules directed by Borel in Zurich, it was already known to me that Mebkhout had informed him of the fact that he was the author of the equivalence of categories central to the theory (known as "Riemann-Hilbert"), by indicating to him the precise references and by sending him all his works, where Borel could easily convince himself of the reality of the facts. This did not prevent Borel from treating him with the necessary condescension (even discourtesy). In a conference which has just taken place in Oberwolfach on this same theme (Algebraic theory of Systems of partial differential equations, Oberwolfach June 9–15, 1985), where Borel gave the first three introductory presentations (under the title "Algebraic theory of $\mathcal{D}$ -Modules"), preparing the ground for the "theorem of the good Lord", the name of Mebkhout was not pronounced in any of these presentations, nor in any of the following presentations (except for a single "thumb reference" by the way, in Brylinski's presentation). According to the report that I have just received from Mebkhout, this Colloquium, where Borel played the conductor (in place of Deligne, who was not at the party), was a true reissue of the Colloquium Perverse which had taken place four years previously. There was "the mafia" almost in full force: Verdier, Brylinski, Laumon, Malgrange and even (this time) Kashiwara (who already had a leading role in the Zurich seminary, notwithstanding the detailed information that Mebkhout had comm

Rather than stupidly drawing up a list in alphabetical order (something a computer would do better than me), I prefer to give the names of the faithful, echoing my funeral, in approximate chronological order; not according to the moments of their appearance at the Funeral ceremony (which are most often not known to me), but of those when I became clearly aware of their participation. I will also set aside all of my students (*). With the exception of Mrs. Hoang Xuan Sinh, working in Vietnam and definitely a little far away to lend a hand to my Funeral, there is not a single one of my students who, in one way or 'another, participated in it.

I have already explained myself on this subject in the note "The silence" (no. 84) and at the beginning of the note "Coffin 1 — or the grateful D-Modules" (no. 93), and this is not the Instead of coming back to it, it is in the case of each of my students that a thorough explanation of what happened seems most desirable to me.

The "choruses at my funeral" are placed in the most diverse pitches. I have identified four main ones, which give me a first-class and very stylish polyphonic funeral! There is the "discreet and effective" boycott opposed to any attempt to develop math-ematics with a Grothendieckian flavor. There is discourtesy and lack of delicacy, such as I had not encountered in the mathematical world before my departure; In

about the character). Needless to say that (any more than at the Zurich seminar) it was not considered useful to ask Mebkhout to give a presentation, and that (apart from occasional interventions by this same Mebkhout, falling into freezing cold) the name of the ancestor was not pronounced (apart from his presence in the unfortunate "Grothendieck group"). The theory of biduality still continues to bear the name of "Verdier's du-ality", including in Borel's presentations. Mebkhout had nevertheless reminded him insistently last year already that this biduality had been copied from presentation I of SGA 5 - but apparently Borel has developed an allergy against a certain style and against a certain absentee, an allergy which prevents him from holding take into account this kind of references... He also made himself part of the same scam in his book "Intersection Homology" (Birkhauser Verlag, 1984), published after Mebkhout pointed out Verdier's deception to him.

I had maintained a presumption of good faith towards Borel to the extent possible, having known him well in the fifties, when we were both part of the Bourbaki group and there we worked together. He is the first, among the members of what I truly consider "my original environment" in the mathematical world, whose direct participation I must note today, without any possibility of doubt, and at the "fraud" level. , the funeral.

(*) When I speak here of "my students", I mean those who worked with me on a doctoral thesis and who (with the exception of Deligne) completed a doctoral thesis with me. There are fourteen (including two "after my departure"), reviewed in the note "Jesus and the twelve apostles" (n^o 19).

one or two extreme cases take the form of barely veiled derision. There is the deliberate intention of ignoring or minimizing the influence of my ideas and points of view in his personal work, or in a particular part of contemporary mathematics, in cases where this influence is nevertheless obvious and crucial, or to 'attribute to a third party results or ideas which are due to me without possibility of doubt. Finally, there is the attitude (known as "the ostrich", among those who are unfortunately confronted with an eye-popping scam), to hide their heads in the sand and act as if they saw nothing. nor felt.

Needless to say, in the choir of the faithful, there is more than one who vocalizes on several pitches at the same time.

All that said, here is finally the promised list (*) to enrich our family album: B.

Eckmann, A. Dold, NA Campo, B. Mazur, V. Poenaru, DBA Epstein, P. Cartier, D.

Quillen, N. Kuiper, R. D. Mac Pherson H. Hironaka, F. Hirzebruch, J. Tits, S. S. Chern, M.

Artin , Langlands RP , Rota GC , Goulaouic C , Fulton W , Borel A , Tate J , Greenhouse JP .

vs. (June 11) I felt a little stupid last night while typing this list of names, when each of the names stupidly lined up there evoked, on its own, a whole rich cloud of associations, none of which shows through here. But there can be no question here of dwelling on each of these names and on what they evoke — that would require another volume, while I can't wait to finish with this one! I apologize to those concerned for "pasting" them like this, a little cavalierly, in a "table" of presence (at my Funeral) which is not very inspiring. It is true that most of them have already been mentioned in one capacity or another here or there during Harvests and

(*) I have not included in this list the names of the eight "non-cohomologist" students, who will be found in the note (n^y 19) already cited, together with the names of the cohomologist students already reviewed above.

It would be fair to also give in my "Family Album" the names of those among my colleagues or former friends, who are known to me to be "non-burialists", by testimonies of sympathy and esteem without possibility of equivocal. First of all, in relation to my work "A la Pursuit des Champs" continued in 1983 (work to which I intend to return)/ I received warm encouragement from J. Benabou, NJ Baues, A. Joyal, and especially from Ronnie Brown and Tim Porter, who (in more than one way) provided me with effective assistance throughout my work.

It is true that these colleagues are part of an environment quite different from that with which I used to identify, which is also the environment in which my masterful Burial was placed quite naturally, as mathematicians who are part or are close to this environment, and from whom I have recently received (during the past one or two years) testimonies to the same effect, it is a pleasure for me to name here B. Lawvere, J. Murre, D. Mumford , IM Gel'and and (last not least!) JP Serre. It is this last name who has the unique distinction of appearing on both "lists" at the same time — those of "buriers", and that of faithful friends!

sowing, even if it was not necessarily as a participant in my funeral. There are four of them who are part of my friends from the Bourbaki group, and to whom I was closely linked, through work and (for two of them) through ties of friendship, already thirty years ago. years and older. There are nine others still, in this concise list, to which I felt linked by feelings of warm friendship, and which have not yet died out as I write these lines. But more than once, over the past years, finding myself confronted with one of these friends of yesteryear, or with one of those who were my students, I was seized by this strange impression, that* the one towards whom I still felt this surge of sympathy that I found in myself intact, was no longer - or at least, the contact with that one was lost, irremediably perhaps; that another had replaced the one I had known, full of intense and quivering life, and seemed to have erased all traces of it. It was like a drying out, a desiccation that had taken place, and a hard and waterproof shell that had appeared, where there had been sensitive and living flesh...

Before closing this family album that I have only just opened, I would like to focus a little more on just one of those that I have just inserted there, in a rush. This is the one that comes last in this album. Even more than for any of the others that I ended up including, there was serious resistance in me (unconsciously, of course) to separate myself from certain ready-made and old images concerning our relationship, and to return to humble evidence. This is Jean-Pierre Serre.

More than once during *Récoltes et Semailles*, I had the opportunity to speak about Serre, most often by name (*). The little that I have said here and there will have already been enough, I think, to make people feel that he played a role in my past as a mathematician that belongs to no other. This is something that I had never stopped to think about before writing *Harvests and Seedlings*, and that I discovered throughout the pages. For twenty years, from the beginning of the fifties until my departure from the mathematical scene, he played for me the role of "privileged interlocutor" (*), and most of my major ideas

(*) I refrained two or three times from naming Serre, in *Fatuité et Renouveau*; at a time therefore when it did not seem useful, most often, to name the people about whom I expressed myself in a somewhat critical manner. The passages from *Récoltes et Semailles* where I express myself in the most detailed manner on the subject of Serre and the relationship between him and me, found in the notes "The nine months and the five minutes", "Brothers and husbands — or the double signature", and "Useless details" (notes n°s 123, 134, 171 (v)).

(*) Between 1965 and 1969, while the relationship between Serre and I always remained close, it was rather Deligne

Large investments were directly stimulated by Serre's ideas (sometimes "innocuous in appearance"). At certain times, especially (I think) in the second half of the fifties and perhaps again in the early sixties, there was a sort of intense mathematical "symbiosis" between him and me, who were of similar temperaments. complementary mathematics (**) — symbiosis which has proven to be very fruitful each time. The relationship between Serre and I was not of a "symmetrical" nature, for example Serre was in no way inclined, as I am, to rely on one or more "privileged interlocutors" to keep up to date what might interest him or what he thinks he needs. This does not prevent (at least I presume) that I must have played an equally exceptional role in his past as a mathematician, and I can imagine that my unexpected departure, in 1970, was a point of departure in his mathematical life. rupture (of a certain balance perhaps, where I represented the "yin" pole), a sudden turning point, by a sort of "emptiness" suddenly appearing. I do not know...

Still, this close relationship between Serre and my person and my work was surely perceived in the mathematical world, even if it remained in the domain of the unsaid. Surely, apart from Deligne, Serre was rightly perceived as being the mathematician "closest" to my work. Deligne's relationship to my work and to my person was very different — it was a relationship of student and "heir". Deligne was nourished by my thoughts and my written and unwritten work, while none of my great ideas and none of my great investments were aroused or stimulated by him. He was "closer" to me than Serre, in the sense that during the years he spent in contact with me (1965–69), there were no reactions of rejection towards certain people. aspects of my work and my approach to mathematics, as there were in Serre; this is what allowed him, in the space of barely three or four years (given his exceptional means, and exceptionally favorable circumstances too), to assimilate intimately and in its totality the vast unifying vision which was born and developed in me over the previous years. But his relationship with me was deeply ambiguous — and he systematically played on this tacit relationship

who played the role of privileged interlocutor. The reason for this is surely, in very strong affinities of temperaments, and above all, in an openness of Deligne (towards what I felt was the essential of what I had to bring) which made often lacking at Serre. I return below to the very different nature of the two relationships, which were the two closest in my past as a mathematician. See also the note cited in note b. from p. following.

(**) On the subject of this complementarity, and on the affinity between Deligne and me, see the note already cited "Brothers and spouse — or the double signature" (n^o 134).

of student and heir, who represented for him the means of power, while denying it and working to bury both the master and his vision...

There was no ambiguity of this order in the relationship between Serre and me - at no time was there in this relationship, on either side, the slightest desire to gain "power" over the other, or that of using this relationship for power purposes. I believe I can even say that such power games did not exist in the "Bourbaki milieu" which welcomed me at the end of the forties, and I do not believe I was a witness, much less a co-actor (even in spite of myself) in such games, until the time of my departure in 1970 (*). Another way of probably saying the same thing, concerning the relationship between Serre and me (or the relationships that I was able to observe within the Bourbaki environment): at no time did I detect the slightest component of antagonism. (**), on either side. There has been occasional friction, to be sure, which has been discussed and perhaps

(*) I should, however, make a reservation, taking into account a certain game that was played, entirely without my knowledge, among some of my students around my person and my work. This game began at least as early as 1966 (the year in which the SGA 5 seminar ended), with as the first clearly visible episode Deligne's article from 1968 on the degeneracy of spectral sequences (see on this subject the note "The eviction", n° 63). I only began to become aware of these games, which are indeed power games, last year, almost twenty years later. It is true that the active actors were not members of the initial environment which had welcomed me and into which I had integrated (an environment in which I still do not discern such games, even with the hindsight that a greater maturity). They formed "the next generation". It is also true that the qualitative degradation that I observe in this succession, in relation to the parent environment, is surely closely linked to a similar degradation which has taken place in each of the members (or almost) of this environment. original, of exceptional quality. On this subject, see the two sections "Bourbaki, or my great chance — and its reverse", and "De Profundis" (n°s 22, 23).

(**) However, I should make an exception here for the episode *Survivre et Vivre*, at the beginning of the seventies. This episode made it clear that my own ethical and ideological options, on many points which seemed important to me (and which still seem so to me today), were at odds with those of almost all of my friends from the mathematical establishment, including Serre. This is what brought a sudden end to my feelings of identification with this "establishment", which I had tended to confuse with an ideal (and idyllic) "mathematical community". (See on this subject the section "The 'Mathematical Community': fiction and reality" n° 10.) This unexpected revelation, and the "change of sides" which resulted in the space of just a few months, made me then led to adopting antagonistic attitudes towards some of my former friends, whom I now tended to classify as "reactionaries", etc. I have since returned from these peremptory and superficial classifications. Still, by a reversal which is not surprising. Serre was one of those whom, for a time, I perceived as "adversaries", if not as "horrible". I was happy to note that this episode left no trace of resentment or enmity in him — nor in me either, need I add!

I will have to come back, but that is something else entirely. The relationship between Serre and I drew its strength, it seems to me, from our only common passion for a common master, mathematics, without any “parasitic” component of an egoistic nature being involved, where the other would appear as a means, as an instrument, or as a target. This is undoubtedly why, in recently resuming a correspondence with Serre interrupted for ten or twelve years, I found in the between the lines of the two or three letters that I received from him, the signs of a friendship and a delicacy intact, as if we had just left each other the day before.

Moreover, even though the opportunity to write had not presented itself for more than ten years, the echoes that reached me from Serre, from far to far away, all went in the same direction of an unchanged friendship. — and not at all in funeral tones, as was the case for many of my friends of yesteryear. This is also why, until these very last weeks, the idea would not have occurred to me that Serre would have played a role at my funeral.

Everything that came back to me about him, and everything I knew about him, seemed to go in the opposite direction. It is also certain that its mere presence on the mathematical scene set certain limits to the Burial (a very modest limit, it must be admitted...). Leafing through JS Milne's book “Etale Cohomology” (*), published in 1980, so after the incredible “operation SGA 4 1/2 — SGA 5”, I was struck to see Milne follow “confidently”, practically textually, the terms in which Serre had expressed himself in a certain Bourbaki seminar (February 1974, n° 446) on the subject of the paternity of ethyl cohomology, namely that the theory had been “developed by Grothendieck, with the help from Mr. Artin” (*). It is visible in more than one way that Milne only occasionally read in SGA 4 and SGA 5 (**), and it follows both

(*) Published in Princeton University Press, Princeton, New Jersey. It is the same JS Milne who, two years later, participated in the scam of the “memorable volume” Lecture Notes 900 (which is discussed in the note “... and exhumation”, n° 168 (iii)) . Leafing through Milne's book, I had the impression that it is written in good faith, and without deliberate intention of burial. Even though in his perception of things he is visibly limited to following in the footsteps of the eminences Serre and Deligne, he nevertheless has the merit (and the originality...) of expressing himself with courtesy on the subject of the mother seminar SGA 4 , SGA 5.

Serre (speaking casually on SGA 4 and SGA 5, in this same Bourbaki presentation) and Deligne (shamelessly debunking these same seminars, in the saw-cut volume of his pen called "SSA 4") to present, in its introduction, the original texts SGA 4 and SGA 5 (***) as being difficult to access. This is precisely the situation that his book (after that of Deligne three years before, a little thin all the same around the edges) is supposed to remedy; or, in short, to avoid the user the useless and tedious work of reading the original texts. The opinion of the highest eminences (Serre first in this case, followed by a Deligne, with a deceased who remains square and mute in his padded coffin...), opinion that a Milne like everyone follows the eyes closed (if not eagerly, given the funerary context...), peremptorily excludes the possibility that these texts present anything other than "useless details" (or even a "gang of nonsense"...), but the foundations of a new "general topology" version topos (buried by unanimous agreement at the same time as the worker...) - and that we will no longer be able, in the long run, to save of this new topology which allowed (among other things) the emergence of the theory dealt with in Milne's book, that it was not possible to create that of ordinary general topology, that Milne, Deligne, Serre had the advantage (just like myself) to learn on the school benches, and which they therefore meekly admit as a matter of course) that the game must

I think it was last year that I first took a quick look at

(*) Two years before, at the International Congress of Mathematics in Helsinki in 1978, in the speech by N. Katz (always the same Katzi in honor of the new Fields laureate Pierre Deligne, the theory of equated cohomology is presented as "developed by M — Artin and A. Grothendieck, in the direction predicted by Grothendieck" — as if Alphabetical order sometimes does things well... The fact that Milne chose to follow Serre, rather than Katz, in his version of things, appears to me to be one sign among others of his good faith.

(**) I was struck, in particular, that Milne (no more than Mebkhout, who was nevertheless an attentive reader of my works...) noticed the existence in SGA 5 of a formula of Lefschetz explicit, for general cohomological correspondences on an algebraic curve, a formula brilliantly evaded by the care of the two conjurer-con artists Deligne and Illusie - the work of an artist, it is true to say 1 See on this subject the two subnotes "The conjurers — or the soaring formula" and "Congratulations — or the new style" (n^os 1698, 1699).

(***) As for the published version of SGA 5, which (thanks to the "care" of the editor-sic Illusie) represents only a disfigured ruin of the original seminar, Milne has excuses for finding it "difficult to access". The good Samaritan Illusie did everything he could to make it (following the good pleasure of the good Samaritan Deligne) an indigestible collection of "technical digressions"...

this Bourbaki presentation by Serre, on which I spoke recently, in the note “Useless details” (n^o 171 (vī), part (a), “Packets of a thousand pages...”. The passage where Serre ironically about the 1583 pages of SGA 4 had then held my attention so little, that I had even completely forgotten the thing, when I took this same presentation in my hands, a month or two ago, on the occasion of the writing of the Four Operations. It must be said that this attitude of distancing Serre from my famous “thousand-page packets” had been known to me for a long time, well before the appearance of the series of seminars SGA 4, and it therefore had nothing to surprise me. The first time (I think) where such a reaction of “visceral rejection” was triggered in Serre, vis-à-vis a certain style of my approach to mathematics was based on the theory of coherent duality, which I had developed in the second half of the 1950s. These were indeed potential “packages of a thousand pages”. at least, especially if we take into account that there was a whole new co-homological algebra at stake, a version of derived categories; but potential or actual “package”, what was clear was that Serre had no more desire to hear about it, than Weil suffered to see a cohomology group written in black and white, or to hear it pronounced the words “topological vector space”.

This time however (*), when I returned to this text by Serre from 1974, on the basis of a year-long reflection on a certain Burial (which, in 1974, had been “going well” for four years) ...), this passage ended up tilting. It worked on me, slowly, over the days and weeks. I realized that this attitude of Serre, to which I had ended up getting used and which, before my departure, “had no consequences”, acted as a sort of green light for the Funeral which took place. The first thing in this sense that appeared to me, with the force of evidence, is that the very terms of Serre (but “with malice and impudence in addition”), were eagerly taken up by a Deligne (or to put it better, with a secret delight) barely three years later, as “background noise” for his memorable Maneuvers.

I express myself for the first time in this sense, in the note already cited, of May 4, and this reflection deepens in part (c) (of May 27) of this same note, “Things which resemble nothing — or drying out.” This is also the first beginning of a reflection on the relationship between Serre and me. in the special light provided by the Burial *). In

(*) In fact, it was only the third time I had this text in my hands that it “finally clicked”.

writing these pages, there must have already been in me a diffuse perception of the crucial role played by Serre in the Burial. In the two weeks that have passed since then, the work of integrating and assimilating a whole range of facts and impressions has had to continue, and the forces of inertia opposing a direct and nuanced perception of the Things were resolved, I believe, without a fight and without effort. The moment seems ripe to complete this work, now trying as best I can to formulate who is perceived.

One might think that this old propensity in Serre, to distance oneself from certain aspects and certain parts of my work, would have acted as a sort of unfortunate coincidence, which would, alas, have favored an equally unfortunate Burial. . However, this would be a superficial vision, which in no way touches the heart of things - To get straight to the heart of the question, it became clear to me, given Serre's unique relationship to my person and my work, and also given his exceptional influence over the mathematicians of his generation and those who followed, that the Burial could not have taken place, if there had not been in him a secret acquiescence in my burial.

In addition to a “deceased” who was definitely absent, there were two main actors in this Funeral, whose acts and omissions were linked together and completed, without the slightest friction or blunders it would seem (but without However, for me, it is a question of speaking here of a collusion, as the two protagonists operated on different pitches): they are Pierre Deligne, and Jean-pierre Serre.

The first was discussed at length from the very beginning of this long reflection on the Burial; he represents “the forefront of the picture” of the Burial, as Grand Officiant at the Funeral, at the same time as the occult heir and the main “beneficiary” of the operations of which he has the initiative (and this, even before the symbolic “death” of the deceased...). Serre, who is discussed here for the first time as a leading character in the Funeral ceremony, represents the “third plane of the picture”, made up of “the congregation of the Faithful”.

Since last year already, or to put it better, even before I discovered Burial in its crudest and most aberrant forms (and under that name), I knew well that those who buried me with such eagerness, in a world where I had not

(*) In a previous note by b. from p. (note (*) page 1117) I also noted two other notes where I expressed myself about the relationship between Serre and me, but in a rather different light — the “before the Funeral” light.

not known enemies, were above all others my friends of the past, and some of whom had not ceased to count themselves (even if only with lip service...) among the number of my friends. Now, it is also clear to me that, among those of these friends who were also (and above all) my students (*), the one who was truly the pillar of the ceremony, as representative of the Congregation and as guarantor of the acquiescence of all the Faithful, was also the one, among all, who at the level of our common passion, had been closest to me.

The most striking sign of Serre's acquiescence is certainly not for me in a certain joke, sent with the casualness that I know him well - this joke which almost escaped my attention (even if it did not not been lost for everyone...).

The sign, truly astonishingly obvious once I stop at it, is for me in the ignorance in which he was pleased to remain, concerning this Burial which was taking place right under his nose, it is the case to say it (**) — the burial of a work

(*) Throughout the reflection in *Récoltes et Semailles*, it appeared, more and more clearly, to what extent the mere fact of having been a student of someone (of me, in this case) marks a relationship and gives it a particular quality, making it close to the relationship with the father or mother.

(**) We can say that in his already cited Bourbaki presentation from 1974, where he presented Deligne's demonstration of the last part of Weil's conjectures. Serre had his nose right in the Funeral — without, however, having the innocence to take note of it. I thought I sensed the discomfort in him, to see himself confronted with this apparently aberrant situation: that ten years after my presentation (also at the Bourbaki seminar) where I gave the broad outlines of the demonstration of a cohomological p -adic formula of L functions, the crucial “fixed point formula” (which I had admitted there) was still not demonstrated in the literature.

Serre then chose to evacuate this unease with a mood, ironically about the famous “1583 pages” of SGA 4 (implied: and which did not even provide the formula we needed), it was there is the easy way out, consisting of evading an unpleasant reality.(x). However, he knew very well (but perhaps he had liked to forget it...) that in the SGA 5 seminar, I had demonstrated at length a formula for fixed points going far beyond that for the correspondence of Frobenius — and he also knew that the writing of my presentations had been dragging on for eight years already in the hands of so-called volunteer “editors”. If he had liked to forget the theme of SGA 5 (“ L functions and p -adic cohomology” — the title still says what it should say) and its content, he nevertheless knew me well enough, for more than twenty years since he had seen me do math, to know that it was not my habit to do things half-heartedly, quite the contrary (and I even did them so much “not half-heartedly”, that he was often annoyed, even exasperated...). This could have helped him refresh his memories of what had happened at the SGA 5 seminar, where he had visited often enough, at least, to know in broad terms what I was doing there and what I had.

Obviously, he didn't want to see his memories refreshed or to ask questions. And this is one case among many others, where my friend preferred to close his eyes and hold his nose, rather than become aware of a reality that he could not accept without deeply questioning himself. even.

with which he had been linked from his origins, and more closely than any other person in the world.

And it is for me a total mystery if reading *Récoltes et Semailles* (assuming that he reads this “package” of more than a thousand pages, again...) will finally encourage him to use his nose then that for fifteen years already it's been hard...), and the rest. But I know well that for him, as much and more than for any other participant in my funeral, accepting my message and making use of his healthy faculties also means agreeing to question himself, deeply.

It appears to me that the role of Serre, at the head of the Congregation of the Faithful who came to attend and sing at my funeral, is both typical and exceptional. If he is exceptional, it is because of his extreme character — as the closest to me, closer than any other member of the Congregation; and also by its exceptional stature (*). This eliminates from deep motivations the usual “parasitic” components of antagonism “by compensation” (**). As I have already pointed out earlier, I do not detect in Serre's relationship to

(x) (June 22) I have been able to realize, since these lines were written, that this kind of “unpleasant reality” is nevertheless now welcomed with eagerness, almost like a godsend! See on this subject parts d. summer. from “The Family Album”.

(*) There is a third circumstance which gives Serre's role in the Burial this exceptional, or “extreme” character. He is part of the group of “benevolent elders” who welcomed me during my first contact with the world of mathematicians. (On the subject of this group, I express myself, for the first time in my life, in “The Welcome Stranger” (section no. 9), then in the Introduction to *Récoltes et Semailles* (I 5, “a debt welcome”).) This is perhaps the main reason, in addition to the bonds of friendship and sympathy between us, which made it take me more than a year to go to the evidence and note the crucial role played by Serre in my mathematical burial.

(**) I have already alluded two or three times, here and there, to this “antagonism without cause” (apparent), and notably in the note of April 3 (below) “The messenger (2)” (n° 182). There is no doubt in my mind that such an “archetypal” antagonism is at work in the vast majority of participants in my funeral — perhaps even in all of them, with the sole exception of Serre. This force appears to me to be distinct from that which is expressed by the process of repression (or “burial”) “of the disowned woman who lives in herself”. But these two forces are nevertheless intimately linked, and in the Burial they are linked and appear in a sort of amalgam, where it is often difficult to dissociate them. However, I believe I have identified in them the two great forces which were at work in the Burial. But I would be hard-pressed, now, to say whether there is one which is primordial over the other, and which one. I would tend to think that it is the first of the two that I detected, namely, the force of repression of the feminine side in one's own being.

If the case of Serre appeared to me at times “typical” (at the same time as exceptional), it is undoubtedly because it is the latter among the two forces present (the one that I tend to see as primordial) which appears there in all its force, to the exclusion of any trace of the other (qualified here as “parasitic” — in the sense that it would obscure a clear apprehension of what I thought I perceived as the essential) . I presume (for a little

my person or my work the slightest trace of antagonism, and it is clear to me that there is no trace at the level of the deep forces at work in his acquiescence. as far as I know, apart from the famous joke, this acquiescence was expressed in a purely passive manner only, through omissions and nothing more. But this tacit "green light" given to a Burial of vast dimensions, accompanied by operations so enormous sometimes that they seem to define both common sense and decency, appears to me now as the essential "pendant" and crucial, the "negative" in a way, of Deligne's intensely active and interested participation in this same Funeral (*).

that a work of integration and assimilation of raw facts and perceptions continues to continue) that the coming months will bring me a more nuanced understanding of the part which belongs to one or the other force present, both in the Funeral, and in other conflict situations in which I am involved in one capacity or another.

(*) There is here a rather remarkable inversion in the distribution of roles between Serre and Deligne, in the Burial: that of Serre appears as almost exclusively passive, that of Deligne as intensely active (even if this role of "playmaker" is constantly obscured, for the needs of the cause and in accordance with the particular style of my friend Pierre). In fact, however, it is Serre's person who is strongly "masculine" dominant, and Deligne's person who is equally marked "yin" (or "feminine") dominant; and this (for both) as well at the level of egoic mechanisms, of the "me" and its conditioning (thus that of the "boss"), as well as at that of the drive for discovery, of this which is original and escapes (in its intimate nature) conditioning (the level of "the child"). Between the extreme opposite temperaments of Serre and Deligne, the two "pillars" of the Funeral, the deceased represents a sort of middle term, with a strong "masculine" dominance on the "boss" side, and a predominantly "feminine" just as strongly pronounced on the "worker" (or "child") side. (This distribution of "basic tones" appears in the note "Brothers and Husbands — or the Double Signature," n° 134.)

The forces and mechanisms of "reversal" between the yin and yang roles were also the main theme of reflection, giving birth to the long meditation "The key to yin and yang" and remaining present implicitly throughout. this one. It appears implicitly from the first note of the Clef, "The muscle and the guts (yang buries yin (1))" (n° 106), and moves more or less to the forefront of attention in eleven among the later notes (notes nos . 124, 127, 132, 133, 138, 140, 145, 148, 151, 153, 154). Here, I have just unexpectedly come across a somewhat similar "reversal" situation, driven by the internal logic of the deep forces at work in the Burial.

I was struck, moreover, recently, by yet another aspect, apparently paradoxical, of "reversal" of yin and yang roles, in this Burial rich in apparent paradoxes! This time it is about the respective roles of the "premature deceased" on the one hand, and of all the participants in his Funeral, on the other. At the level of collective unconscious intentions, this Burial of a deceased person (supposed to be confined in the complete passivity which befits his state) is that, above all else, of "mathematics in the feminine" -

It seems to me to have keenly perceived the force that was at work in Serre. It is at a deeper level than that of personal antagonism, or that of the search for "benefit", in the common sense of the term. The recent exchange of letters with him was revealing in this regard. I feel that in these fifteen years which have passed since my departure, a transformation has taken place in my friend (*). This goes precisely in the direction of this "visceral reaction of rejection" towards certain dominant aspects in my approach to mathematics. These are aspects which were also present, but to a less pronounced degree, in the approach of Serre himself, in the most fruitful years of his past as a mathematician — years of openness and intense creativity, before a process of repression of these aspects of his creative personality, of the "child" in him, takes place. These are the "yin", or "feminine", aspects and traits of creativity. The transformation that I felt in my friend, with striking force, is that of a state of harmonious cooperation of the creative forces yin and yang, with a pronounced "dominant" yang (or "masculine"), in a state of

a style and approach to mathematics with strongly "feminine" connotations; while the burial Congregation is supposed to embody "pure and harsh" virile values, devoting the soft feminine decay to appropriate disdain. (See for example, on this subject, the notes "The funeral of yin (yang buries yin (4))", and "The providential circumstance - or the Apotheosis", n° s 124, 151.) However, the logic internal to the situation obliges each of these "pure and hard" participants in question to play a typically "yin" or "feminine" game: a "velvet paw" game, in halftones, in silences, omissions, insinuations placed there casually, where we constantly suggest a certain thing while pretending to say the opposite - the "thumb!" style, in short, where my friend Pierre is the master among all, and each of the buryers must have had so much or can make it his own, by force of circumstances. (See, on the subject of this style, the note "Pouce l", and especially the notes "Patte de velours — or the smiles" and "The reversal (4) — or the marital circus", n° s 77, 137, 138.) It is the "deceased" on the other hand, the incarnation of the plethoric feminine softness, who emerging from his cozy coffin at the moment when we least expect it, suddenly takes on a "macho" role which was familiar to him, laying cards on tables, sticking his indiscreet nose and an impertinent verb, electric torch in hand, in the most exquisitely ambiguous twilight, rudely calling everyone by his name and a spade a spade and a rascal a scoundrel - a real misinterpreter for everything say, and a fierce preventer from going around in circles in the hushed purrs of a beautiful Funeral o

(*) This expression "transformation" is immediately associated with the "metamorphosis" in my friend Pierre, which I clearly perceived, for the first time, during his visit to my home last October. (I express myself on this subject in the note "The disavowal (2) - or the metamorphosis", n° 153.) The term "metamorphosis" is stronger, and corresponds to the fact that there was, in my friend Pierre, a real reversal of an original temperament with a pronounced "dominant" yin, into borrowed "macho" attitudes with a bit of zinc. This aside, the transformation that I felt in both friend goes in the same direction, and is driven by the same force of repression of traits perceived as "feminine".

of “virile-to-zinc” imbalance, where “yin” or “feminine” qualities are mercilessly extirpated.

To tell the truth, as I already suggested two weeks ago (in the note cited earlier), this is the culmination of an evolution of which I detected the first signs in the 1950s, and which increased during the 1960s. From this moment on, there has already been a gradual disruption of balance, manifested by a narrowing in vision, and in the range of creative faculties allowed to come into play. The reactions of rejection towards certain major aspects in my approach to mathematics, and progressively, towards everything that really gave life, depth and strength to my work - this rejection was only the projection towards the outside, the tangible manifestation at the level of his relationship to me, of a rejection of a completely different scope, with regard to an essential aspect of his own being and his own creative faculties.

It is possible (as I suggested earlier) that as long as I was around, the relationship with me acted as a brake in this evolution in Serre, that it represented in his life, in the fifties and especially in the sixties, a sort of counterweight, and thereby, a factor of relative balance. If this is indeed so, my sudden departure must have given free rein to this force of repression of feminine qualities - a kind of force which has become familiar to me, as one of the dominant egoic forces which also acted in my own life ; with this remarkable difference, however, that in my case this force of repression was confined solely to the level of egoic mechanisms and my relationships with others. without interfering with my love affair with a mathematical lady, nor (more generally) with my spontaneous approach to the adventure of discovery, whether mathematical or otherwise (*).

To return to the Burial, I cannot do better, at present, than to quote here the lines which end the reflection of November 10, in the note “The funeral of yin (yang buries yin (4))” (n 124, page 564):

(*) I speak about the role of this force of repression in my own life, in the note “The superfather (yang buries yin (2))”, n 108. I began to detect this force in 1976, the year which marked a crucial turning point in my spiritual adventure. This turning point is discussed in the two notes “Reunion (the awakening of yin (1))” and “Acceptance (the awakening of yin (2))”, n s 109, t10. I note the predominance of “feminine” traits in my mathematical work (where said traits seem to have taken refuge, sheltered from all suspicion!) in the note “The rising sea...”, n 122.

"... And this funeral suddenly appears to me in a new, unexpected light, where my person itself has become accessory, where she becomes a symbol of what must be "delivered to disdain". It is no longer the funeral of a person, nor of a work, nor even of an unacceptable dissidence, but the funeral of the "mathematical feminine" – and even more profoundly, perhaps, in each of the many assistants. come to applaud the Eulogy, the funeral of the disowned woman who lives within himself."

This last intuition appeared in a sudden flash that day, at the very moment of writing these last two lines, coming there as an unexpected revelation, in addition to that which was the subject of the previous lines. This intuition remained as if implicit in my reflection during the weeks that followed, to be finally taken up and deepened in the three consecutive notes from December 23 to 26: "The providential circumstance - or the Apotheosis", "The disavowal (1) — or the recall", and "The disavowal (2) — or the metamorphosis".

Neither on the day on which this intuition first made its appearance, nor in the first two of the three notes cited, where I probe it further, did I have in mind a precise case of species, except It is, somewhat, that of my friend Pierre (examined in more detail in the third note cited). I knew well, moreover, that this case was in no way typical for the entire Congregation of the Faithful, forming the famous "third plan" at my Funeral. Also, for lack of being exemplified in a specific case, my apprehension of a certain reality, suddenly glimpsed, remained still tainted by a certain vagueness - that of things anticipated, "known" at a certain level, but not fully and clearly "seen".

I vaguely remember being a little embarrassed by this vagueness, that there was a desire to find someone "representative", among those of my friends whom I knew to be involved in the Funeral, to There, in a way, "hang" this diffuse knowledge, seeing it incarnate into a tangible reality.

The thought of Serre did not cross my mind at any time then — he was one of the rare few among my friends from yesteryear, for whom it was well decided (on a conscious level, at least) that he, at least, would not was not involved in my Funeral! But if my groping thought did not find then (nor before already...) the one who, at my Funeral, was to embody, in his person "the entire Congregation", it is undoubtedly that somewhere in me, it had to be very clear that there was only one person in the world capable of playing this role - and that it was the person, precisely, that a heaviness in me had made me exclude

from the outset, by a sort of tacit and peremptory taboo...

Now that this gravity has dissipated, following a slow and obscure underground work, it now appears to me in full light that this is also the one, among all, to whom this intuition-?i -the-search-for-an-incarnation is applied in such a perfect way that one could believe that it was none other than the same one who would have made it arise in me and who would have given, from the very moment it appeared, this peremptory and unanswerable force of "known" things (*).

d. (June 17) The reality each time goes beyond any presentiment (however acute it may be) and even the "knowledge" that we can have of it — and it is only by coming into contact with it, at the bend of the road and most often unexpectedly, that I gradually absorb its taste and smell.

Even though this contact could seem to simply confirm, without more, what was anticipated or "known", very often it disconcerts, it unceremoniously shakes up a certain, almost ineradicable, disbelief with regard to this very thing which is beautiful. and well known, said, written, re-said and re-written - and yet, at a certain level (that of immense gravity), continues to remain a dead letter. More than once I detected this heaviness (*) and my impatience was irritated by it - an obstinate heaviness which tenaciously would like to keep me in the rut of familiar ideas and images, or of those which have a more or less general assent - and this, even though I also "know" well (or someone or something else in me knows well...) that these well-established ideas and images are an illusion, an obvious illusion often, that they do not stand up... Thought, even animated by an intense desire to know the end of the matter (of the thing both "known" and challenged) — thought is powerless

(*) I am even inclined to think that this "one might believe" does indeed correspond to the reality of things. This would attest, once again, to the extent to which our faculties of knowledge go beyond the pale and paltry reflection to which we allow access to the narrowly delimited field of the conscious gaze.

(June 14) The thought, or sudden intuition, which completes the reflection of the day before yesterday, also appeared in "flash" at the time of writing, without apparent preparation or inclination to examine. She presented herself with a sort of "force of the obvious". It was only afterwards that I remembered that in the note which immediately precedes the one from which the extract is taken. the passage quoted from November 10, I had the opportunity to evoke in a fairly detailed manner the person of Serre and the relationship between him and me (and this for the first time, moreover, in *Récoltes et Semailles*).

(*) See also, on the subject of this "gravity" and this "disbelief before the testimony of his healthy faculties", the note "The duty accomplished — or the moment of truth" (n^o 163), p. 782 to 784, and in particular the note of b. from p. (**) p. 782.

alone to erase this gravity, deeply anchored in the structure of the self. it is only the peremptory force of direct contact with reality that can sometimes shake up this gravity, undermine it or move it a little, if not really erase it.

I called Serre yesterday, it was for a simple question of information, about Tate's notes "Rigid analytic spaces", which was discussed recently (**). I vaguely thought I remembered that there had been a short introduction to this text, mentioning the sources of this work - it seemed to me that this introduction had "skipped" from the edition produced by *Inventiones Mathematicae*, in 1971. Actually. Serre confirmed to me that in Tate's notes there was no such introduction. They were a bit of day-to-day notes, which Tate had sent to Serre on his rigid-analytic cogitations, almost like letters, and (of course) without any fixed idea of publishing them. I remembered having taken care to have them distributed by IHES (with the subtitle "Private notes published with (out) his permission" — after the name of the author), but I had forgotten that Serre had been an intermediary. In any case, apart from Tate and me, it was Serre who had been the most "in on it", in the birth of rigid-analytical spaces, in 1962. It was he who explained to me, perhaps a year or two before, the theory of so-called "Tate" elliptic curves, on the field of fractions K of a complete discrete valuation ring. I had been a little stunned by what I remember as a flood of explicit (and, it seems, "classic") formulas, which went over my head a little, without "catching". But there remained a striking geometric image, surely sparked by a comment by Serre along these lines: that in short, Tate's elliptic curve (or, at least, its "points") was obtained by "passing to the quotient" in the multiplicative group $K^\times$ by a discrete subgroup isomorphic to $\mathbb{Z}$. It was therefore the analogue of the complex case, where we divide $\mathbb{C}^\times$ first by a first factor $\mathbb{Z}$, and then again by a factor $\mathbb{Z}$, to find this time an elliptical curve.

to find $C/\mathbb{Z}$ In this

case, the passages to the quotient had a precise meaning, in the complex analytical domain, and the Riemann-Serre theorems (GAGA type ensured that the final quotient (which was a compact complex curve) had a canonical structure of algebraic curve.

In Tate's case, alas, working in the context of somewhat familiar analytical spaces, on the complete value field K , we found as a quotient a totally discontinuous compact analytical space, and there was no chance of extracting from it an elliptical curve.

And yet (that's what Serre must have told me then) everything was happening, as if... All-

(**) See the note "La mafia" (n° 1712), part (c1), "Failing memories — or the New History".

days is it that Tate managed to create, in terms of $K\bar{y}$ and its discrete subgroup, a real elliptic curve, using explicit formulas.

I seem to remember that neither Serre nor Tate believed that there would indeed be an “explanation” in terms of a new notion of “analytical variety” on K , for Tate's computational construction. As for me, it clicked straight away, and there was no question for me of “seeing” the Tate curve other than as the result of a transition to the quotient, for a notion of suitable “variety” which remained to clear — the kind of work, precisely, that I have a crush on! It is quite possible that it was also Serre, skeptical as he was, who pointed out to me that there were people, and at least Krasner, who were “doing analytical extension” on complete ultrametric value fields, therefore totally discontinuous. This could therefore seem to add grist to the mill of my (a little crazy) hope that there would be, despite everything, a “good notion” of analytical variety, smarter than the one we knew and close to (by “connection” type properties) of real or complex analytical varieties, or even algebraic ones. But once again, I was the only one really, in the trio, who believed in it — at least that was the impression I had then.

It continued to run through my head for months, maybe a year, I can't say anymore. The situation reminded me of an old perplexity - the impossibility where we were, in the conceptual context then available (using ringed spaces, like diagrams and formal diagrams) to give meaning to the generic fiber of a formal diagram on the ring of discrete valuation envisaged A . It soon became clear that it was essentially the same perplexity — and that the kind of “manifolds” I was looking for to make geometric sense of Tate's construction must be this one even which would make it possible to give meaning to this famous “generic fiber” which still does not exist. I finally had a third common thread (in addition to the rumor concerning Krasner), which appeared in 1968 — it was the intuition of “generalized topological spaces” (which then had not yet received a name such as site or topos, since I had not started conceptual work on parts), which was to make it possible to define the famous “Weil -adic cohomology” entering (implicitly) into Weil's conjectures. This suggested to me that, just as for Weil cohomology, the new “kind of structure” that I was looking for should not be sought in the eternal ordinary “ringed spaces”, but perhaps in these “generalized spaces”. , fitted with a bundle of suitable rings.

I can no longer say when these scattered intuitions ended up being strong enough and con-

to push me to take a break from my current tasks (especially the EGA and the SGA), to begin an embryonic work on parts. What I know is that this work was done, as most often, in solitude — I was the only one to “see” that it there was something, and also the only one, therefore, who was able to do the first work, which would bring it to light. I remember I started thinking about it for a few hours here, a few hours, even a whole day, a bit like I would have skipped school (although there was no shortage of “routine” work ¹). One day I ended up taking my teeth in my teeth, to be clear about it, and to tackle it for good — I had to spend at least a few days in a row, if not a week or two. The hardest part was to manage to overcome inveterate habits of thought, which constantly seemed to want me withdraw into the rut of the known — that of “ordinary” analytical spaces (now said, I think, “flasques” — or “welk”, in German). I had to try again three or four times times — to come out of the rut, when I saw that I had returned to it, like a horse to its stable ! But definitely, here, it's not the old man who was going to do the trick...

At the end of this work, I was clear: modulo additional technical work, which I was not then motivated to do, I had set up a notion of “space, rigid-analytic” (this is the name I gave it, to express with the word “rigid” properties like connectivity, close to algebraic varieties and the antipodes of those of so-called “flabby” analytical varieties) sufficient in all case to meet both desiderata

which were then in my mind: to give an interpretation', in terms of these spaces, of the construction of Tate, and of the generic fiber, of a formal diagram.

I did not then think of looking further, in a hurry as I was above all to return to the tasks that I had temporarily neglected. If I had played a little more, I would have quickly realized that spaces as simple as closed crowns $r = r = R$ (which they too deserved a “rigid-analytical” structure) escaped my construction. It is Tate, whom I had informed of my thoughts of course, who made the adjustments he necessary, to be able to include them. Apart from the conceptual work itself, which I had mostly done, there was also work of a more technical nature to be done, to have good control over the “building stones” used, playing the role of diagrams affines. It is the work that is done precisely, with the elegance and care that characterize it, in Tate's 1962 notes (*).

(*) To put things in perspective, I think I can say that both my work and that of Tate represent-

It took me a while before I realized that the building stones I had used were a little short at the edges. They were enough for both

were stages, each as essential as the other, for the emergence of the theory of rigid-analytic spaces. My part had been in the initial vision (which had been lacking both at Tate and at Serre) and in an especially conceptual work, which was by no means exempt from certain technical aspects, which had to be tackled head-on. . The part of Tate's work had been mainly technical, without there having also been a part of conceptual work. My work had a dominant “yin”, “feminine” note (and this is why, in addition to my absence from the stage, it is the object of general disesteem), that of Tate had a dominant “yang” note, conforming to with canons of good taste and good behavior.

If I had not intervened, by pushing my work sufficiently so that there would no longer be the slightest doubt about the existence of a good “rigid-analytical” notion and for a clear vision of a project manager of a theory, it is probable that this notion would not have seen the light of day even today. Indeed, while we could not fail “sooner or later” to discover and develop this notion, which is in no way an “invention”, certainly, its need has not yet been felt, in the twenty- three years which have passed since then, in a sufficiently compelling manner, to “force” the hand to “take the plunge”. I was apparently the first to foresee (in 1966) another field of applications of rigid-analytic theory, apart from the two initial motivations, with the development of crystal cohomology.

I have not been aware of any geometric uses other than the three that I had planned - counting, of course, the generalization of Tate's theory to general Abelian diagrams. It would seem that the people who subsequently “worked on the subject” saw it as material above all to develop the theory in isolation (since it existed, and a consensus ranked it among the “serious research themes”), without inserting it into a larger geometric vision. This is a striking case of the atomization, of the fragmentation of mathematical thought, linked to the contempt into which any kind of work on foundations has fallen, like any work which is not reduced to some technical tour de force, making it possible to solve such a “competition problem”. A particularly eloquent sign is the absence of any attempt to develop a more general notion of rigid-analytical space, which would be to that developed by Tate in the same way that the notion of schema is to that of algebraic variety on a body — so as to be able to link together rigid-analytic geometries on complete “variable” value bodies (and in particular, of variable characteristics, and including both real and complex cases, as well as “ultra-metric” cases). This absence is one sign among many others of the astonishing stagnation of mathematics over the last fifteen years, at the level of all foundational work (visibly crucial, in this case).

Coming back to Tate and me, it is just as likely, certainly, that if my first “breakthrough” had not “twinked” Tate and triggered him for a “second round”, the rigid spaces- analytics would no longer exist! I would have talked about it here and there around me, but as there was never a shortage of juicy questions (including questions that seemed even more “urgent”), it is doubtful that anyone would have stuck to it — and especially not these days, of course, when the very idea of introducing such absurd things would have seemed a little too much like someone who it would be more charitable not to name here...

initial problems that motivated me — so why look any further! I had a hard time letting go. Tate ended up convincing me, in his quiet and careful way, that after all there weren't just these two examples, and that even though I didn't seem to have encountered still circular crowns in my life, that was no reason to exclude them. And there was no way, apparently, to “catch up” with my own building stones (except by using an infinite number of them, which more or less made them fall back into the “flabby” rut).).

I had done my share of the work in my corner, as was normal, so of course I was the only one to believe in it - but that does not prevent, of course, that once I reached the (provisional) end, I did not fail to talk about it to the two main (and practically only) concerned, namely Serre and Tate - At Tate obviously it clicked, and I think that Serre must have been convinced too, when I told him what had I come to. I don't have a precise memory on this subject, but if it had been otherwise, surely I would have remembered it.

So, when I called Serre yesterday, it was obvious to me that he knew, almost as well as I did, what my part had been in the birth of the new notion of variety. I did not anticipate that there would be an opportunity to allude to it, but it was he who pointed out to me, when I told him about Tate's notes, that they had been published *ne varietur* in the *Inventiones*, and that moreover Remmert and two other authors had just released a book devoted to the famous rigid-analytic varieties. This is the book that I had the opportunity to talk about recently, in the note “La maffia”, part (c) “Failing memories - or the New History”, where I accuse Remmert for a “failing memory ” (while even Tate's notes could well have refreshed it), in the service of a bad faith which seemed patent to me. I mentioned a word about it while passing through Serre - I had already had the opportunity, in my last letter to him, to allude to a certain Burial (*), and there was a

(*) It is in the response to this letter (in the last letter from Serre that I received) that Serre cites Siegel's expression, on the “Verflachung” (“flattening”) of contemporary mathematics, on which I comment and continue in the note “Useless details” (n° 171 (v)) part (c), “Things that look like nothing — or drying out”. As I say in this note, Serre had dismissed this impression of Siegel as “unfair” — yet I had the impression that it bothered him a little, that Siegel thought like that. And it is this same term again (without doing so on purpose, surely) that he uses, to also dismiss my allusion to a Burial.

Needless to say, it didn't occur to him to ask me what so he made me say that there was a funeral (I hadn't mentioned a word about it in my letter, preferring to wait for him to ask me) . The cause,

illustration, in my opinion, quite blatant.

The first rather crazy thing is that Serre (God knows if he had been in the front row in time I) - well, he didn't remember either, but then he didn't remember at all, that I had had something to do with these famous rigid-analytical varieties! I was literally speechless! It was really crazy - when I alluded to him about a modest part that I believed I had taken in it, based on the two examples that had triggered me, it was just the opposite that he thought he remembered. Serre: almost that I wouldn't have wanted to know anything about these new varieties, saying (according to him) that with the formal diagrams, we already had everything we needed! I had a hard time believing my ears, at the time (*) — and yet, just a few days before, I had just written a few pages in the most serene way, where there was talk of a certain crucial role, a “pillar” role, that Serre would play in a certain Burial. Well, there for once, I was right there in the Funeral, in front of my nose - at the other end of the phone, and in the very person of this same Serre, very comfortable as it is. is his habit, and obviously in the best faith in the world (And I can't imagine, in any case, Serre in bad faith, and especially when it comes to math...).

I didn't feel like arguing, that's for sure, and Serre even less so, but there was a casual conversation, lasting five minutes or ten. Ten minutes well spent if ever there were, to come into contact with the tangible reality, color, taste, smell and everything of a Funeral which had ended up becoming a little distant, by limiting myself to only looking at paper !

The first thing I had to think of saying was that the very name, “rigid-analytical spaces”, it was I who had given it (intimating, if I did not say it in clear: at a time when I was still the only one dreaming about it, about these things that I called that...). Serre was a little taken aback — obviously he didn't remember it either, but it was also obvious that I wasn't having fun making up stories. But never mind, a name is just a

visibly/was already heard...

(*) Thinking about it afterwards, I understood what distortion had taken place in the memory (a little shaky at the edges) of my friend. As I had taken the formal diagrams as the main and almost sole guide, to identify a definition of a rigid-analytical space (so as to be able to associate a generic rigid-analytical fiber with a formal diagram), he had retained (twenty -three years later) that I would have staunchly maintained that there was no need for a new notion of variety, seeing as “my” formal schemes would suffice for everything. (Shows that memory failures often do things well...) However, already $K \tilde{y}$ (my second common thread) does not come from a formal diagram. In any case, here again, the cause was already heard!

name after all, and so natural all the same... This “so natural” made it clear that it was even so natural, that it no longer meant anything, that anyone with a nose in front of the thing would not could have refrained from calling it just that: “rigid-analytic”. It was, in short, a compliment that my friend gave me without meaning to, about this name - but with the air of “if that's all...!”. Besides, I hadn't published anything about it, right? So there was nothing to say...

I was more and more stunned. Published or not published, for me it made no difference to reality. A woman who carried a child for nine months and gave birth to him and there he is, frolicking and in good shape, someone would tell her that it's not her child, since nothing is published and that 'she's not going to show off the birth certificate - she'll definitely laugh in the face of anyone who makes such a speech to her. To tell the truth, I didn't laugh in Serre's face, which is not my style and in any case, I was still too blown away. I didn't think of arguing either; that Tate himself in his notes made no secret of the part I had taken in starting the theory, something that Serre had apparently forgotten just as much as Remmert (*) — and that in 1972, when I wrote the Thematic Sketch where I alluded to it (**), Serre had not yet pretended to wince on this subject (his memory must

(*) I felt, once again, that “in any case, the case had been heard”. If Tate said he was following “completely faithfully” a master builder I had provided him with, well that doesn't matter — it was only a master builder after all, a vague drawing which means that the first kid who comes along can trace in the sand, a vague Grothendieckian sauce, that's for sure - it was still nice of Tate, really a friend like no other, to take the trouble to mention it.. .

(**) This is the text, dated 1972, presenting a somewhat dry (and not very inspiring) sketch of my mathematical contributions to that date, written on the occasion of my application for a position at the Collège de France (post which was assigned to J. Tits). This text, augmented by more detailed historical comments, will appear in volume 3 of Reflections. This is discussed in particular in the introduction, 3 (Compass and Baggage). In the Thematic Sketch, 5 e), I write:

“Rigid-analytic spaces. Inspired by the example of the “Tate elliptic curve”, and the needs of “formal geometry” on a complete discrete valuation ring, I had arrived at a partial formulation of the notion of rigid manifold- analytical on a complete value body, which played its role in the first systematic study of this notion by J. Tate. Furthermore, the “crystals” that I introduce on algebraic varieties on a field of characteristic $\neq 0$ can sometimes be interpreted in terms of vector fibers with integrable connection on certain types of rigid-analytic spaces on bodies of zero characteristic; this suggests the existence of deep relationships between crystal cohomology in $\text{car. } p \neq 0$, and cohomology of local systems on rigid-analytic varieties with characteristic zero.”

have worked since that time). It would have been a wasted effort anyway, obviously - as long as nothing was published, everything I was going to say would count for nothing...

But the “not published” had clicked, I continued on that – that a major part of my work consisted of things not published, communicated by word of mouth.

I felt Serre still taken aback - this was an idea that seemed a little absurd to him, like a contradiction in the terms “work - not published...”, for him it didn't seem to go together. I said the word “motive”, he jumped on it straight away: there he was going to disabuse me of the ideas I had about the Funeral, and was happy to tell me that two or three years ago, In fact, there was a whole book that had been published on patterns – really, I couldn't complain about the “patterns” chapter!

“And then, you held it in your hands, this famous book?” I asked him (that was good, I had been thinking about asking him this interesting question for a while).

Held in the hands - but perhaps I wanted to laugh, Serre replied, to make sure he knew this book; he even spoke of it as someone who had read it in depth, and in fact he must have read it. I could have dispensed with asking the question if he hadn't found anything in particular - it was clearly not the case, and yet (that's how we are made, I can't help it !) I asked him the question anyway! And since he didn't seem to understand the meaning of the question. I told him that when I took it in my hands last year, I had difficulty believing my eyes.

I had to say the word “scam,” but I felt that was a complete understatement. As I really felt it, and still feel it while writing these lines, it was indecency - but I refrained from reading it. Deep down, I felt that it didn't matter which term I was going to use; nothing had happened for fifteen years since “things were hard” and Serre chose not to feel anything (that's what I had just written a few days earlier), and whatever I said, it wouldn't “would not pass” however.

Serre, suddenly, he was launched, it was almost as if he had only been waiting for that. Scam ? You want to dream, poor thing, but it was Deligne himself who wrote this book and

It's still pure Grothendieck!

nice work again, yes — okay everyone knows very well that it was you who introduced the patterns, but that's no reason to repeat it every time we say the word "patterns", not true? Not to mention that you never published a line, and that your yoga depended on unproven conjectures (I thought I was hearing someone else speaking to me through the mouth of Serre...), whereas precisely the interest of the book is that it doesn't use any conjecture, in fact it doesn't use anything that you had done in the past...

The tone was lively and without reply, of someone who knows very well what he is talking about and who has nothing more to learn - with a touch of annoyance, of the man in a bit of a hurry, taken to task by an oaf who persists in not understanding the most obvious things. It wasn't the right atmosphere to discuss anything at all - everything had already been settled and awarded, obviously. Serre's axioms about the ethics of the profession and what is important and what is incidental had visibly changed — and there was nothing that could be done about it. I had to take it as is, with its new axioms.

So I stuck to "conjectural", in desperation! I could have told him that Weil's conjectures were also conjectural - and yet there was no question for him or anyone of treating them underhandedly - but it is true that these conjectures, Weil took care to publish them! But as I am precisely at the "Sixth nail" (to my coffin) (*) I have rather branched off into the "motivic Galois group"; there was nothing "conjectural" about him, I had developed a whole theory of great precision on the categories of the Galois-Poincaré type, which was one of the basic notions used in this famous book, without him having seemed necessary to make the slightest allusion to my person.

Serre jumped on the allusion, again, there again he would be able to disabuse me of my ideas of Burial - this whole theory, it was, published in black and white in a book, and by one of my students again, Saavedra (**) — wasn't it me who even made him do this thesis? Here again, obviously, it was a book that he knew perfectly well, he had had to refer to it more than once (***). "And so, in this book, nothing has either

(*) This is the group of notes (n^os 1761 to 1767) to which I am putting the finishing touches, and where I unscrew the scam, precisely, around the notion of a motivic and of Galois-Poincaré-Grothendieck categories (baptized "Tannakian" for the occasion) — scam mounted by a Deligne and (at first) by the "pawn" Saavedra interposed... (**) This is the famous

book "Categories tannakiennes" (sic) by this mime Neantro Saavedra Rivano, published in Lecture Notes 265 (1972), Springer Verlag. (***)

I believe I know that when Serre has the opportunity to cite this book where my name is not pronounced

hit" — I asked him again (and this time again, it was clear that I already knew what the answer would be).

No, obviously it hadn't struck him that my name was not mentioned in this book, neither for the theory which is the subject of it, nor for the related notions (such as pattern, crystal and tutti quanti) which are there. are introduced ab ovo and developed as examples. There, however, Serre did not seem to have memory lapses - he still remembers (for the moment at least...) to whom these notions are due, which appear there, under the pen from another of my students, without my name being mentioned either. If there is indeed a "failure" here, in my friend, it is not in any case at the "memory" level...

We debated for a few more minutes about the name "Tannakian categories", which I suggested was considered a mystification, whereas Serre, with supporting evidence, found it to be a perfect fit. This too, I already knew it well, deep down, even before lifting this new hare; as I also know why this name suits the one who was my friend so well, while I, who carried and gave birth to this thing, find fault with it.

As is generally the case between us, it was Serre who cut it short — and in fact, it's true that the conversation had lasted long enough. There had been no "communication" at any time, and that is surely why it left me with this feeling of dissatisfaction, of disharmony. And yet, just like the two or three short letters I received from him recently and with even more peremptory force, this short conversation taught me a lot. "Known" things, surely, but half-rejected; sued and not believed 1 And surely this feeling of frustration (which has not dissipated even today) is the sign of my resistance to welcoming and accepting the message.

An unwelcome message, certainly. Until a few months ago, I had no doubt that Serre (as I vividly remembered him, the incarnation of incisive elegance and probity free from any complacency), when he became aware (better late than late) -but...), thanks to the reading of the providential text "Récoltes et Semailles", of the turpitudes of a certain Burial (which he was certainly a thousand miles from suspecting, poor guy...), well that his blood he would only make one turn and throw himself into the fray, this time (*). This image

(which is to say), and without finding (for his part) anything abnormal, he nevertheless takes care (by I don't know what scruple) to refer at the same time to my person. He must be the very last one to still take this kind of punishment...

d'Epinal has dissipated in recent weeks, helped by an innocuous exchange of letters. And yesterday I was able to see, without the slightest possibility of doubt, that Serre has been installed there right there, in the Burial, for a long time, and that he is enjoying it there. And this, need I say (and without my adding any sort of irony), with the best faith in the world?

It's been a while since I understood that "good faith" is by no means such a simplistic and clear-cut thing as it seemed to me for most of my life. A certain type of "good faith", the most widespread, simply consists of giving oneself a false impression, like a flag of good quality used to cover sometimes doubtful goods. Our psyche is made up of superimposed layers, and as the gaze becomes more refined, it sees the "good faith" of one layer sometimes serving as a cover and an alibi for the deceptions of the one below.

As for Serre's good faith, I continue to credit him with the fact that he will never write a book making essential use of other people's ideas, without saying so clearly - and this, even if these ideas have never been published, and would be known to no one other than the person who communicated them to him (assuming he was still alive) and himself. This means that I believe I know that Serre will never write a book like those discussed between us yesterday. I think I can even say that the mere fact, for someone like Serre or like me (*), of writing a text (mathematical in this case) addressed to an audience,

(*) When writing "this time", I thought of the two other times when I had put myself out there, to try to send a message to the famous "mathematical community" — and even, these two times - there, to mobilize it. The first time was in 1970, when I left the mathematical scene, due to the connivance of the scientific establishment with military apparatus. The second, at the more modest level of only French colleagues, was about a certain unfair article hitting foreigners in France. (See on this subject the section "My farewells — or: the strangers", n° 24.) Both times, my efforts met with general indifference, where Serre, no more than any of my other friends in the community than I had just left (with the sole exception of Chevalley and Samuel), was no exception. Bets are off on the effect (or non-effect) that the "Harvest and Seeds" tile will produce, in this same establishment — starting with Serre itself...

(*) By speaking here of "Serre or me", I am thinking, in fact, of any of the members of the environment to which we were both part in the fifties — an environment that I am trying to to be identified somewhat in parts III and IV of "Fatuity and Renewal", and more particularly in the section "Bourbaki, or my great chance — and its reverse side". It is true, however, that I note that even in this restricted environment, I am aware of two members who have "gone bad" (which was discussed in its place in Récoltes et semences).

brings into play inveterate reflexes of professional conscience, which will tend to eliminate or correct at least (I believe) certain “memory lapses”, which are not of much consequence in a simple casual conversation like that of yesterday (**). All this is in line with what I wrote just three weeks ago, in the note “Things that resemble nothing — or drying up” (n° 171 (v), part (c)): “I I know very well that Serre, no more than I, would think of howling with the wolves, of pillaging, of scheming and of scheming, where “everyone” is plundering, scheming and scheming.

That said, I note that all this does not prevent Serre from indeed finding his benefit, in certain cases at least, in what others pillage, scheming and deliberating, and this in an open and obvious way, “in the middle of public” and “in the limelight”. He can certainly do it “with the best faith in the world” — he does not dirty his hands, limiting himself to giving his unreserved blessing to the plundering, scheming and mischief of others, and all the less so since he pockets no visible profit: he does not pride himself on the fruits of the labors of others, while finding it good that others (registered dealers, I would like to write) play such a game, in view and known to everyone. The “profits” he receives are more subtle than publications that are a little shady around the edges) and other bank accounts that others are fond of. We must believe that they are nevertheless of consequence, to give rise to the astonishing metamorphosis of the one I had known, participating today (I cannot say since when), eyes closed and nostrils blocked, in the general corruption (*).

e. (June 18) I had a hesitation, yesterday, to add a fourth part to the note “The family album” (n° 173), just to make a “hot” report of the phone call with Greenhouse of the day before. This phone call, it is true, left me with a “feeling of dissatisfaction, of disharmony” (as I wrote yesterday) – and these are even euphemisms, to express a discomfort so incisive, that he was approaching anguish. This discomfort aroused the need to return

(**) Thus, I have no doubt that if Serre had been author or co-author (as R. Remmert is) of a book on rigid-analytic spaces, he would not have gone down the “natural slope ” to pass over in silence that which must be passed over in silence; that he would go beyond somewhat complacent “lapses” of memory to the said natural inclination, to which he was pleased to indulge in a private conversation. It is also true that even fifteen years ago, with the rigor that I knew him then, he would not have let himself go to such a slope, it seems to me, even in a private conversation...

(*) This observation of participation in corruption is similar to that made (for the listeners of a certain seminar in March 1980) in the note “Carte blanche pour le pillage — ou les Hautes Œuvres” (the name says well what 'he means), n° 1714 , in particular page 1090 second paragraph.

on this episode, like a ripe abscess now, and which it would be high time to empty. And there was also the usual procrastination. The USTL duplication service has been waiting for weeks for us to bring them the rest of this famous booklet IV of *Récoltes et Semailles* which never stops giving birth; already it's just August to manage to get everything out and stitched before the annual closing of the University (July 15), especially since it's not just me — at the end of the academic year, there are an influx of theses of all kinds, which must be given priority. In short, I told myself that you have to know how to finish a book; that if I continued to insert “last minute” stuff into it, I wouldn't have finished it again next year, that it had gone on long enough as it was...

And yes, I ended up getting started — and too bad, if the *Récoltes et Semailles* draw is only for the start of the school year! it waited fifteen years (not to say thirty), now it can wait another two or three months, but let me take the leisure to look at what I have to look at, and to say what I have to say, without letting myself be pushed around by “deadlines”...

It's been a hard day's work, or rather a night and part of a morning — I wanted this “replaced” text for typing to go with today's mail. It's done.

There, I have the impression of having completed a certain amount of work that had to be done. I suddenly feel light, as if freed from a great weight that I had been carrying, without knowing it, surely, and I cannot say since when. It must be the weight of a certain tenacious illusion - which must have started to take hold in me at the end of the forties, when an adopted identity began to blossom in me, that of a member of a * a certain “community” (ma-thematic), from a certain environment, which for me was full of warmth and life. I speak of this blossoming of a new identity, in *Fatuité et Renouveau**, in the sections “The welcome stranger” and “The “mathematical community”: fiction and reality” (n^os 9, 10), and also in “Bourbaki, or my great chance — and its reverse” (section no. 22). It is true that this identification was swept away irrevocably by the events which surrounded and followed my departure in 1970, in the wake of my engagement in militant activity. Looking back, I now realize that there remained a link to this environment that I had left, in which I no longer recognized myself; an invisible link perhaps but one of great strength, part of this “weight of a past” (which I began to glimpse last year, in the section of the same name, n^o 50). While I had left this environment with no intention of returning, a certain image of what this “family” had been, in short, which I had left for a

another adventure, remained alive in me, and maintained this link. This image must have remained more or less static, it seems to me, since my departure (and a long time before, certainly) until the moment of the reflection pursued in *Récoltes et Semailles*. This began to nuance the image I had of a certain past, and to incorporate as best I could elements of the present, often disconcerting and unwelcome. I ended up realizing the evidence of an astonishing deterioration in the state of mentalities and morals in what had taken over from the environment with which I had identified, and (it would seem) in the world mathematics in general. This deterioration, I realized, did not date from yesterday, and I had had time, even before my departure, to have my part in it, (One part glimpsed, at least, during the reflection continued in *Fatuity and Renewal*.) I had the impression, however, that there was a sort of frantic escalation in this degradation after my departure, in which some of my ex-students played a catalytic role in foreground.

Be that as it may—all through the successive revelations in my investigation into the Burial, I maintained in my mind a sort of unspoken “taboo” around those of my old friends who were part of of this environment which had welcomed me in my young years - I simply could not conceive that any of them had been seriously affected or “damaged” by this profound degradation which I was observing. When I happened to speak of the complacency of the “entire congregation” with regard to operations which (for me at least) were beyond imagination, surely there must be in me a sort of “clause ” internally, exonerating those who, for me, had to remain “above all suspicion”. They obviously didn't suspect anything - they must have been busy elsewhere, surely - we can't blame them 1 A bit in those tones. And for the oldest among my elders, this way of seeing corresponds, I would like to believe, to reality, or at least to a certain aspect of reality. But certainly not for people like Serre, Cartier, Borel, Tate, Kuiper, Tits and others whom I knew well, who are of the same generation as me, full of activity, fully integrated into the environment that I examine here and who continue, even today, to exercise significant power and to set the tone, just as much as certain newcomers who ended up constituting an unscrupulous “mafia”, with the unreserved blessing of their elders.

There was therefore a tenacious and flagrant contradiction in the image that I had of reality, as it appeared through the first order “revealer” which is the Burial. It is surely this contradiction, perceived at a certain level and challenged at

another, which created this “discomfort” that I spoke about earlier, bordering on anxiety – anxiety revealing a division. And the one who, more than any other, embodied for me this environment, of people that someone in me persisted in perceiving as “close” and the one who had also been “closest” to all of them, was Jean- Pierre Serre. As such, it was in him, more than in any other, that the crux of the avoided contradiction resided.

I timidly began to address this contradiction only six weeks ago, in the first part (of May 4) of the note “Useless details” (n^o 171 (v)). This reflection deepens considerably in the third part of this same note (from May 27, three weeks later), “Things that resemble nothing - or drying out”.

I return again to the person of Serre, against strong internal resistance, a week ago (June 11) in part c. (“He among all — or acquiescence”) of this note. This time, Serre's crucial role in the Burial finally comes to light. This was a new big step in my understanding of the Burial - but the crux of the contradiction had still not been addressed! The person of Serre remained for me (as if nothing had ever happened) the incarnation of “elegance” and “probity” without fear and without reproach. The “taboo” remained safe and sound!

It was the phone call the day before yesterday that brought the contradiction to light, putting my nose “right in it” (the Funeral), whether I liked it or not. There was, as was right, immediate mobilization of considerable resistance forces (mentioned earlier), to maintain the status quo, rather than accepting the contradiction: taking note of it, one way or another , and thereby resolve it. I was free to do it, or not to do it.

I took the plunge — and I'm happy I did. The reward was immediate: a liberation, manifested by a feeling of lightness, of relief; relief of an inner tension, certainly, but even more, liberation from a weight.

The only other moment in Récoltes et Semailles where there was a similar feeling of liberation, is also the one which marked a first major turning point in reflection, in Fatuité et Renouvellement, with the section “Sporting Mathematics” followed by “Fini the carousel I” (n^o s 40, 41). I also have the impression that this new step that I have just “taken” follows on from the one I took last year. I can't really say at the time why and how. The triumphant exclamation at the time, “The merry-go-round is over!”, was premature, that's for sure (as I realized the following month). But the new step I have just taken is, to say the least, one more step which leads me out of said merry-go-round. The future will tell me more,

to what extent this is indeed the case.

After yesterday's reflection and that of June 11, I have the impression of having arrived at a less blurred vision of the Funeral. It was especially this "third plan" which remained vague. The reflection of the 11th will have made it incarnate, in a tangible way, in the person of Serre, and this in turn has taken on very concrete contours (this is the case to say it) during yesterday's reflection.

Finally, in this entire fourth part of Récoltes et Semailles, it is the reflection on the relationship with Serre which appears to me to be the most crucial part, for my own understanding of the Burial, beyond the "additional investigations" and colorful paintings from the underbelly of the mathematical megapolis. It is also true that if I had not taken the trouble, out of respect for the subject that I have given myself the task of investigating, to go through this "ordering of an investigation" with all the care with which I am able, while also taking great care to illuminate as best I could all the slightly dark corners that presented themselves along the way, this reflection on Serre would probably not have seen the light of day either, and my understanding of the Burial (and of my involvement in it) would have remained unclear as before. It all comes together in a piece of research!

The most substantial part of the reflection, in this last part of the Funeral, actually appeared "at the last minute". In principle, the "final point" under this part was set two and a half months ago (April 7). There remained just around ten pages to retype, and a few footnotes to add (as was also the case a year ago, towards the end of May...). The unexpected began to arise in the following days already, with the visit of Zoghman, who came to read this last part (in principle finished) and to give me his comments. They materialized in some three hundred pages of additional text - and among these, these pages where I return to the relationship between Serre and me, in the light (until then evaded) of the Burial.

(174) (March 22) (*) As I have already pointed out elsewhere, there are in reality not four operations (for a Burial), but one and only "Burial operation". Its division into four main sections was convenient for the exhibition, but is artificial and (if taken too literally) apt to mislead. Certainly, in the Director — Chief

(*) (June 14) This note continues with part a. ("A deceased well surrounded") from the previous note, written the same day.

orchestra — Principal Officiant at the Funeral, there were not four little devils in four different corners of his head to tell him what he had to do, but one and only 1 I tried, during the long meditation on yin and yang (**), to get to know this little devil better than in the past, where I had limited myself to noticing from time to time that he was still there fidgeting, and moved on the next moment. I don't claim to have fully succeeded in getting to know him, and perhaps that's not really my job after all. What is certain is that he is still there, moving as before, and it is not said that he will stop before my friend's last breath. Still, the famous "Operation Burial" is still continuing, even now as I write these lines. And I wonder if the distribution of this "Family Album" will at least have the effect of putting an end to the biggest (and most iniquitous) of all partial operations: that which consisted of burying a young mathematician alive, Zoghman Mebkhout, whose ideas and results "everyone" working in the cohomology of algebraic or complex varieties has been using for four or five years...

Abandoning the fiction of the "four" operations where there is clearly only one, it would be interesting to make a sketch, in chronological order, of the main episodes and stages that are known to me. I will not do it here, judging that I have done enough by bringing together, in the four previous main notes ("The silence", "The maneuvers", "The sharing", "The Apotheosis", n°s 168, 169, 170, 171) all the episodes that are known to me, and that the curious reader can order themselves on a chronological scale. Interestingly enough, from the "second level" or "operation" point of view (to use euphemisms), it would not seem that the year of my departure from the mathematical scene, in 1970, marks a discontinuity in the succession of episodes, which continue at a fairly regular pace, it seemed to me, since the end of the SGA 5 seminar in 1966, until 1977 with the double publication of "SGA 4 1/2" and the Illusie edition of SGA 5 (*). This operation appears to me to mark a sudden and striking qualitative change. Before there was a discreet "move". There I suddenly feel the irruption of a burst of violence and contempt, attacking the work of a

(**) This is the reflection forming the major part of the third part of *Récoltes et Semailles*, with notes n°s 104 to 162 (*) (June 3) It is appropriate to correct this impression, taking into account the the

large-scale operation "Tannakian Categories" (sic), the first episode of which (with the "straw father" N. Saavedra) took place in 1972 (and the epilogue in 1982, with the "real Father" P. Deligne taking over). On this subject, see the series of notes "The sixth nail (in the coffin)" n°s 1761 — 1767 .

absent, declared "deceased".

After this kind of collective release of all of my cohomologist students (under the complacent eye of the "entire Congregation"), it would seem that there was a calm for four years. While throughout the eleven years which elapsed between 1966 and 1977, I detected a well-defined "episode" every one or two years, I did not know of any between 1977 and 1981 (year of the Pervers Colloquium). On the contrary, the long article "Weil's conjecture, II" by Deligne, published by Publications Mathématiques in 1980, therefore the year which preceded the incredible Colloquium, can almost be considered normal, in these times. ..(**). It was also the year that Deligne learned, during a Bour-baki seminar and from the author himself, of the "good God theorem" (aka Mebkhout)

(***). This is the start of a sudden melting of the ice in a long stagnation of the cohomological theme. And it is also the signal the following year, for this second and final (?) culmination of Operation Burial, on the pitch this time iniquitous, when all restraint, and even simple prudence, are blithely thrown over edge.

The episode of the "memorable volume" LN 900 the following year (devoting the exhumation of the reasons without mention of my person, an episode which had moved me so much on a certain April 19 of last year -..), just like that of Berthelot's report of the same year (consecrating the elimination of my humble person from the "history"-sic of crystalline cohomology), appear to me afterwards as natural extensions, and all in all quite innocuous, of what happened during this conference, whose name will perhaps go down in history (or what remains of it), as a warning. And the "Funeral Eulogy" the following year, however incredible it may seem to the one who "poses" on it even a little, also appears as such an extension, or (as I wrote previously (*)) as an "epilogue". As for the two years that have passed since then, they have only confirmed, in the writings

(**) Of course, no allusion is made to me on the occasion of the main result which is the subject of the work, and whose statement was part of the yoga of motives that Deligne took from me. On the other hand, I was struck by the fact that my name appears, with that of Miller, in one of the paragraphs of the work, regarding the De Rham complex with divided powers, which had been introduced (around 1976) independently by Miller and by me. I gave a talk on this theme in 1976 at IHES (it was actually the last public talk I gave in my life), but it was clear that I would not publish anything. No doubt no one would have even noticed, or especially would have found fault, that the author passes over this completely unofficial co-authorship in silence... (***) (June 1) In fact, this episode took place I The previous year, in June 1979, at the Bourbaki seminary.

(*) In the note "The jewels", n° 170 (iii).

and in the minds, the “achievements” of a brilliant conference and its extensions...

It is a remarkable coincidence – or rather, it is clearly not the effect of a “coincidence” – that as of last year, and before having yet become acquainted with the “SGA 4 1/2 — SGA 5” nor with that of the Colloque Pervers, I noticed two “turning points” in the personal relationship of my friend Pierre to me, taking place in the same years 1977 and 1981. I included them for the first time in a common attention and try to fathom its meaning, in the note “Two turning points” of April 25, six days after I discovered the Burial (by reading the memorable LN 900. At the moment, when one and the other turning points took place, years before, I had been very far from suspecting (not on a conscious level, at least) of the Funeral which was being planned, and I would have been very difficult to connect neither of them to any event that is known to me, and which could have shed light on them.

(175) (March 23) To complete the tour of “Operation Burial”, it remains for me to review the role of one last active and eager participant, about whom I had the opportunity to speak “ in passing” many times during this long reflection on the said Burial. This is the honorable Springer Verlag GmbH (Heidelberg), well known as a publisher of scientific books and periodicals, honoring itself with the motto “Im Dienste der wissenschaft” — in the service of science (* *).

In the mathematical publishing of this house, it is undoubtedly the series of texts “Lecture Notes in Mathematics” which is undoubtedly the best known of all. It is perhaps also the series of scientific texts in the world which has enjoyed the most prodigious fortune: more than a thousand titles published in around twenty years. I also think I have contributed my part to this unprecedented success, by lending my support to this series, still in its infancy, through the publication of numerous texts by students or myself, during the sixties and until at the beginning of the seventies. I was also associated with Springer as one of the editors of the “Grundlehren” series (der Mathematik und ihrer Grenzgebiete) where three books (including the reissue of EGA I) were published by me (*).

After my departure from the mathematical scene in 1970, I also abstained from any

(**) (June 1) Information taken from Dr. J. Heinze, it appears that it is not really a question of “motto”, but rather an advertising slogan. Its English form is “Springer for Science”.

(*) The other two books are the theses of Jean Giraud and Monique Hakim (on the formalism of fields and non-commutative 1-cohomology, and on relative schemes on general ringed topos).

activity as an editor, I continued, by a simple effect of inertia, to be one of the editors of the series until last year, when I finally “officially” withdrew from all responsibilities as editor in the house Springer. I was prompted to do so by two concordant motivations. On the one hand, at the moment when I return to an “orthodox” mathematical activity, by resuming the publication of mathematics, I want to draw precise limits to this “return”, which in no way means for me a return to a “powerstructure” (a structure of power and influence), but only for personal mathematical work intended for publication.

On the other hand, I had had the opportunity, since 1976 (with the episode of Yves Ladegaillerie's thesis), to smell the scent of a certain air from Burial, well before having the slightest suspicion of the large-scale operation that I discovered last year. (See regarding the episode of this thesis, one of the most brilliant that I have had the honor of inspiring, the note “We do not stop Progress” (n° 50), and especially the note more detailed “Coffin 2: or the cut-outs”, n° 94.) This made me understand that “the kind of mathematics that I like and that I would like to encourage no longer has its place in the Springer Verlag” (* *); and even more, perhaps, that the spirit that I felt there did not encourage me to continue or to resume even the slightest ties with this house. The year that has passed since my letter of resignation from the Grundlehren editorial board in February last year has only confirmed and strengthened this feeling.

But this is on the sidelines of “Operation Burial” itself — of this “second level” that I spoke about yesterday, to which it is time to return. To my knowledge, there are five books which are directly linked to the operation in question (*). these are, in chronological order of

(**) This quote (translated) is taken from the short letter (addressed to Dr. Peters) dated February 18 last year, where I informed him of my decision to withdraw from the Grundlehren editorial board . Dr. Peters had in fact already left the Springer Verlag (he now works in the Birkhauser Verlag), and the correspondence continued with Dr. J. Heinze, in charge of Grundlehren in the Springer house. I had requested that a copy of my letter be sent to each of the co-editors of the Grundlehren (eighteen in number), and had reiterated this prayer to Dr. Heinze twice (in April 84 and January 85) without that he considers it useful to clarify to me whether or not it had been respected (it appeared not). I took the trouble to send a copy of my letter myself to each of the eighteen editors, with a few words of explanation about this sending. I know seven of them personally well, and I counted five of them among my friends. Only one (Artin) took the trouble to answer me, and none apparently found anything abnormal (even if only with regard to himself) that the Springer house had not itself- even took the trouble to send him the letter in question as early as February 1984.

publication, the volumes SGA 7 I (published under my name in 1972) and SGA 7 II (published under that of Deligne-Katz in 1973), presenting the SGA 7 seminar on monodromy groups, from 1967/69; the volume called "SGA 4 1/2" (by Deligne) and the Illusie edition of SGA 5 (published under my name) in 1977; finally the "memorable volume" devoting the exhumation of motifs, published under the joint signature Deligne-Milne-Ogus-Shih in 1982. Remarkably, the five volumes were published by the same house, and in the same series of Reading Notes (**). The first four volumes were published while Dr. K. Peters was in charge of the Lecture Notes (***), the last with Mrs. M. Byrne in charge of this series.

These five publications were made in conditions which appear to me to be grossly irregular. As I have already pointed out elsewhere, the two volumes SGA 7 I and SGA 5 published under my name in 1972 and 1977 (LN 288 and 589) were published without Springer deeming it necessary to contact me, to request my agreement or just to notify me of the planned publication. The publication of the two volumes of the name SGA 7 II and "SGA 4 1/2", therefore presenting itself under the acronym SGA which I consider is in no way available to everyone, but notoriously linked to my work and has my person, were published without requesting my agreement for the use of this acronym for the planned publications, even though I do not appear there (as one would have been entitled to expect) as the author, or the director (or one of the directors) of the volume, or of the seminar of which he presents a written version. Finally, volume LN 900 presents, without naming me, notions, ideas and constructions which it is known, among well-informed mathematicians, that they were introduced by me.

In this case, it was therefore obvious (without having to be among the rare initiates of an SGA 5 or SGA 7 seminar) that this volume constituted what is commonly called a plagiarism. I certainly do not expect that Ms Byrne, in charge of LN (unless I am mistaken) at the time

(*) (June 1) Since these lines were written, it has become apparent that it is appropriate to add to the following list a sixth book/whose very name is a mystification: "Tannakian Categories", by Neantro Saavedra Rivano. Remarkably, this book also appeared in the same series of Springer's "Lecture Notes in Mathematics". But in the case of this operation, the responsibility of the Springer house does not appear to me to be engaged, as it is for the other five volumes. For details on the operation "Tannakian Categories", see the suite of notes "The sixth nail (in the coffin)", n^o s 1761 — 1764 .

(**) These are volumes n^o s 288, 340, 569, 589, 900.

(***) As I specify in the penultimate note of b. p., Dr. Peters has since left Springer Verlag for Birkhauser Verlag.

of the publication of this volume, has the competence to recognize the fraud by his own means, in view of the manuscript. But it is, I imagine, part of the tasks of a serious publishing house, to ensure the seriousness of its publications, by surrounding itself with competent advisors.

These same advisors were also able, if they honestly do the job for which they are (I imagine) paid, to point out to those concerned that the SGA sign is not an acronym for all comers, that it has a meaning, which must be respected by consulting the only person who is qualified to decide on the use of this acronym, namely myself. Finally, as an aggravating circumstance concerning the publication of the volume presenting itself under the trompe-l'oeil name "SGA 4 1/2", it is enough to browse either the introduction to the volume, or the "Breadcrumbs" which follows, namely the introduction to the first chapter, to note the casual contempt with which the SGA 4 and SGA 5 seminars are treated; It is also known among people who are somewhat well informed that these last seminars took place around the mid-sixties, while the volume presenting itself as "SGA 4 from the 70s. I therefore estimate that for a person reasonably well informed and in possession of all his means, the deception could only be patent. This was an all the more compelling reason not to publish such is made up of apocryphal texts a volume under such a name, without first requesting my formal agreement.

I therefore consider the responsibility of the Springer Verlag fully committed, in the publication of each of these five volumes, constituting so many significant episodes in the monumental fraud operation which took place around my work on the cohomological theme. Through these publications, the Springer company has become the auxiliary and conveyor of this unusual operation. I cannot say, of course, that this is with full knowledge of the facts. But I can say that the repeated discourtesies that I have experienced from this house in its relationship with me, since 1976 (I have not had the opportunity, I believe, to have affair with her between 1970 and 1976) also go well in the direction of this operation and are part of a certain spirit, which is inseparable from it.

In the subnote "The Eviction" (n^o 1691) of the note "The Maneuvers", I alluded to my letter to Mrs. Byrnes concerning the publication of SGA 5, and to her response, which blown away I must say — (It is certainly not the first time nor the last that I have been "blown away", in this brilliant operation "in the service of science"...) I learned from his letter (dated 15 February 85) that in accordance with "the usual way of acting when a work contains contributions from several authors" (sic), there was no need to address more specifically

to me, who was only director of the seminar... The five “authors” of SGA 5 are Bucur, Houzel, Illusie, Jouanolou, Serre, to the exclusion of my modest person, who only appears as “director” — no doubt purely honorary, I had said too much (*) — for this brilliant seminar.

Before receiving this instructive letter and finding the time long (having received nothing for a month), I took up my most beautiful pen (in German) to write to Dr. K. F — Springer himself, who part of the responsible directors of the Springer house. It was a beautiful two-page letter, explaining to him that I was very saddened by a long series of inconveniences in my relationship with the Springer house, and beyond these, by a certain number of irregularities rude towards me, of which I was content for the moment to submit two to him, which seemed particularly blatant to me: the publication of two volumes of the Lecture Notes (nos. 288, 589) published under my name and without deeming it necessary to consult me. That in these two texts, the ideas, methods and results that I had developed in the oral seminars, were shortened or mutilated sometimes to the point of being unrecognizable. That the coincidence of this last fact, with the unusual circumstances which surrounded the publication of these two volumes, could not be for me the effect of pure chance. And that I expected a public and unreserved apology from the Springer house, in a form which would be determined by mutual agreement, once an agreement in principle was reached. That I hoped that he would have the heart like me to put an end to an unpleasant and unacceptable situation and to find a solution that was up to the circumstances (“eine dem Fall geziemende Losung zu finden”, which is even more distinguished again), “hoachachtungsvoll” (as it should be) signed by my most beautiful ha

To put my cards on the table, it seems to me that I have laid my cards on the table! He won't be able to say that. Mr. KF Springer, that he was not informed of the situation personally, and even first hand, by none other than the main person himself!

As luck would have it, I ended up receiving a response (still a good month later) just yesterday. It's so short that I can't resist the temptation to reproduce it here (translated) in full. It took me a moment, in fact, to realize that it was indeed

(*) In this famous “Breadcrumbs” (through SGA 4 etc.) in the volume called “SGA 4 1/2”, nothing could suggest to the reader that I had the honor of giving presentations in SGA 4 and SGA 5 (on the other hand, I did have the option to “collaborate” in “SGA 4 1/2”...). See on this subject my observations in the note “Double meanings — or the art of the scam” (n° 1697), p, 899.

a response to my beautiful letter of last month. So here is the answer.

Heidelberg 15.3.1985

Cher Professeur Grothendieck,

I must thank you again for your letter of February 9. Mrs. Dr. Byrne's letter of February 15 will undoubtedly have answered your questions.

Receive etc.

K. F. Springer

At least I'm fixed! The "well-informed" people (of which we have already spoken) had to explain to him that there was no point in tiring himself out for the somewhat excited gentleman who wrote to him there — that he was definitely not part of the beautiful world. And it's true, what's more...

While waiting to receive this edifying response from the management of Pompes Funèbres Springer Verlag GmbH (it was nice again to honor me with a response signed by the director himself), I had the time to think about myself on my own intentions. The role played by the esteemed company seems really very big to me, and I thought about the possibility of a spectacle trial, where I would ask for astronomical damages, as an outraged "good man", victim unspeakable privileges. But I also told myself that a trial like that must take up a lot of energy. Even supposing that I win my case and that I receive dizzying damages (let's be optimistic!), after no need for more than what I have — and a swindle is not more or less a swindle, because a certain case has been won, or lost. I am not going to improve the world, nor myself, nor the manners of Mr. KF Springer and certain employees of the company he manages, and in any case not their way of conceiving of their profession, by mobilizing lawyers and by making them mobilize theirs (*). Nor will I improve a certain mind in a certain beautiful world that I left, the mind that makes possible the kind of operation that Dr. Springer and his estimable house have been doing (for thirteen years) the servers. I have (I hope) a few years left to live — time flies, and I see lots of exciting things

(*) I also thought that it could well be that the situation was reversed, and that it was the esteemed company that would sue me for damage to its reputation. These people "in the service of Science", they must be picky on this chapter (as long as it is their reputation that is at stake...).

to do in the time I have left. It must not be very exciting to put together evidence to convince judges that I have something to do with the SGA. It is not for them, any more than for Mr. KF Springer, that I tired myself writing them...

As for those (apart from myself) for whom I wrote the SGA, the relationship they maintain to what (for me in any case) remains a part of myself, is in no way me. indifferent. It is part of their relationship to me. Strangely enough, I only know this relationship well (or at least a little) for my five cohomologist students: the very ones thanks to whom it has become possible today for a Dr. KF Springer to send me away, like a scumbag who has nothing to say about what we do or don't do with texts bearing the SGA acronym, whether or not the person in question appears on the cover.

The mathematician reader who would have followed me until now, and who would one day have haunted the SGAs (the real ones, I mean), perhaps he will have the idea of having a word with me about what he thinks about it. -even. It would certainly give me pleasure to receive a word from someone who would find that the work into which I was the only one to put my whole self, for ten years of my life, and that no one at no one had the heart to continue once the worker had left - that this work indeed bears the imprint of the one who designed it and carried within him the time it took, before it takes shape under his hands and becomes a home for all (**). And that a house for all is not a vespasian in a slum, where everyone would feel free to relieve themselves as they wish and to scribble their obscenities on dilapidated and sticky walls...

And if the person who reads me is one of those who were my students, or those who were my friends, and he does not feel encouraged to write to me or speak to me, at least on this subject failing of all others, let him know that his silence is also eloquent, and that it will be heard.

(1761) (*) (April 19) I finally had the opportunity to read (on April 10) the article

(**) This key idea of building "houses", which are good "for everything", has played a considerable role in my mathematical work, and this since the beginning of the 1950s. This was the concrete expression in my work that what I called the "service drive", which was part (without even detecting it before the reflection "The key to yin and yang") of the forces profound giving their life force to my mathematical work. The archetype of the "house" appears for the first time in my reflection, without my having anticipated it and with great force, in the note of November 26 "Yin the Servant, and the new masters*" (n ỹ 135). (*) (June

16) The following group of notes (n ỹ s 1761 to 1767), under the name "The sixth nail (in the coffin)" must be considered: as a natural continuation of the group of notes "The silence" (n ỹ s 168 (i) to (iv)), devoted to the operation "Motifs", and more particularly to the last among these, "Pre-exhumation" (n ỹ 168 (iv)), dated 8 apr

by RP Langlands cited in the note "Pre-exhumation" (n^o 1681). According to the "commented bibliography" on the grounds that Deligne communicated to me last August, this article by Langlands, is, with that by Deligne, published in the same volume (article which is the subject of the note cited), the first where the patterns are used, since my departure in 1970 (**). I can be excused for not having been aware of Langlands' article until last year (nor of Deligne's), given that the author did not consider it necessary (nor did my ex-student) to send me a separate print. We also wonder why he would have taken this trouble, when it is clear, by reading his article, that my modest person has strictly nothing to do with the subject "Automorphic representations Shimura varieties, and motives" discussed in his article. My name (to use a phrase that my typewriter knows by heart, for a year to the day!) does not appear anywhere in this article, nor in the bibliography. However, I thought I recognized certain ideas that I had released around 1964 (or dreamed that I had released them - definitely I'm repeating myself again...), and I even put this memory of 'a dream (or the dream perhaps of a memory of a dream...), this same April 19, 1984 (*) I would think I was back on this same day, a year ago.

It is true that I have had time to be jaded in the year that has passed in the meantime. If there was displeasure, it was hardly a surprise (considering how little, one might say...), and certainly not a shock. There is, moreover, a significant difference between this article, a precursor to the memorable flight LN 900 which was to follow it three years later, and the latter: I did not have the honor of meeting Langlands in person, and it was not from my mouth that he learned (like this

The notes which follow, with the exception of the last (n^o 1677 , are from April 19 and 20. If I preferred to reject them here, at the end of the "Four operations", instead of attaching them to the operation "Motifs", it is because the reflection which had continued in the preceding weeks on the three other operations, and especially on that (called "of the Pervers Colloquy" or "of the unknown person on duty") which is the subject of the group of notes "The Apotheosis", shed an unforeseen light on the "new fact" (equally unforeseen) which had just appeared. I recall that at the time of writing the notes which follow, I had already, in principle, placed the "final point" under the Burial (of which the final note, "L'amie" (n^o 188) is from April 7), and I thought of entrusting the complete manuscript of the Burial III from one day to the next. This means that these notes were written in the provisions of "last supplements minute"...

(**) With the exception, however, of the presentations by Kleiman and Saavedra in 1972, in line with the few modest "ranges" on the description of the category of motifs (compare with the note by b. de p. (* *) page 794, in the note "Dot the i's", n^o 164).

(*) See on this subject the note "memory of a dream — or the birth of motives", n^o 51.

was the case of Deligne around the year 1965 or 66) the yoga of the group of Galois (the “fundamental group”) called “motivic”. But, throughout the second half of the sixties, I talked about it enough around me, to anyone who would listen (and Langlands after all has not just arrived...), to have a presumption that Langlands knows full well where this new “geometric” philosophy comes from concerning Galois and fundamental groups of all kinds, seen as suitable pro-algebraic affine groups. I presume that he knows full well that this philosophy was not born in 1972 from the brain of a certain Neantro Saavedra Rivano, who has since disappeared from circulation without leaving a trace (**). I think it would not be a luxury for Langlands to explain himself on this subject, if he deems it useful of course. It is true that given the current times, it is perhaps an excess of optimism on my part to hope that he will take this trouble...

(1972) As good surprises never come alone, the day after I read the cited article by Langlands, I also had the opportunity to browse the volume of Neantro Saavedra Rivano (to which Langlands refers abundantly), having the name “Tannakian Categories” (Lecture Notes in Mathematics 265, 1972).

Among the nine (male) students I had before my departure, Saavedra was the only one from whom I had no longer heard at any time, and as a result, no echo either which would have indicated to me that he would have somewhat taken on the “color” or “smell” of a certain Funeral. I had hastily concluded, with this naive confidence that I am accustomed to, that (if only for lack of opportunity perhaps, having left the mathematical waters from what I have heard...) , he was the student among all who had remained* entirely foreign to the spirit of “operation” Burial. However, as in the case of Jouanolou, I had heard so little about it that it could have just alerted me. I knew of course that what, at the time he worked with me, was supposed to become his thesis, had finally appeared in Lecture.. Notes in 1972 in the volume cited, which I do not remember having ever taken worth watching before last week (*). Fully absorbed by other tasks, it did not occur to me that it was a little strange that Saavedra had no longer given me any sign of life, if only to inform me of his thesis defense, and to ask me to do

(**) According to what Deligne suggested to me during his visit to my home last October, Saavedra would have practically changed jobs (he would now be “in the economy”), and would no longer do no maths at all since his thesis defense in 1972.

part of the jury, as being the person best placed to know what was going on, it is by reading this volume that it becomes clear why he preferred not to disturb me in my other occupations, and to write his thesis. on the sly", in front of a jury whose composition I am entirely unaware of (**). The Funeral at that time was already going well, since none of the members of the jury considered it useful to even inform me of the defense, and even less to ask for my participation in the jury (as had also been the case for Jouanolou's thesis, which must have happened around the same time) (***).

This volume exposes a crucial aspect of this "arithmetic geometry" whose vision was born and developed in me throughout the sixties (without having yet received a name), and of which the yoga of patterns was (and remains always (*)) the soul. It can be said that for the most part, Saavedra's book is a careful and detailed presentation of my ideas on a sort of "Galois-Poincaré theory" of certain categories (which I would never have dreamed of calling "Tannakian"). ...), ideas that I explained at length and patiently to Saavedra, at a time when it was still doubtful whether he would make the effort of awareness and assimilation necessary to be able to include them in an "expository" part " of his thesis work. I had given him detailed handwritten notes, with detailed statements, demonstration sketches and everything, and I am still waiting for him to send them back to me (**). Of course, the subject of the thesis itself was not to expose the

(*) (June 16) Saavedra must not have considered it useful to send me this book, of which I do not have a copy, but it is possible on the other hand that I held it in my hands in the sixties -ten. I remembered, nothing more, that he had done a careful job and was perfectly usable as is, but I could not pinpoint the exact source of this impression. She had been present, in particular, by writing the note "La slate rase" (n° 67, and in particular p. 252–253), where I comment on this "mystery" of a Deligne "Recopying" practically the thesis that Saavedra had done with me.

(**) The mystery of the composition of this jury was elucidated in an entirely unexpected way in the seventh and last of the notes of the "sixth Nail" (n° 176), of which I will not say another word here...

(***) For a correction, see the note cited in the previous note by b. from p.

(*) But in the meantime, this "soul" has been enriched by "Anabelian" yoga, which is discussed somewhat in "The Outline of a Program". (See, regarding this text, Introduction 3 "Compass and Baggage". It will also be included in volume 3 of the Reflections.)

(**) It was my habit to distribute my handwritten notes here and there among my students, as needed — and one of the first things they had to learn was to decipher my handwriting. It was always understood that I wanted them to return my notes to me as soon as they had finished using them - but it is rare, I believe, that this desire was respected. This is one sign, among many others, of the fact that

ideas of another, whose motivations completely escaped him. It was a question of explaining a “helpful” intrinsic characterization of the “tensorial” categories which I will call here “Galois-Poincaré” (***), that is to say of a category admitting a description “à la Galois-Poincaré-Grothendieck”, in terms of linear representations of an “affine (pro) algebraic sheaf” on the base ring $k = \text{End}(1)$ of the considered category. When this is a body, I had indicated such a condition by the property called “rigidity” (in the terminology that I had introduced), and I seem to remember that I had written a complete demonstration of it (from my first reflections on the Galois motivic group, in 1964/65) (*). I had to indicate the principle to him, while refraining from communicating to him my written notes on this subject, since it was up to him, and not up to me, to learn his future profession, by doing the work through him. -even. If I remember correctly, the only question that remained unanswered for me was to identify the natural domain of validity of such a GaloisPoincaré theory, with regard to the hypothesis to be made on the base ring k , being interested in particular by the case where this would be a ring such as $\mathbb{Z}$ (because of the applications to the theory of patterns).

Of all the students I had before my departure, Saavedra, the very last to arrive (**), was also the one who was the least well prepared, and (initially at least) the least motivated to “have a go”. This is why I hardly hoped that he would go beyond the very limited technical problem that I had proposed to him, which only required the most modest knowledge (a little diagram language, linear algebra, flat descent, sheaves, and nothing more). The more delicate questions which are the subject of Chapters IV to VI

I was in no way feared by my students, but that I was seen rather as the “good guy”, demanding for the work for sure, but apart from that accommodating like no other...

(***) So as not to call them “Grothendieck categories”! However, among the numerous category spaces (and other new notions) that I had the honor of introducing and naming (and which, for this reason, do not bear my name), if there are any* a^* for whom this appellation would impose itself, out of simple decency I would be tempted to write, it is indeed the one! (Apart from the topos, but the name seems perfect to me as is...)

As for the name “Tannakian categories” surreptitiously slipped in by a brilliant ex-student (and obligingly adopted by a unanimous Congregation), this is nothing more and nothing less than a mystification — as I explain in detail below. (See the note that follows “He who knows how to wait...”, n° 1763.)

(*) I did not want to take the time to check this in my notes on the Galois motivic group (or rather, what remains of it, which I had not given to Saavedra). I will come back to it in any case in volume 3 of the Reflections, probably in the Chapter “Motifs my loves”. (**) if I remember correctly, Saavedra asked to work with me in 1968 or 69, a year or two

before my unexpected departure from the mathematical scene.

of his book (filtrations of fiber functors, polarization structures on a Galois-Poincaré category on R and list of such categories which are “polarizable”, applications to the categories of patterns and to numerous variants) required knowledge a little “all azimuths” (***), and thereby a considerable effort to provide information, which I did not believe that Saavedra would be able to provide; I hoped at most that he would perhaps attach to his work a summary (which would be more or less dictated to him by me) of the important points of the theory which would not have been included in an exhibition work in shape. I was only disabused last week, and realized that Saavedra did a truly impressive job and in record time (*). This work is materialized by a book presenting a detailed and careful presentation, even impeccable and perfectly usable as is, presenting in a practically exhaustive manner (so it seemed to me) the geometric-algebraic formalism that I had developed in the the sixties. From this point of view therefore, I consider that he has done a useful and honorable job in all respects, and the “surprise” that I spoke of earlier was indeed “a good surprise”.

This work consisted, very precisely, of putting in “canonical” and publishable form as is (following the rigorous criteria which were still mine at the time) a set of ideas, statements and demonstrations, which had been provided by me. Pairing such expositional work is part of the mathematician's profession, of course, whether it concerns one's own ideas and results, or those of others. Unlike many of my colleagues, I do not think that such work should be counted as a negligible quantity to evaluate the quality of a thesis or any other publication, and even to the limit, to award the person who does it the title of “doctor” in mathematics — that is to say, to consider him as a mathematician in his own right. On the other hand, it seems essential to me that a certain elementary ethics of the profession be respected, and that where a job consists of exposing and developing the ideas of others, this should be clearly indicated, so as not to allow any there

(***) Above all, it required a thorough knowledge of the theory of structure of reductive algebraic groups, their classification on the field of real numbers, plus familiarity with a whole range of notions such as pattern, crystal, F -crystal, stratified modules, local systems (for someone who had at most a vague understanding of the singular fundamental group of a topological space), plus Hodge theory, and delicate “polarization” properties, which had never been explained in the literature but remained “between the lines” in current reference texts.

(*) For a more in-depth reflection on the subject of this “record”, and for its (obvious) explanation, see the note “Monsieur Verdoux — or the cavalier serving” (n° 1765).

less ambiguity.

In the present case, however, nothing in the entire volume, except three lines of vague and purely formal “thanks” lost at the end of a brilliant introduction (**), could make the reader suspect may my modest person have something to do with any of the themes developed there, starting with the one which is the very subject of the book. I would have thought I had returned to the day of my first encounter with the memorable volume-exhumation of motifs (exactly a year ago today, to the day)! My name appears practically nowhere in the volume, except on two or three occasions, when formal references are necessary and none are available which are not from my pen.

This is by no means the only effect of embarrassment, so as not to seem to clearly recognize that the author is “only” exposing the ideas and results of another - which (and especially in the present case) is already not bad, when the work is done intelligently. But I was able to realize, by a number of “small details” which do not deceive, that it is in no way a question here of just a little “failure” to gild its image a little, before disappearing into the behind the scenes. It's truly a Funeral for the Funeral's sake. To give just one example - God knows I spent days and weeks explaining at length to Saavedra, who had just arrived and knew nothing about it, the notions of crystal, of F -crystal (replacing in char. $p > 0$ the missing p -adic “coefficients”, making it possible to define L ... functions), stratified module (and its relations with local systems), and finally a minimum of yoga of patterns (taking standard conjectures as a provisional heuristic basis); all this to make him understand, through a wide range of examples, where I wanted to go with these categories of Galois-Poincaré, and for the case (we never knew...) where he would find the courage and perseverance to include at least, beyond the “minimum program” planned, a chapter of typical examples. As he knew very well, without me having to explain it to him at length, these are crucial geometric notions which do not go back to Adam and Eve; It's none

(**) This introduction essentially consisted of text copying the four main statements, which I had indicated to Saavedra as being the “pillars” of Galois-Poincaré yoga to be developed (excluding questions related to the filtrations on fiber functors, which were difficult to summarize in a single concise statement); but by augmenting one of these statements, the one which was supposed to constitute the “minimum program” of his thesis, with a monumental and obvious error, which made it trivially false! This is discussed in the next note (“He who knows how to wait...”, n° 1763), and especially in the note already cited “Monsieur Verdoux — or the cavalier serving” (n° 1765) and the one which follows it “The dirty work” (b. 1766).

quays and re-explained without tiring, who had introduced them over the previous five or ten years, to serve as tools for a certain vision (even if it went over his head, as it went over his head of all my students except one (*)). But my name does not appear any more where he introduces and develops these notions a little (in Chapter VI devoted to examples), than in the part of the text devoted to the development of the theory of which he pretends to present himself as the author. However, I find it difficult to see Saavedra imagining that the reader, however ill-informed he may be and even if he is quite willing to believe him to be the father of these categories (which he generously calls "Tannakian"), would go as far as to think that it is this same Saavedra who also invented for the needs of the cause the F -crystals, patterns and other gadgets of the "Tannakian" (sic) panoply. If these notions are treated as commonplace that we would just improvise, or pick up from the nearest orphanage, I recognized there a style that I know only too well, since a year that I haven't finished going around the Funeral...

Mebkhout had brought me the volume in question, very happy to be able to show me the case of one of my students who, at least, had been "honest" (*) He had been dazzled, visibly, by the three lines of thanks at the end of the introduction - it is true that in 1972 it was no longer so common to thank a certain deceased person, and since then it is rather the tone of persiflage or joke which has become common among more than one of my ex-students, where it is not complete silence. Still, this time I am entitled to "deep recognition", for "having introduced the author to this subject", and for my "advice and encouragement... essential to carry out this work successfully.. ." (**). This is what we call paying lip service, while simple honesty in the presentation of

(*) Who stopped himself from burying it, as soon as the master had his back turned... (*) (June 16) He was also absolutely sorry that it had failed, and made his better to mollify me — it reminds me of the case of Kawai (see p. Diogenes with his lantern, but this time looking for an honest mathematician in the "gang" of those who are involved in the decidedly disreputable theme of cohomology of all kinds...

(**) These "thanks" are a joke, given the circumstances: one might believe that I "introduced" the author to the "subject" of the functions of a complex variable, or to any other classic subject of the same water. In fact, the "subject" in question did not exist when I spoke about the thing to a Saavedra in need of a thesis, except in a vision only which had developed in me in symbiosis with that of the patterns, and in my handwritten notes which gave it shape. I speak about the birth and development of this vision in the note "Remembrance of a Dream — or the Birth of Motives", and about the casual contempt with which one of those

his work would have seemed to me a more convincing way of expressing “gratitude”, at a time when the Funeral was definitely going well.

(1763) In fact, it was enough for me to hold this book in my hands to realize that before the memorable “operation SGA 4 1/2—SGA 5”, there was not a single episode in all the Burial, which is of a scope comparable to that of this volume LN 265, with the anodine name “Tannakian Categories”. The previous episodes (*) were all limited to a more or less discreet “mistake”, hiding the origins of certain important ideas. Here, it is a whole crucial aspect of my vision of “arithmetic geometry” which is “diverted”, casually; and this, through the one who may have seemed the most “innocuous” among all my students!

It is true that behind this one, I clearly recognize, by a style that does not deceive, the one who pulls the strings - and who also figures prominently among those to whom my ex-students lavishes his thanks (**). The only name given to the volume of Saavedra's pen and to the crucial notion that I had introduced is a subtle act of dispossession. It will only be surpassed, in its lapidary effectiveness, five years later, by the sole virtue of a name again, given to another volume, but this time from the pen of Deligne himself (***).

If the name “SGA 4 1/2” given to a certain saw-cut volume is a genius imposture, the name “Tannakian category” is a mystification, just as brilliant. Even in the case of a “trivial” or “neutral” Galois-Poincaré category, equivalent to that of the representatives

who were my students (and under the complacent eye of all) make a clean sweep of these roots, in the note which follows it “The Burial - or the New Father”

(notes n^os 51, 52). (June 16) These thanks from Saavedra are all the more “a joke” because their author never bothered to send me just a copy of his book and these bogus thanks. Having finished going through the “tannakian categories (sic)” operation, I understand all the better now to what extent my ex-student had no reason to be proud of his “work”-sic, and that he was reluctant to see me learn about it. And as things seemed then and until two years ago, it seemed that there was little chance* that the worker would ever become aware of it...

(*) The “episodes” in question are briefly outlined in the note “Burial...” (n^o 168 (ii)), part of the series of notes devoted to the “Motifs” operation.

(**) On the “mathematical” side itself, these people are (in order of appearance) myself (out of alphabetical order, that was nice), Berthelot and Deligne.

(***) As will appear below (in the note “Monsieur Verdoux — or the cavalier serving”, already cited), there are at least strong presumptions that instead of reading here “but of the pen this time from Deligne in person”, it is permissible to read “and also from the pen of Deligne in person”...

linear tations of finite dimension of a schema in affine groups G on a body k , the yoga that I had developed is typically “Grothendieckian”, inspired as it is from the analogous yoga that I had developed in the case of fundamental group of a topological space, a diagram or (more generally) a topos. The idea of defining the fundamental group as the group of automorphisms of a fiber functor on the category of coverings of a “space” or “topos”, and the idea (just as absurd, because new, therefore unusual) to work systematically with the category of coverings not necessarily related, had at the time attracted a lot of sarcasm to me. I never worried about it, knowing well that none of these jokers, who thought they knew the theory of Galois or that of Poincaré because they had learned it on school benches, really had it. understood — and none of them until today could still take even the first elementary steps of Galois's theory of coverings of a (let's say) somewhat general diagram (*), without repeating the text text work I did on this subject, and the formulation I gave of the Galois-Poincaré theory of coverings in terms of category equivalence (**).

And likewise, the idea of reconstructing a schema in affine groups (on a body, to fix the ideas) from the “abstract” category of its linear representations of finite dimension, equipped with its natural multiplicative structure and its “fiber functor” natural “forgetting the operations of G ”, like the group diagram of the automorphisms of this functor — this idea is due neither to Tannaka (who never asked for so much), nor to my modest ex -student Saavedra, nor to my most brilliant student Deligne (to my great regret - but he was not yet around), but it is a typically “Grothendieckian” idea. And the same for the fact that we thus find a perfect correspondence between diagrams in affine groups on k , and k -rigid tensor categories provided with a fiber functor on k . And the same again for the idea that, if by chance (as tends to be the case for categories of patterns on a field with non-zero characteristics) we have a rigid tensor category which (by misfortune, or by extra happiness ...) does not have the advantage of having a fiber functor, that the “group

(*) “Somewhat general” could be interpreted here, precisely, as “a non-normal pattern”.

Before me, the fundamental group of an algebraic variety had only been introduced (by Lang and Serre) in the case of normal varieties, by describing it as a suitable quotient of the “absolute” profinite Galois group of its field of functions, $\overline{\text{Gal}}(K/K)$.

(**) Today, this way of formulating the relationship between fundamental group and coverings, even in the particular “academic” case (so to speak) of ordinary topological spaces (locally simply connected by arcs) is starting to drag on. almost everywhere, without any allusion to the ancestor need be said...

algebraic" must then be replaced by an "algebraic sheaf". This idea was explained in detail at a time when young Deligne had not yet heard the word "sheaf" pronounced in math, and had never yet dreamed of something similar. There too, when Giraud took it upon himself to develop one in the sixties. arsenal of non-commutative cohomological algebra in dimension = 2, with fields, sheaves and links (*), there was no shortage of snickers. This is the kind of thing that these days and for a long time Deligne and others have called a "gang of nonsense". These sneers did not bother me (**), I knew where I was going - and it was with "revival" (as I write elsewhere) but without really surprise, that I saw this "gangu" seized with a perfect finesse of delicate and deep relationships which I knew well that no other "language" would be able to grasp.

That said, when the same sneers one day notice a "cream pie" that had escaped them, let it be the categories that some hasten to baptize "tannaki-ennes" (while waiting for better. ..), or a certain "correspondence" or "relation" or "con-struction" (a little neo-Grothendieckian at the edges) which we dismiss by euphemism or which we baptize "de Riemann-Hilbert" (in the meantime better also... ĩ (***) — everyone then rushes and it's who will play the role of the brilliant inventors. This is the mathematical "spirit of the times", in the seventies, eighties of this century...

What is certain, in any case, is that it is not a Saavedra who could have had the idea of calling these categories (which I had explained to him at length) by the truly generic name.

(*) This suggestive terminology was introduced by Giraud, in place of a provisional terminology (a bit haphazardly) that I used from 1955 (like "fibered categories of nature local" and other unwelcome names, for notions whose fundamental nature required concise and striking names).

(June 16) On the first page of the introduction to his book, Saavedra speaks of the "formalism for non-commutative homological algebra introduced by Giraud". This is one of the many places where I could sense someone smarter than the author of this book, who "held his hand"... the same one who likes to only talk about "derived categories " only to add in the process "introduced by Verdier" (even though he knows perfectly well, in both cases, what to expect...).

(**) But Giraud did - who distanced himself irrevocably from the theme he had pursued with me, by just beginning it. See on this subject the note "The co-heirs..." (notably p. 386–387), and the note which follows it "... and the chainsaw" (notes n^o s 91, 92).

(***) See, regarding the latter "while waiting for better", the entire "Colloque Pervers" package, and in particular the notes "The conjurer" and "Markets of fools — or the puppet theater" (n^o s 75, and 1712 (e), the latter being part of the long note "La maffia" n^o 1712).

nial of “Tannakian categories”. Left to his own devices, he would never have dared to change the terminology he got from me, without at least asking for my agreement - and that was the least he could do! The example and encouragement had to come from above for him to allow himself to treat me like this in a negligible quantity. Moreover, the unfortunate man already had enough work to get up to speed with what was essential, if he wanted to carry out even part of the ambitious writing program that I had submitted to him (*), without let him dig into literature again and read Tannaka and what not, which he had certainly never heard of, when he was still working with me (**).

The name is “brilliant” because of the subtle combination of two qualities, which might seem contradictory. One is that to a superficial observer, this name does not seem totally crazy. “Everyone” vaguely remembers that there exists a “Tannaka duality” in which the multiplicative structure plays a role — and it seems to resemble a little what happens for these famous $\tilde{y}$ -categories that a certain Saavedra (who is that one?) calls “tannakiennes”; so go for “tannakiennes”, why not!

But for those who know how to wait, things mature by themselves. Thirteen years have passed since then, and instead of the book by an unknown person that no one has ever seen, for three years there has been a much more prestigious reference, in the brilliant volume LN 900, written by none other than Deligne, and a man named Milne working in tandem, these well-known authors develop ab ovo all the formalism of the categories that they also call Tannaki-enne. Obviously, this is a fundamental notion, used for years by people like Langlands, Deligne, Serre and others, and promised a brilliant future, certainly no one will believe that it is a certain Saavedra, cited two or three times in passing in this article, which is the author of this crucial notion, and of the very fine formalism to which it gives rise. The very tone of the article by the two brilliant authors, taking up the subject with all the maestro

(*) He completed this program in the record time of barely two years, from the time of my departure, when this program had practically not yet started, (beyond the beginning of becoming aware of the techniques basic schematics). Even supported by a Deligne (who had taken no interest in this student before my departure), this performance is quite simply a prodigy — which “prodigy” is examined a little more closely in the note “Monsieur Verdoux — or the serving rider” (n^o 1765).

(**) I recall that Saavedra worked with me just for a year or two before I left (around 1968, 1969), after which I almost completely lost touch with him. His background at that time was neither more nor less extensive than that of any other postgraduate student from the Third World (or from one of our provincial faculties).

tria which is known to the main author, leaves no doubt on this subject (*).

Not to mention that they find in the theory presented in Saavedra's book such a gross error (which even obliges them to start from a completely different definition, which finally seems the right one (**)) that we are justified in wondering if this unfortunate Saavedra (to whom someone - and we can guess who... - must have once tried to explain what it was all about) had really understood well what he was talking about. And it is not Milne, brilliant as he is, and who had the honor of co-signing with the prestigious Deligne an article developing a visibly fundamental idea, who would have the idea that he could pass for father or only co-father of this one; no more than Beilinson nor Bernstein would claim that they invented (or even co-invented...) the famous "relation which should have found its place in these notes... which they had honor to co-sign with this same prestigious Deligne, after he had the great kindness to put them on the path to a demonstration of Kazhdan-Lusztig...

And who, finally, would seriously believe that this famous Tannaka who lent his name (without surely being consulted) to designate this fundamental notion, really had something to do with it? It is not he who would come to claim, assuming that he is still alive, the day when it will be very clear to everyone who is the true father of this notion, and of the whole theory of a perfect delicacy to match. For anyone who might have the slightest doubt on this subject, it will be enough to go through the works of Tannaka, or if there are too many for his patience, that on the "duality of Tannaka", to realize that this is not the case. basically has nothing to do with it...

Here again, once a few milestones have been established, you just have to let time take its course. Obviously, this theory, which will increasingly reveal itself as the technical means of a new philosophy for linking geometry and arithmetic, is called in the years to come more and more to the forefront of the mathematical scene. In five years see! ten, no one will any longer have the idea of referring on this subject to a certain book by an unknown author, while the one who had undoubtedly held his hand took the trouble to write the necessary presentation, with the assistance of a brilliant collaborator, to form the heart of the no less brilliant volume where the notion of motif is finally developed on solid ground. (Volume where it

(*) Regarding the article in question, see in particular the notes "The Funeral — or the New Father" (n^o 52, notably p. 214) and "The tabula rasa" (n^o 67, notably p. 252–253).

(**) See, regarding this feat of Deligne (assisted by Milne acting as an extra), the beginning of the often cited note "Monsieur Verdoux — or the serving rider" (page 1176).

seemed more charitable, moreover not to mention the usual conjectural “gang of nonsense”, on this theme which visibly went beyond it, of a vague and muddled precursor, long since fallen into the ‘forgotten...’) it will have become second nature, to cite “Tannakian categories” by P. Deligne and J. S. Milne as one would cite FAC or GAGA (de Serre) or the SGA (the well-known anonymous seminar of IHES, known as “du Bois Marie”). And in doing so, there will not be the slightest ambiguity in anyone’s mind as to the authorship of these innovative ideas - which is certainly not the work of co-author Milne, and even less of Tannaka, or even of a certain strictly unknown author (a man named Saavedra), named two or three times in passing in their article, for having written (in the introduction to a volume by his pen) an “excellent summary” (with a few reservations) on the subject.

But we will not expect the father of the theory to do violence to his well-known modesty, to the point of calling “Deligne categories” (or “Deligne correspondence”, in a completely different domain ...) which, obviously and by the unanimous consensus of “good” people who decide in these matters, should indeed be called that...

(1764) (April 20) Yesterday’s reflection made me see with new eyes something that last year, when I had just arrived at the Burial, had left me astounded: “... this a seemingly absurd thing: Deligne “redoing” Saavedra’s thesis, ten years later!” It was discussed on April 19 last year when I discovered the “memorable volume” LN 900, in which (among other beautiful things) Saavedra’s thesis is reproduced practically by text message (*). I come back to it a week later again, in the note “The clean slate”. At that moment, I had arrived at the “intimate conviction” that the meaning behind this nonsense was the desire of the brilliant Deligne (acting as Saavedra’s scribe) to

“to give himself the illusory feeling of liberation from something that he surely felt as a painful obligation: to have to constantly refer to the very person that it is a question of supplanting and denying, or if only to another who refers to him.”

But last week, taking the trouble for the first time to leaf through the work of this “such and such other”, I noticed to my surprise that he was absolutely not thinking of “referring to me” (except is by the three quoted lines of “deep gratitude” – bogus, visibly

(*) See the notes cited in the penultimate note of b. from p.

intended to be a deception). Suddenly my “intimate conviction” of a year ago became lame - there must have been a correct element in it, surely, but it still remained a mystery: it is not the three lines in question, that no reader will think of going to find at the end of the introduction, who will have motivated a Deligne to play the copyist of the most obscure of the pupils of a long-deceased master! Not to mention that in this end of the introduction I appear almost in one breath with him and with Berthelot, who are entitled (in the same way as me, one would say (*)) to thanks for their “help and advice that they have generously contributed during this work”...

This “mystery” was completely clarified during yesterday's reflection, and without me having to search, and without even having to mention it to myself. Thinking about it again, after I stopped writing, various associations surfaced — they must have already been present while writing, without me even being aware of it, and guiding my pen without my knowledge. I was struck by a similarity not only in style, but in the patented process of appropriation, across the three major “operations” in the Burial (among the four in which Deligne himself is the principal (if not the sole) “beneficiary”). This is the process that we could call “the temporary surrogate father”, introduced surreptitiously onto the mathematical racketeering board to conceal real paternity, while the person of my friend Pierre remains temporarily in the shadows. . Once the natural father has been completely eliminated from the scene to everyone's satisfaction, the substitute father is himself hidden away as if he had never existed, and the real father, modest and smiling, appears on the scene, without even having to say it's him; because for him who quietly knew how to pull the threads and who knew how to wait, things happen by themselves without any resistance: the unanimous agreement of the entire Congregation has already invested him with the role which is legally responsible.

This process only began to be perceived by me a few days ago, retracing the misadventures of my friend Zoghman through the various episodes of Operation IV known as “the unknown man on duty”. The “substitute father” in this case (for a certain “correspondence”...) was Kashiwara — I cannot say whether he fell from the sky like that, providentially and by the greatest chance, or if the future real father delicately made him understand that this result of a stranger, who was hanging around without a father worthy of this

(*) With this difference though that I “introduced him to this subject” (sic), and that he “also owes me a large part of his training as a mathematician” (that's really too much of an honor).

name, was not, in my opinion, to be disdained (*). The fact remains that friend Pierre knew how to perfectly play on an alleged ambiguity of paternity, fabricated from scratch by the peremptory consensus of “skills”, and this even before the scope of the new thing was is still generally recognized. The surrogate father Kashiwara appeared in March 1980 (**), if not already during the Flies Conference six months before; it was slipped away without leaving a trace (and without taking too much offense, it would seem) during the memorable conference of June 1981, fifteen months later. Here, the evasion is done with perfect tact, by the introduction of two others, let's call them this time “presumptive co-fathers” (and purely formal) Beilinson and Bernstein, who enter the scene as a simple clause of style — “thumb!”, while of course no one would imagine that it was one nor the other who had the child (even if both took advantage of it ...).

The analogy with “Operation Motifs” is truly striking 1 While the authorship of what could be presented as the “nonsense” of all comers on the motives was still too notorious (and especially in the early 1970s) to give room for maneuvers, there were two crucial aspects of the yoga of motifs which had never before been the subject of a single published line, even in allusive form. One of these aspects, “weight yoga”, had been appropriated by the Mega-father in 1970 without showing the shadow of a wrinkle – what had been glossed over was in any case only “conjectural” and was no better than a token allusion.

The other part, on the other hand, was perfectly on point, without anything conjectural about it, from the second half of the sixties. A vague, somewhat neglected student was supposed to give a presentation at least of the starting mechanism of yoga - a technically not very arduous task, but which (until around the time of the “death” of the natural and unwanted father, at least) seemed rather beyond the unfortunate. It was this student, Saavedra therefore, who was the ready-made substitute father, sufficiently credible, thanks to the provisional guarantee of the one who remains behind the scenes, to win the assent of a Congregation which does not

(*) (June 16) It would seem that the initiative for pick-pocket operations on Mebkhout's work belonged to the enterprising Kashiwara, and this from 1978, barely a few months after Mebkhout communicated to him the Chapter III of his thesis which he had just completed. See on this subject the note “The maffia” part (b) (“first troubles - or the bosses from across the Pacific”), note b. from p. (*) p. 1060.

(**) (June 16) In fact, it was already starting to show its nose two years ago — see b's previous note. from p. The episode of March 1980 is that of the Goulaouic-Schwartz seminar, which is discussed in the note cited, as well as in the note “Carte blanche pour le pillage — ou les Hautes Œuvres” (n° 1714 , notably pages 1088–1090).

asks only to forget the one who must be forgotten; but at the same time (and that's the point) this "father" clearly doesn't "make the cut". When the time came, the idea would not occur to anyone, and probably to Saavedra least of all anyone else (*), to put forward the supposition that he could be the father of a new philosophy - a simply grotesque supposition for few. we would like to stop there for just a moment... Here, the evacuation of the surrogate father, who has had his day, only takes place ten years later, with the publication of the memorable LN 900 in 1982. It must be said that between 1972 (prominence of the "substitute father" in operation I called "motives") and 1980 (appearance of the equally providential substitute father in operation IV called "motives") "from the stranger on duty"), water had passed under the bridges, and there was no longer any point in going around any further! Remarkably, here too, a "presumptive and perfunctory co-father" is introduced to do so. "smooth" transition (and without anyone seeming to put themselves forward) between surrogate paternity (polichinelle paternity, in short...) and real one. And I am sure that Milne no more saw the invisible threads that manipulated him as someone else wanted them, than Beilinson and Bernstein cared to see them. Everyone has had their crumbs, and everyone (at least those who have a say...) has every reason to be fully satisfied.

All this also made me think again last night of the third major operation for the direct benefit of the "future all-out father", the "Equal Cohomology" operation. I was able to convince myself previously that the initial motivation for this operation (**) was the intention of appropriating a certain formula of fixed points, from the fact that we could present a certain "formula of functions L" to undesirable paternity as a trivial corollary of the said formula. The trouble is that the formula of the traces in question was tainted by the same undesirable authorship. Fortunately there was also another possible father, a good friend (Verdier not to name him), who had even made two formulas, one too general (but heuristically crucial), the other a little narrow but still sufficient

(*) (June 16) At the end of the "deal" which must have been concluded between him, Saavedra, and a Deligne (provisionally) behind the scenes (ready to reappear when the time was ripe...), the "share" by Saavedra, it was a state doctoral thesis in his pocket and the relative notoriety acquired for an author of the prestigious "Lecture Notes" series — which would give him the start for a career in his country, far from the arid mathematical pursuits that he had only glimpsed from afar...

(**) See on this subject the group of notes "The formula" (n^os 1695 – 1699). This initial statement was subsequently expanded considerably - see in particular on this subject the notes "The Funeral Eulogy (1) - or the compliments" (n^o 104) and the note "The Jewels" (n^o 170 (iii)).

able to “style” what we wanted. But friend or not, it is certainly neither the friend, nor the unwanted deceased, who is the “father” who is appropriate here, even though it is the key formula for “the” famous conjecture (*) . Given the notoriety, unfortunately, of the L functions formula and its unfortunate authorship, the delicate point here was not the friend (between friends we always end up working things out...), but rather the deceased. To add insult to injury, his demonstration of the “corollary” was published in black and white in a Bourbaki seminar in 1964, but at a moment (fortunately) where the routine case (uh sorry, the crucial case, I meant M, of this formula (or the formula of the traces is kif kif, but that should definitely not be said... (**)), had not yet had time to be verified.

Here, the manipulation consisted of using the friend in question to act as the father of his ultra-general formula (which was only the exact truth, except that he never took the trouble to demonstrate it...), but by slipping through the band a confusion with the explicit formula demonstrated by the cumbersome deceased (formula to which above all is not alluded to at any time), and by debunking the ultra-general formula (as conjectural, incomplete and, frankly, unusable). This was a way of drowning a fish, and of depriving the reader of any desire to go and watch in a certain SGA 5 seminar (which we also make it a duty for him to “forget”) what he would have to say on the matter. As for the explicit formula (a little narrow around the edges, but perfectly valid) of the friend, by mutual agreement there is no longer any question of it either, except for an ambiguous and purely formal reference, buried at the end of a stringy and discouraging text as possible, which no reader in the world will have had the courage to read to the end. We can therefore say, in summary, that the “substitute father” (Verdier in this case) did indeed intervene, but less through his tacit agreement for “paternity” on a result (that of the deceased) that he acts here to avoid completely, rather than by his connivance in a game of scrambling and unscrambling two “children” of whom he is indeed the father, just to evade in the fray the third child, the unspeakable father himself, an orphan that no one can, or above all, care, to find (*). In this manipulation, Illusie plays

(*) This is of course “the” Weil conjecture. See on this subject the note “La Conjecture” (n° 1694).

(**) These two formulas are in fact each immediate corollary of the other. As my authorship on one (the formula of L functions) was notorious, Deligne managed (in the memorable text with the name “SGA 4 1/2”) to present it as a corollary of the other, by making the impossible to give the appearance of being the father of it, by conjuring-scram tricks infinitely more arduous, than my modest demonstration (and stated in the key) for the said formula. See the group of formulas already cited, for this tour de force undoubtedly unique in the annals of our venerable Science (notes n° s 1695 - 1699).

a supporting role, a little similar to that of the “presumptive co-fathers” of earlier - except that his paternity, no more than that of Verdier, is not supposed at any time to relate to the sacrosanct formula of traces for Frobenius, the only one that counts and reserved (with all the tact that is required, of course) only for Deligne, but that it also concerns the unspeakable child that it is a question of hiding - this to which Illusie collaborates with this exemplary devotion which characterizes him.

(1765) But I would like to come back again to Saavedra’s “thesis”. It was around the time of my departure from the mathematical scene, at the beginning of 1970 (if I remember correctly), that Saavedra finally pretended to really “stick” to his work, after a year or two during which he did not. He didn’t seem too decided. He then told me that he had produced a formulation and a demonstration of the initial statement that I had proposed to him, so as to apply to the case of any ring with base k . He even made me a demonstration sketch, which I had to listen to with a slightly distracted ear. Almost all of my energy was occupied by the change in my life that I was experiencing at the time. Without thinking of carefully checking what Saavedra was telling me, I had the impression that he had finally started, and that he would now be able to manage on his own. Perhaps I was a little in a hurry to take my desires as realities, at a time when my availability for a real direction of research had become almost nil. (**). After that I had no more sign of life from him, as far as I remember (***). I assumed until last week that he must have completed the minimum program that I had proposed to him, and just a little beyond perhaps by dealing with the case of the reasons (according to what Deligne had written to me last August, with his bibliography commented on the motifs).

I have only just realized that this is not the case. The unfortunate man found a way, after three or four years spent on the subject, to make a gross error in the very definition of what he calls “Tannakian category” (the definition by intrinsic properties,

(*) See on this subject the note “The conjurers — or the soaring formula” (n^o 1698) — and also the note by b. from p. (**) page 1121 in the note “The family album” showing to what extent the shirking and flight efforts of the good Samaritans Deligne and Illusie were crowned with success.

(**) In comparison, at least, with the availability that had been mine before my departure; But no with that which I can see in most of my colleagues, assuming research directions.

(***) My memory here betrays me a bit - see note no. 1767 for unexpected revelations on this subject.

I mean (*)), which it was a question of proving that it implies the “Galoisian” description in terms of representations of a suitable sheaf. Theorem 3 that he states in the introduction (this introduction where he is supposed to at least state the four essential theorems of the theory, as I had given them to him) is therefore trivially false. Deligne and Milne make it a pleasant duty to point out the monumental error, proposing as a “new” definition of the categories studied the description in terms of sheaf (which it is obvious a priori that it is the correct one, even if it means modifying the intrinsic description if necessary...), and seriously question whether the definition “of Saavedra” (once rid of the id-iot error) indeed implies “theirs” (sic) (**) — which was very exactly the subject that was supposed to constitute Saavedra's thesis work!

The situation is pure Father Ubu! And this in thirty-six ways at once. Thus, what was the subject of the work proposed to Saavedra, the only part which required an original contribution, however modest it may be (identifying the good intrinsic conditions for a Galois-Poincaré category on a base ring as general as possible) has not been treated even in the case (which I believe I have treated for a long time (***) at the time of meeting Saavedra) where the base ring $k = \text{End}(1)$ is a field! Saavedra's “thesis” work therefore consisted, very precisely, of piously copying the part of the theory (beyond the start of Grothendieckian yoga), above a basic body, which was already entirely completed by me. , and to present, in place of the work which was a prerequisite for everything that was to follow, a cannulated definition and a “demonstration” of a false theorem, a demonstration that is reduced (as Deligne makes it a point to point out - loc. cit. p. 160) to a simple

(*) The error comes from the fact that there was confusion, in Saavedra's mind, about what I meant by the base ring of a tensor category; it is not just any ring with respect to which said category is “linear”, and the tensor product is “bilinear”, but rather the canonical ring $\text{End}(1)$ (where 1 is the unit object of the category). By the time I explained the basics of the theory to Saavedra, he must have been so “not in on it” that it must have gone completely over his head and sunk into oblivion. Deligne, who seems to have more or less taken over from Saavedra (with obviously an idea of his own in mind...), was careful not to make him correct the situation. This allowed him (ten years later) to discreetly collapse the Saavedrien house of cards, and to appear as the Savior Angel and (this time again) as the true Father that everyone was waiting for...

(**) Location. cit. page 160 (I'm not making this up!).

(***) It was in 1964 or 65, so seven or eight years before the famous “thesis”-sic of Saavedra, and seventeen or eighteen years before a Deligne-Milne tandem came running to the rescue for not doing this modest work either — the only “original” work that I had expected from the most modest of my students...

vicious circle !

That's not all. The thesis doesn't hold up — and the thesis jury doesn't notice anything! It seems that none of the members understood very well what was going on. However, this did not encourage anyone to let me know that there was at least one among them who was able to give valid guarantee of the seriousness of the work that they seriously pretended to judge (*). If the defense nevertheless took place, and without my being associated with it, it could only have been thanks to Deligne's guarantee, which (as Saavedra's thanks clearly suggest) must have followed somewhat his work, once I had practically disappeared from the scene (**).

It seems unimaginable to me, therefore, that Deligne would not have noticed this error, he whose liveliness and acuity I know down to the smallest detail - and this is in no way a question here of "small detail" I Of course, I had told him in all its finesse the yoga that I had achieved, and it is simply not possible that among the very first things that I explained to him, there was not this counter-example that he and Milne pretend to bring out there as the latest novelty, and which was known to me from the very beginning of my reflection on yoga (which I will ultimately call "Grothendieckian", instead of referring to Galois- Poincaré who don't ask for that much...). If he allowed such a gross error to remain in the "thesis" (sic) of his "protege" (resic), such as could purely and simply discredit the "substitution father" (all provisional) as soon as he would seem appropriate, it is certainly not without good reasons. Yesterday's reflection makes these quite obvious.

It may be said that I am fabricating, and that the "help and advice" mentioned by Saavedra do not necessarily imply that Deligne took the trouble to read with any care the four statements of the introduction which summarizes the essentials of the theory (*). These statements were of course familiar to him long before he met the person concerned. It would then have been a simple thoughtlessness to endorse a work without having taken at least the trouble to check, in the space of a quarter of an hour, the correction of the main statements announced in

(*) The composition of this lamentable jury will also end up being revealed (to the reader who has resisted until then) in the final note 1767 of the "Sixth Nail" to my coffin...

(**) This sudden interest of a Deligne for an obscure student in need of a thesis only appeared, one wonders why, after the death of the natural (and unwanted...) father. of the theory that said student (visibly overwhelmed by the task...) was supposed to present.

(*) Apart from the results on the filtrations of the fiber functors, more technical and more difficult to compress in one striking statement.

the introduction. But in fact there is no doubt in my mind that Deligne must have taken this trouble. This work, in fact, was not just any work, presented by a student who was a bit lost and in need of a thesis. Deligne was best placed after me (and before Serre again) to sense the full scope of the formalism which was presented there, as forming a crucial part of the unwritten (or at least, unpublished) heritage left by the late master, if it was more, certainly, for him to take his usual casual airs towards this aspect (**) deep down he knew better than anyone what was going on, if he, the brilliant Deligne, the excessively elitist, took the trouble here to follow the work of someone who, obviously, was mediocally gifted, it is surely not for the beautiful eyes of the person concerned and with the aim of helping him to obtain what, according to current consensus (and even more so, following the criteria of demandingness pushed to their extreme degree, which he is honored to profess) is a bogus thesis.

Once this word is released, we are immediately confronted with a strange contradiction. On the one hand, an error so monumental, from someone who is supposed to have invested full time in the subject for years, that it is difficult not to interpret it as a sign of incapacity land — it would seem that the very problem that was posed, even in its simply technical aspect (which was not very rocket science, however), was simply not yet grasped during the defense, and during the publication of the book in question. On the other hand, this same student, after a year or two spent with me without doing much, suddenly acquired, in less than two years, a mathematical culture which can rightly seem impressive: theory of structure of algebraic groups, both on general fields and on the field of reals, theory of zeta functions, Hodge theory, patterns... Not only that - but I don't remember having read a mathematical text written in his hand, even if only a few pages, and knowing very well to what extent (especially for students with modest means) it is not at all easy to learn to write maths — I was struck, browsing the book published under his name, its “outfit” of exceptional quality. The thought had occurred to me that, technically speaking at least, this text, which is obviously intended to be a standard reference text in the same way as the EGA and SGA texts, could have been written in my hand, or in that of Deligne or from one of the four or five other students I have had, all remarkably gifted, who are experienced in the task of presenting in precise, complete, and elegant form a set of ideas and interwoven facts

(**) See, regarding these tunes, and the technique of appropriation that they serve, the note “Appropriation and contempt” (n° 59).

and complex. I know very well that, even less than a mathematical culture, such editorial virtuosity is not something that can be improvised (except among beings with exceptional gifts, like this same Deligne and a few rare others), and that 'it is only acquired (when one actually ends up acquiring it) after many years of practice. It took me more than ten years to acquire it myself, even though the contact I had with the substance it was about expressing was very strong. This contact was without any common measure, certainly, with that of Saavedra for his thesis subject, still not understood after having written on this theme which turns out to be, however (at least until 1982...), 1a "good reference" for a delicate and crucial formalism. Clearly, there are two things here that simply don't "fit" with each other...

The thought that crossed my mind last night, and which now returns with the force of evidence, once I take the trouble to tell myself the situation in black and white, is this: it is unthinkable that this or Saavedra, whom I knew well and whose possibilities and above all, the limits I know very well - it is unthinkable, upon reflection, that it is indeed him the author of this brilliant book, expounding, in its exclusively technical aspect it is true, but in a way (on this level) that is exhaustive and to the nines, the bases of a "philosophy" which goes beyond it entirely. Perhaps the first three chapters, two of which consist mainly of functorial generalities that everyone already knew, and the third of which presents Saavedra's completely cannulated version of the central notion of the book - these chapters therefore which were supposed to constitute the "minimum program" which he never accomplished — perhaps these are entirely in the hand of Saavedra. Although the central chapter III may be, it is nevertheless enough to give an idea of what we were getting at — namely, the "Grothendieckian" (not to name it), or "Ger-Bienne" vision. of certain — categories, a vision which gives meaning to later chapters IV to VI.

Once the description by sheaves has been admitted (wisely taken as a definition of the so-called "Tannakian" categories, in the doubly pirate text of Deligne and Milne), it is these last three chapters which constitute the heart of the formalism that was in question. to appropriate. I presume that these chapters were written in toto by Deligne, or perhaps partly by him, partly by Berthelot; and this in much more detail than the notes that I had passed to Saavedra, so that he practically only had to copy them verbatim, if indeed he was even asked to take the penalty of this formality. He must have felt like a "winner", because he was being given a "gift" of a thesis and the title, even though he should have

feeling that what he had done himself (and even while deluding himself that it stood up), was undoubtedly a little meager for a state doctoral thesis. And Deligne (disguised as a Samaritan again...) wins: here is the reference that was needed, if not for immediately then at least for "later" (for those who know how to wait...), and where the undesirable name no longer appeared, for all practical purposes at least.

To heighten the joy, I add that the man named Saavedra seems to have disappeared from circulation without leaving any trace. Last year, in anticipation of the sending (which I saw was imminent) of the printed and paperback copies and everything of *Récoltes et Semailles*, I had leafed through the International Directory of Mathematicians, which is large nonetheless — everyone there is (and the directory is there for that), with the sole exception of the person concerned, who does not appear under Saavedra, nor under Rivano (nor even under Neantro, which I looked at out of conscience). Suddenly, the story takes on the appearance of a dark detective story. We shudder to imagine the smiling and affable Deligne, like a second Monsieur Verdoux (alias Landru), once he has achieved his torturous ends with this "good reference" as he pleases (four years before that of his friend Verdier! (*)) — we shudder, I say, to see him make the "evidence" of his diabolical machination disappear, namely the unfortunate Neantro Saavedra Rivano himself, by having him calcined for a long time in a pretty fireplace in Ormails (**), especially designed for such purposes.

I reassured myself by telling myself that I hadn't heard that Kashiwara or Verdier had disappeared from this world - to be honest, I had the latter on the line only the day before yesterday, for him asking (without much conviction and without success, it seems to me) if he could not give me news of another "disappeared" woman, of whom everyone is talking and which apparently no one has ever seen — I mean, Jouanolou's thesis. I still don't know much more about this thesis, but it would at least seem that Verdier is still alive, whatever "evidence" he may be - and I have good hope that he is. even Neantro Saavedra Rivano.

(*) On the subject of this, see the note named (appropriately) "Good references", n° 82.

(**) "Les Ormails" is the name of the residential part of IHES (Institut des Hautes Etudes Scientifiques), where my friend Pierre — alias Monsieur Verdoux-alias Landru (and disguised as a horseman serving) took over at the right time of a certain deceased person, ousted from the place and sent to oblivion by the kind of casual coup of which my friend has the secret. The residential part consists of around ten family pavilions, and a larger building made up of comfortable studios, which will surely soon also have their own small individual all-purpose fireplace...

(1766) With all that, I haven't even finished going around the Ubu aspects of the history of Saavedra's thesis - I definitely collect them, theses and theses like no other! There I had arrived at the presumption (not to say, the intimate conviction) that if Deligne (assisted by an eager and voluntary collaborator) pretended to seriously copy Saavedra's thesis ten years after the defense of it here, he undoubtedly only "recovered" what he had been willing to "lend" to him for a time (the time for Saavedra to complete his thesis and disappear), and that it was therefore not there that a fair return of things - except that what he had "lent" for a time, he had "borrowed" from the deceased who was never named. But as it is not customary to return to the deceased what we borrow from them (that would be all that is missing 1), everything is for the best, on this side too.

The best part of all this is that even after a second ex-student came through (the most brilliant of all those I had, to boot), the humble problem that I had given to Saavedra, which had been my starting point more than twenty years ago and the first thing that I believe to have resolved from that moment, in the case where the definition ring of the $\tilde{y}$ -category considered is a body — this humble problem is still not "resolved" at the moment, even in this case! Deligne was content to point out Saavedra's gross error (probably noticed more than ten years ago, but he was biding his time...). He did not bother, while copying 128 pages of the previous reference text, to repair this error. Why would he have taken this trouble - when the goal pursued was visibly achieved? For this to happen it would have been necessary for there to be present in him, in this operation, something other than the sole desire for appropriation, but rather an awakening interest, a respect for the mathematical substance he dealt with, and a vision which goes beyond the perspective of immediate "gain".

If I took the trouble, around the years 64–65, to identify a "Grothendieckian" yoga for the $\tilde{y}$ -categories representable in terms of "algebraic sheaves", instead of being satisfied with those which can be described by a diagram in groups, it is because in the example which "motivated" me the most, that of the patterns on a body, it was well known (by a very simple Serre argument) that when this body is of char. $p > 0$, there is no "rational" fiber functor on Q (or even on R). This forced my hand, then, to express the theory in terms of something as "unserious" as the formalism of sheaves and links, and at the same time of course, to find intrinsic criteria of a simple algebraic nature, ensuring that this "Galoisian" or "Grothendieckian" vision practically "always" worked, and in any case, at very little cost. The characterization that I had identified (and, if I am not mistaken,

proven), by the existence of a fiber functor on an extension of the field k' of the base field k , is still not established in the literature, twenty years later! Even today, in terms of what is written by the care of Saavedra, Deligne and others, even admitting everything we want about a formalism of “motivic cohomology classes” on a finite field (let's say), it is still not established (not in the literature, at least) that the category of semi-simple patterns (let's say) on such a body is “Grothendieckian” (or “Tannakian”, as these gentlemen say). Here are $418 + 128 = 546$ pages of text, from the pen of Saavedra (assisted by a Deligne and by a Berthelot), then by Deligne and by Milne, and all that so as not to even be able to bring out what had been my point of reference. departure twenty years ago, convincing me that “motivic Galois groups” existed.

Yes, why would a Deligne have taken this trouble, when he had long forgotten the vision, when the credit he sought was acquired in any case, and when the body on which he worked to create his theory of motifs (which has nothing to do especially with that of a certain deceased...) are all bodies with zero characteristics - so that its famous so-called “Tannakian” categories are all “neutral” (or “trivial ”). On this account, it was certainly not worth making a big deal out of the sheaves and the like, which are now nothing more than window dressing. There was no point, except to appropriate the letter of something whose soul and spirit we have forgotten.

And I see that the epilogue of this breathtaking and lamentable story is that just as for the BA BA of the vision of motives buried for fifteen years, it is still crumbling, barely finished to go around the brilliant Burial and his prowess, who is going to do this little job that none of his students after his “death” has yet had the heart to do. Because they have been too busy playing masters for a long time to still have the time, even if only for a few days, to also be a servant (*).

(1767) (June 19) It is today exactly two months since I began, in a rush, to write the preceding notes (from April 19 and 20), with the ready-made name “The sixth

(*) I was a little hasty here, pretending to put all my students in the same bag with the most brilliant of them. In advance, I apologize to all those among them who do not feel flattered to find themselves in such brilliant company! I am happy in any case to remember Giraud, doing the work (which fell upon him unexpectedly) of reading Contou-Carrère's thesis, in a “service” capacity, that's for sure, vis- towards Contou-Carrère and me at least, and perhaps also towards the mathematical community; see on this subject the last paragraph of the note “Jesus and the twelve apostles” (n° 19, page 151).

nail (to the coffin)" (n^os 1761 , to 1766 , not including this one, part of the lot). Zoghman Mebkhout had just brought me Saavedra's book the week before — and it only took one glance for me to already realize what it was about.

I must admit that this discovery was an emotion, barely less strong than that of the "memorable volume" of exhumation of the motifs (Lecture Notes n^o 900), a year before the day. To put it better, the emotion of last year reappeared, in a way, unexpectedly revived by the discovery of an "operation" intimately linked to this exhumation; an operation (this was obvious from the outset) which had prepared it, and of a completely comparable scale. I was then seized again, not to say suffocated, by this feeling. with a quiet impudence - the same impudence (this too was clear from the start, by many signs which do not deceive), attacking something intimately linked to me, something that no other person in the world that I had carried and nourished for a long time... It was so strong, even bordering on anguish, that I myself was astonished.

The spontaneous reaction, and the natural outlet, would have been to do as last year - to express my emotion while it was very fresh, and thereby get to the heart of this new part of my burial alive by those who were my loved ones. I held back, however (*), because I needed a minimum of availability for Mebkhout's visit, not to mention that he had things to say to me that I felt good about, even if they did not affect me in such a neuralgic way. , that they were just as "neuralgic" for him, in any case, and just as significant for the Funeral. Moreover, it seemed important to me to note these things that I had just learned from him and which were not yet familiar to me, while they were still fresh* in my mind - while the ins and outs around this famous burial book was not likely to escape me - even if I only started it later, which is why, the day after my friend's departure, I started (from April 15 to 18) the story of his misadventures , in the group of notes (nos. 1711 to 1714) now forming the end of the Apotheosis.

This means that before coming to the famous "sixth nail", I had time to pull myself together. To tell the truth, just now rereading the first pages I find no trace, in my sarcastic (and a tad distant) description of the new pot-aux-roses, of the emotion which had initially assailed me, to the point to make me spend a sleepless night, at a time when I had

(*) I still wrote four or five pages in the emotion of the moment, but there are hardly any left trace in the text written nine days later, on April 19.

yet great need for sleep, for once I felt it, yes, the “weight of a past”!

It was June 10, three days after having put the famous “end point” under the Funeral — which suddenly started again with a vengeance! Of course, I was far from realizing how much it was restarted — that there were still three hundred pages (give or take) that remained to be written. When I finished with the sixth of the notes (“The dirty jobs”) forming the “Sixth nail”, I thought I had covered it, and the “Four operations” also at the same time - apart from around ten pages (for operations III and IV) to retype clean and add the required footnotes. In a few days, I thought I would be able to entrust the entire manuscript of Burial II to typing.

However, in the days that followed (perhaps even the day after or two days after the day when I thought I had finished with the last “Clou”) there was an unforeseen turn of events, about which I still have to decide. to come back. Here again, my spontaneous movement would have been to get started straight away. If I waited two more months before doing it, it's not that I lacked the desire, of course. But there were more urgent things to prepare for the strike. Rereading the Four Operations from the beginning, it appeared that there was a great need to expand here and there — and we know the rest!

Still, today (and barring further unforeseen events - knock on wood!) here is finally the auspicious day when I put the real end to the Funeral, practically speaking I mean: the one where I write the very last pages, supposed to be part of my reflection on the Burial, within *Récoltes et Semailles* at least. After that, all that remains is to write this “Letter” which must serve as a foreword to *Récoltes et Semailles* — after which I plan to take a few days of rest, well deserved and which I really need. .

A few days after writing the six previous notes, I became aware of the composition of Saavedra's thesis jury — this jury that I covered with well-deserved sarcasm in the penultimate note “Monsieur Verdoux — or the rider servant”. The thesis was defended on February 25, 1972 at the Faculty of Sciences of Orsay, before a jury formed by J. Demazure (rapporteur), Castelle and A. Grothendieck.

For a “twist of theater”, it was a coup of theater! The crowning glory of Ubu! I also found it difficult to believe this information from official sources, even though I had not retained the shadow of a memory of having attended such a thesis defense. Clearly, the story of Monsieur Verdoux–Landru was getting even tougher! I called Demazure by chance,

if he remembered having been part of a thesis jury with me for a man named Saavedra. Demazure didn't remember much anymore, either, but still enough to be able to assure me that the defense had indeed taken place (he certainly wouldn't have been able to say when and how), and that we Both of them had been there, in addition to Castelle (whose name I didn't even remember...). He didn't know much more, except that he had been a thesis rapporteur. It was I who told him that the thesis, officially, would have consisted of a 25-page text (which must have made his work as rapporteur easier, I imagine). So it was he who was surprised. He promised me that he would send me a copy of the thesis. I would have been very interested to know what it looked like, but I'm still waiting for it - apparently (according to what Demazure ended up telling me a few weeks later) this thesis would be impossible to find; maybe he didn't try very hard. Still, neither apparently does he have any trace of it in his papers than I do. But that's a detail...

Suddenly, I looked fine! With the hot sips that I had given myself on the subject of this jury, visibly inept, "knowingly pretending to judge" a work of which it "must not have understood very well what it was about" 1 We can 'Imagine that I had a crazy desire to put away these sarcasms, to save the furniture in short, to keep a composure - and then no, that would have been cheating. There's already enough cheating going on in this whole Funeral without me putting in any more of my own. Once again, such sarcasm. were entirely justified — Now that I know the composition of the jury, I can even point out that it was me, above all others, who fully deserved this sarcasm. After all, what they must have remembered above all, Demazure and Castelle, was that Saavedra had prepared this thesis with me, or at least that he had started with me, on a subject that I had given him . I was the one who was supposed to be in this, and they trusted me. If so, these famous 25 pages for which Demazure is supposed to have been rapporteur, they perhaps held up - and even if the same monumental blunder was there, in a simple summary of theory, Demazure who was not in the loop and whoever trusted me had no chance of noticing it.

As for me, who had practically dropped out of maths for two years, apart from my courses, this defense which I probably sent there in a rush, between a course in Orsay and some meeting of *Survivre et Vivre* or some public discussion (if it turns out) on the atomic waste stored nearby (in Saclay), it must have been nothing more or less than a simple administrative formality. What is certain is that I had not followed Saavedra's work for two years, any more than anyone else's — and I had no doubt

that Saavedra's work stood up. I can no longer say exactly where this conviction came from. Unlike all the other students I had until then, I had no direct presumption, through work already accomplished with me, of Saavedra's seriousness.

Would I have taken my academic duties, in those days, so lightly that I would have trusted him with his appearance, so to speak? If the text of the book (published the same year), whose thesis does. 25 pages undoubtedly constitutes a summary, was already ready at that time and served to give me an idea, it is very true that "at a glance" it presented so well, that the idea did not bother me. . may not have even come to verify the part of the work that was supposed to constitute Saavedra's personal contribution. It is also possible and even probable (but I no longer have any memory on this subject) that I relied on the opinion of Deligne, who after my departure had followed the work (*).

In either case, I must recognize that my responsibility is engaged in the same way, for having awarded the title of doctor of sciences in view of a thesis which, twenty-three years later, appears to be a bogus thesis, to use the expression of the note already cited. But it is not the fact that I was myself and without my knowledge an instrument in this deception, and bear responsibility for having given my guarantee (lightly), which nevertheless takes away its character of deception. This one just seems all the more awesome. Because after all, the real motivation (for the one who pulled the strings) was certainly not to allow a vague doctoral student in distress to have a title at a low price, before changing jobs and disappearing behind the scenes - but Well, it's up to someone who is in no way lost to appropriate, delicately and casually, the authorship of a certain vision born in me and brought to fruition before he has yet heard the words pronounced (in mathematics). such as "sheaf" or "pattern". It is thanks to my sudden and intense activity for the survival of the species and other beautiful and most urgent causes (from which this same ex-student and friend told me he had to distance himself, because of his entire dedication and absolute to mathematics alone (*)), at a moment when my energy was fully absorbed elsewhere, that my brilliant student and friend succeeded in this truly unique sleight of hand, of making me the instrument of my own dispossession. In the state I was in then, completely disconnected from my former mathematical interests and blindly trusting

(*) I don't even remember the fact that Deligne took care of Saavedra's work. That's one thing which I learned in April, while watching the introduction to Saavedra's book.

(*) See on this subject the note "Brothers and spouses — or the double signature" (n^o 134), in particular pages 614–615.

to those among my students, Deligne in the lead, who since the end of the SGA 5 seminar had already started to play a little game in their own way, any name (for example) that we would have concocted for its famous categories of which I did not remember that from a long way away, I would have said yes and amen¹ As I said yes and amen to Verdier announcing to me that there was no av. there would be no book on new style homological algebra, or Deligne announcing to me that half of the SGA 7 seminar that we had done together would suddenly change authorship...

But the fact that the person who pays the price for a scam operation stupidly agrees to it, and without suspecting anything, does not change the nature of the scam, except that it doubles as 'a breach of trust. And the fact that Serre and other augurs also find their value there and give their blessing without reservation. (**), gives the thing an unusual dimension - that of the corruption of an entire environment and an entire era - without making it honorable, however brilliant it may be, nor removing an iota of its indecency.

As dramatic surprises never come alone, just a few days after having the revelation of the composition of the thesis jury of my ex-student Saavedra, I also had the appropriate information for Jouanolou's thesis, a somewhat special thesis as well, and about which I had the opportunity to speak somewhat here and there in my reflections (*). No more than Saavedra, he had never bothered to send me a copy of his famous thesis ("which everyone cites (since the Pervers Colloquium) and which no one has ever seen"), so I ended up writing him a somewhat dry letter (dated April 25) to ask him a certain number of questions about the strange vicissitudes of this thesis. He replied to me practically by return, on May 1, in an evasive manner for the substantive questions (since it was "always very painful to return to the past"), but on the other hand with information that could not have been more precise. at the level of administrative coordinates: the thesis was defended on July 3, 1969 at IHES (Paris), before a jury chaired by P. Samuel, with J. Dixmier, A. Grothendieck, JL Verdier. My correspondent adds, with a touch of mischief: "As far as I was able to judge, all the members of the jury were present¹" (something which was also confirmed to me by JL Verdier, whom I had at the end of the thread about this little

(**) See, for this most explicit blessing, the note "The family album", part d. ("the Burial — or the natural slope").

(*) This thesis was discussed in sub-note n° 851 (p. 349) to the note "Solidarity", and also in the note "The co-heirs..." (n° 91), p. 387- 88. See also the section "The student and the Program" (n° 25).

After).

Here again, I didn't have the shadow of a memory of this thesis defense, which had obviously also been done on the sly (sorry to have to degrade my brand image in this way!) (**). If I believed that the defense had taken place in Strasbourg (and therefore placed this defense at the beginning of the seventies, knowing that Jouanolou had a position in Strasbourg in those years), it is undoubtedly because of a cryptic reference by JL Verdier to this thesis (in a Bourbaki presentation of February 1975, n° 464), cited as "JP Jouanolou Thèse, Fac. Se. Strasbourg" (without date or title). However, like me, he had been part of the jury - his. Would memory be as faulty as mine, or rather, capricious, by placing the IHP (Institut Henri Poincaré) where the defense was done, in Strasbourg? Understand who can!

This same Verdier was also kind enough to send me his own copy of the thesis. I believed at first, when looking at this packet of 208 loose sheets (*), that it was a photocopy of a draft, which I also remembered having myself kept between hands and commented in detail, from the time when Jouanolou worked with me on this thesis which kept dragging on. But Verdier confirmed to me that this was indeed the definitive copy of the unfortunate thesis, which apparently never had the honor of being printed in more than three or four copies (mine, with my annotations, had to return to the hands of Jouanolou, and I never saw it again...), nor to be paperbacked.

The slightly more detailed explanations that Jouanolou was kind enough to give me subsequently (in a letter of June 3), plus the phone call to Verdier, allowed me to get back into the swing of the situation a little. Jouanolou had visibly reached a "saturation point" for his thesis work, which he had pursued without conviction from the beginning (but without me bothering to clearly understand the situation (**)). In 1969, he must have reached such a blocking point that he would have been unable to resume his work at all, to take into account my numerous observations. I then had to

(**) The thesis defense took place at a time, I believe, when I had already "dropped out" of maths, to become interested in biology (and more particularly, molecular biology).

(*) At the Sorbonne's Thesis Department, there is a 215-page thesis submitted - apparently Verdier's copy is missing six pages. If it turns out, the copy submitted to the said Service is the only complete one that exists in the world - and in paperback to boot, I have been assured. They must have a binding service for foundling theses, which arrive in pieces...

(**) See the section already cited "The student and the Program", n° 25.

state the evidence and “let it run”. In any case, it seemed to me, when looking through it again, that this text represented a serious and usable work of formatting, even if it is far from perfect — it was clearly better than “better than nothing”, and could pass as providing an indispensable reference text, in the absence of any other which would have fully satisfied me (***).

Of course, the idea would not have occurred to me (“even in a dream”) that Jouanolou would take his revenge in his own way, on the lack of conviction with which he had continued this work with me, by sabotaging it himself and practically erasing all traces of this famous “reference” that I was so keen to have! This is again a “return of things” about which I would be ill-founded to complain (even though I don't lack the desire to do so!). In my relationship a.

Jouanolou, what mattered to me was finding in him “arms” to push the wheels of a certain cart of imposing dimensions. I took it as a given in advance that he, Jouanolou, was involved in my plans, without at any time thinking of stopping at the insistent signs which nevertheless showed me that this was not the case. It is true, of course, that it was Jouanolou himself who had chosen to come and work with me; he must have benefited from working with a prestigious “boss”, without realizing what he was getting into...), and it was also he who freely chose his subject of work, among the wide range of subjects on which I was willing to support him (subjects all linked, of course, to this same “cart” which without doubt, deep down, didn't tell him anything of value). To put it another way: like everyone else, Jouanolou was grappling with certain contradictions within himself, in terms of his own desires and choices, in his work in this case.

My own contradiction was not in my relationship to my work, but in such a polarization on my tasks that I was unable to see in my students anything other than welcome arms, and to imagine that none of them could be divided in the work he was doing with me. With the additional perspective that the long reflection on the Burial gives me, I realize that Jouanolou was far from being the only one among my students to be “divided” in one way or another, in this work. But he represents an extreme case, because he is the only one among them who was unable to identify with the task he had chosen, and whose work was done without conviction and without joy. My responsibility in this

(***) In any case, today it is still the only text in the world which presents the theory of -adic coefficients, derived categories version - and a text that cannot be found on top of that, to bring joy to its height. The chainsaw went through there...

situation, it is not having agreed to really become aware of it, preferring to put what should be incidental (the accomplishment of my tasks) before what is essential (that the task “chosen” by the student is truly hers also, and continued with joy).

This is surely why Jouanolou is also the only one of my ex-students in whom I happened to perceive a grudge (who never says his name, of course). Cultivating such resentment is an outlet and a diversion, which certainly does not advance anything, except to avoid one's own problems (and it is rare that we look further). That does not prevent it from being founded, and I have no reason to complain if today (twenty years later) I reap certain fruits from it.

To find myself confronted in quick succession, less than two months ago, with the unusual episodes of Saavedra's thesis, then that of Jouanolou, made this thing, just glimpsed in the first part of *Récoltes*, striking for me. and Sowing; that even before my departure and in the years which immediately followed, everything was not going well (as I took for granted 1) between my students and me. Thus, among the twelve theses which were passed by the students who worked with me at the level of a state doctorate thesis, four of these theses constitute, blatantly, “Burial theses” of the master 1 They followed each other over a period of five years, between 1967 and 1972, and two of these thesesBurial took place before my departure. The first is that of Verdier in 1967, a thesis reduced to a summary of 28 pages, a prelude to the burial of the new homological algebra that I had introduced, and that Verdier was responsible for developing. It has already been discussed in sufficient detail (*), so that there is no point in returning to it again.

The second is that of Jouanolou in 1969, which marks the burial of the formalism of -adic cohomology, from the point of view (visibly crucial for the six operations) of derived and triangulated categories (for which Verdier was supposed to provide the basic reference). The third is that of Deligne in 1970 (?), a brilliant thesis if ever there was one and also deeply rooted in the ideas he got from me (**), without my name even being mentioned! The fourth is Saavedra's thesis, which has just been discussed at length, where

(*) See in particular, on this subject, the notes “Thesis on credit and all-risk insurance” and “Glory galore — or ambiguity” (n^os 81, 170 (ii)).

(**) This is the work “Hodge II Theory” by Deligne. I give details on the rooting of this work in the yoga of patterns and in my vision of “theories of coefficients” (including a theory of “Hodge coefficients”), in the note “The points on the i ” (n^o 1641), notably pages 739–740, as well as subnote n^o 164 (p. 805–806). Like M. Raynaud and C. Contou-Carrère, Deligne chose his work themes and in particular that for his thesis, without waiting for me to suggest one, and continued this work of

another that the presumed author (***) exposes, with the technical mastery that we know of him, the ideas and results of a third on the motivic Galois group (via a complete theory of the so-called “Tannakian categories”, and four 1) without alluding to my modest and late self!

These four burial operations (which prelude the “Four Operations” with capital letters 1) are visibly linked in many ways (*). They follow each other in the space of less than five years, starting the same year following the end of the SGA 5 seminar. This seems to have been the starting point and the rallying point for the deepening dispositions in my ex-students, and this well before my departure! That these predate my departure is a remarkable circumstance, concerning this “second plan” of the Burial formed by all of my ex-students “before” — a circumstance that I was not really able to integrate still in an overall understanding. It is this “second plan” which, at this moment, seems to me the least well understood of the three. But now is not the time to rekindle reflection on this subject. Surely, the coming months will not fail to bring me many new elements, coming to me from my ex-students themselves. At that point, it will be time to assemble them into a living picture of the “second plane”.

There is still a fifth thesis (**) which for me fits into the series of Burial theses, but a thesis “after”, and even ten years after the previous series. It's that of Contou-Carrère, passed in December 1982, and special in more than one way, too. It differs from the previous four by this, that the valiant digging efforts of Contour-

completely independently, without even talking to me about it before it was practically completed. This does not prevent the fact that his work (on mixed Hodge structures) is rooted in my ideas more deeply than is the case for Raynaud and Contou-Carrère, who mainly use the language and techniques that I brought, while the problem pursued by both is entirely original.

It is true that (depending on the wind that blows today) ideas go with the wind, especially if they are not published in the bargain (as Serre has just peremptorily explained to me again, a few days ago barely)...

(***) that is at least the

conviction I arrived at, in the penultimate note “Monsieur Verdoux
— or the serving rider” (n° 1765).

(*) It would of course be interesting to explore these links further — but as I say a few lines later, now is not the time.

(**) Out of a total of fourteen theses, done by the fourteen students (both “before” and “after”) who worked with me on the level of a state doctoral thesis. So that's more than one thesis in three that is a Burial thesis — which is already not so bad!

Carrère, to be pleasant to people who matter and to be forgiven for having been more or less my student, did not spare him as much as Verdier (whom he had thought wise to choose as his thesis director (***)) unexpectedly pretended to “sink” him without warning — whereupon, for lack of anything better, he fell back on me again. It was not necessary for me to act as thesis director, given that Contou-Carrère had found his working theme and developed his methods by his own means, and that I had not followed his work, and that it was placed in a context (that of reductive group diagrams) that I had lost sight of a little. This does not prevent the fact that the initial idea of his work, namely a certain method of resolving “equivariant” singularities, for the adhesions of Schubert cycles, is directly inspired by an idea that I had explained to him in detail (around 1975 or 76), concerning a resolution of the canonical and simultaneous singularity of the adhesions of the orbits, for the adjoint representation of a reductive group on itself (*). Needless to say, Contou-Carrère, who has felt for a long time how the wind blows in the beautiful world to which he has the legitimate desire to access, says nothing of this connection. Where would we go if we once again began to mention such imponderables as an idea (and not yet published), supposed to give rise to another (or ask you a little...) - except, of course, when the one that we are honored to cite is one of those whose name enhances the brilliance of the work presented

(***) At a time moreover when I still believed (according to what Contou-Carrère himself assured me) to be his official thesis director. I only learned of the existence of a “parallel” thesis director (in a pair where it was rather me who had to act as “backup” thesis director, just in case...) at the moment when Contou-Carrère saw himself obliged to fall back on me, and at the same time (given the situation which had become a little too much, shitty) to reveal to me the role played by Verdier. It's no wonder that with such impossible shenanigans following one another over the years, Contou-Carrère ended up practically stopping doing math anymore. It must be said that he is not the only one...

(*) I had been intrigued, towards the end of the sixties, by the beautiful work of Brieskorn on so-called “rational” (surface) singularities, and their links to certain simple root systems (those where the roots are all of the same length), and I asked myself the question (absurd, it goes without saying) of finding a direct description of a rational singularity, in terms of the simple algebraic group corresponding to its root diagram. This is how I arrived at a very simple geometric description (and even obvious, to put it bluntly) of the resolution of the singularities in question, using Killing couples, with a whole nice set of conjectures that I have a little forgotten since then, and which I have told over time to anyone who would listen. But as I haven't published anything and following the new axioms that Serre has just kindly explained to me, it's to the first person who picks up that we award - and I was able to see, moreover, that there are some who pick up a lot like that, obviously. It's very practical sometimes to change axioms...

(in which case, moreover, it is entirely superfluous to specify why we lavish him with thanks, which therefore can only be justified...).

END OF "FOUR OPERATIONS (ON A REMAIN)"

(¹⁷⁶) (March 25) Last night, I spent several hours in bed getting back into the “yoga of patterns” bath, instead of falling asleep peacefully as I should. And sometimes again, instead of going back to my notes, I spent another hour or two scribbling implication diagrams for the intrinsic conditions known to me on a class of De Rham cohomology (of a variety non-singular projective on a body of zero char., let's say) so that it is “algebraic”. I found twelve variants, in total, of the conjectures of Hodge and Tate (*). At the same time, I was able to convince myself that we must have roughly in hand what is needed to define “the” (triangulated) category of patterns on a finite type diagram on $\mathbb{Z}$, or at least an approximation very tight of it (assuming that it is not yet “the” good one), provided however that we have a theory of the “mysterious functor”, which I had postulated towards the end of the sixties (**).

This is not the place to dwell on this subject, of course. But from now on I see that it is the moment or never, given the state of lamentable abandonment in which I see the motivic theme fifteen years after having left it in doubtful hands, to trace some main lines of the ideas to which I had achieved in the past. I don't have the heart to wait any longer, until I find the time (once I've finished “A la Pursuit des Champs”) to write the “1st” systematic book that should be written; this detailed account of a dream, as the first big step for the dream to take

(*) (March 27) Each of these twelve variants should give rise, for any basic pattern of characteristics, to a “category of coefficients” of a corresponding type on the conjecture considered is true, this category of coefficients should contain that of the patterns on a body...). For details, I refer to the part of volume 3 of the Reflections which will be devoted to the theory of motifs (“Motifs my loves”).

This also means that these twelve variants of well-known conjectures give rise to as many different notions (a priori at least) from a notion of “pattern” on a body with zero characteristics. This will allow in the future eleven followers of my friend Pierre to each “discover” their own notion of motive, while pretending to ignore those of others and above all (as has been the norm for fifteen years...) a certain deceased (known above all for his predilection for unnecessary details...).

(**) This question of the “mysterious functor”, establishing the “missing link” between crystal cohomology in $\text{car. } p$ (via the notion of F -filtered crystal, F like “Frobenius”), and p -adic cohomology in char. zero, a question obviously crucial for our understanding of the cohomology of algebraic varieties, has still not been seriously addressed, almost twenty years after I raised it in very clear terms...

root, finally! in the soil of carefully matured (and published...) formulations, and that it flourishes according to its own nature. In addition to a first milestone already planned and announced for this book of "mathematical fiction", namely a sketch of the algebraic formalism of duality known as "the six operations", I will therefore attach to volume 3 of the Reflections (*) a short work where I plan to ask some crucial questions related to patterns and algebraic cycles. I was sad to see them languish in a tomb, and I long to see them return to the light of day and participate again in the rhythm of the seasons...

It has been more than five weeks since reflection returned to the Funeral, without leaving it again. This is undoubtedly why the thought of "orphans", left behind in a sick world, has come back to me recently with a certain insistence. The last note where one of these orphans is discussed in detail is "The melody at the tomb - or sufficiency" (n^o 167), on a theme very close to that of last night's motivic reflection and from earlier (which I just talked about). It was a month ago to the day, the day before I was going to launch (without yet suspecting what awaited me M in a note that would be called (it was already decided in advance) "The four operations". In the end, it was sixteen notes instead of one, I believed that I would never finish it - and then yes, I nevertheless ended up going through it all, from these "operations" to extensions (**)!

And here, above all, I want to come back to these orphans, to at least call them each by their name, it will perhaps do them good, and it will certainly do me some good. The first time I spoke about it was a year ago, in the note of this name precisely, "My orphans", from the end of March last year, in one breath with the note which follows it "Refusal of an inheritance — or the price of a contradiction" (notes n^os 46, 47). In writing these notes and giving them these names, as if guided by an obscure foreknowledge, I did not yet suspect to what extent these things that I had left had been orphans in fact - in a sense stronger and more poignant than I could not have imagined it even in a dream; nor how far did this "contradiction" go

(*) In the current state of my publication projects, the first four parts of Récoltes et Semailles (ending with the third and last part of the Burial) must form volumes 1 and 2 of the Reflections.

Volume 3 will consist of the fifth part of R and S (reading notes on the autobiography of CG Jung) and a certain number of shorter texts, most of which have been announced in the Introduction. The first volume of "A la Pursuit des Champs" is therefore planned as the fourth volume of Reflections.

(**) (May 9) Barely two weeks after writing these lines, new facts, which appeared at the last minute, relaunch the "four operations" investigation, which has already been increased by around twenty notes and sub- new notes!

I then made a first and timid observation. And this memory immediately reminds me of another, from the month before, when I saw myself writing, as if it were someone else, more penetrating than me, who wrote by my hand: “we do not fight corruption”. It was while writing the section “The World Without Love” (nŷ 19). I still remember, seeing this word “corruption” in black and white, I was initially taken by surprise. Someone “reasonable” in me was scolding me: really, you don’t go with the back of the spoon — “corruption” is a big word, so don’t misuse it! You better change register!

I had to examine myself for a few moments, minutes perhaps. Then I knew that I was not going to change that “big” word, nor add a note to explain that the word had escaped me in the rush of the pen, and that it was not necessary to take it too seriously. These “puffs” that came back to me here and there from that world, someone deep inside me, more insightful than the “me” who decides on “reasonable” labels, knew well what their meaning was, before even though I took the trouble to try to tell the story (*)...

I also remember well the precise moment when the reflection of that day suddenly changed quality, when this other in me took over to write, it was just after having evoked the affectionate warmth which had surrounded my first years in the mathematical world, thanks to the welcome received from my elders, and even in their family: the Schwartzes, the Dieudonnés, the Godements... The change takes place when I continue with “Visibly, for many young mathematicians today, it is being cut off... from any current of affection, of warmth... which cuts the wings of work and takes away a deeper meaning than that of earning sullen and uncertain bread...” — and when at the same moment, suddenly appears and comes to life before my eyes this world without love, which once again calls to me...

It was without having to look for it that the name “my orphans” came to me last year, for what I had left behind when I left (declared “death” by the relatives to whom I had entrusted them. ..). It is undoubtedly that this name expressed a simple and tangible reality: what I had “left” or “entrusted”, these were not “objects” nor “property”, but they were things alive. When I think about it, it’s always like living, vigorous and fertile things, made to grow, to flourish and to conceive and generate other things

(*) I tell the story, first in March last year in the section “The note — or the new ethics” nŷ 33), then two months later, after the discovery of the Burial, in the clearly more circumscribed, stanciated set of notes, forming Procession X or “Funeral Van” (in the company of the Gravedigger), notes 93–97.

alive, vigorous and fertile. If I have the feeling of a “wealth” that I have left, it is not the wealth of the banker, but rather that of the gardener, or that of the mason, who from their hands brought forth these exuberant gardens and these spacious and welcoming houses.

This feeling of something precious (even fragile) links me above all to the notions, to the questions, to the great themes that I know are fertile, and that I had left in younger hands - these things which still need work and solicitude; much more than the well-developed tools that I had fashioned, or the “houses” that I had finished building and fitting out (*). Others besides me will go about their business there as they please, cooking there and lounging there; if one turns out to be too small they will enlarge it according to their needs, as I myself have often had to enlarge and enlarge again, where however it had previously seemed that I was “thinking big”. But it is by what remains unresolved, by the construction sites which had just started on splendid sites and with these stones of great beauty (and already the workers have left, having taken away what they liked and degraded the rest..) — this is how my past as a mathematician continues to have a hold on me. It is these abandoned construction sites, which I find today looted and dilapidated, that I would now like to review.

(177) (March 27) Yesterday was busy with stewardship. I had to reread the first fifty pages of the third and final part of The Burial, to entrust them to typing. It took me no less than five hours, making small adjustments of expression here and there, and adding a few more footnotes. The typing of “The Key to Yin and Yang” is about to be completed. After the impossible problems I had with typing this part (**), I ended up relying on the services of a secretary from the University, who does the work outside of her job official. The troubles are over. Thank goodness — she does conscientious and efficient work, around thirty impeccable pages per week. We'll get there eventually. It was time !

Apart from that, the question of a shaped construction of the triangulated category of patterns on a finite type schema on the absolute basis Z continued to run through my head — I still spent most of the night to think about it in bed, instead of sleeping — beware! It had seemed

(*) Regarding the impulse in me which pushes me to “build houses” (mathematics), see the note “Yin the servant, and the new masters” (n^o 135)

(**) See, on the subject of these “troubles” (that is a euphemism), the beginnings of the note “Prayer and the conflict” (n^o 161), as well as those of the note “Jung — ou the cycle of “evil” and “good””, which opens the fifth and final part of Harvests and Sowing.

first of all that the idea I had would only work for schemes with zero characteristics (of finite type on the field $\mathbb{Q}$, let's say), already on the SpecZ base itself it didn't seem to work. to walk. Then I remembered that I had determined in principle the structure of the category of patterns on a finite body, back in the sixties. Assuming that the work that I had done then was clarified, I finally see the principle of at least a complete description appearing in the general case, quite screwy it must be said, but in no way unaffordable it seems to me. The only new ingredient compared to my ideas of the sixties is the philosophy of Mebkhout, expressed in his "good God theorem" of strange memory.

Apart from that, I use the "mysterious functor" theory as a hypothetical ingredient. If this is not available now, it is surely not because it is "unaffordable" (to use an expression that I have already encountered (*)), but because the people I known to work on the cohomology of algebraic varieties have lost, even in maths, the meaning of essential things, too absorbed certainly by a burial which requires all their care...

It must be fair, the work done by Deligne on Weil's conjectures, in "Weil I" and especially "Weil II", will surely come at the right time, when it comes to constructing the six operations on the categories of coefficients supposed express the reasons. Nevertheless, a "confused" and crumbling deceased person had to have the idea, after fifteen years, of getting out of the padded coffin where his dear students and heirs were no longer willing to assign him, he who is not aware of anything and who has forgotten to say the little he had known, so that the problem of describing the category of patterns above a basic schema S is only posed in full, and at the same time and as if by chance, that the principle at least of a shaped construction which takes into account all the known structural elements associated with a pattern) is finally clearly explained (*).

After the "memorable volume" of 1982 on patterns, it would seem that the "motif patterns",

(*) This is the peremptory qualifier with which my brilliant ex-student Deligne took pleasure in burying the "standard conjectures" – which as a result none of my bold contemporaries dared to tackle for almost twenty years ! For a full quotation, see the note "The Eulogy (1) — or the compliments" (n° 104).

(*) As I announced in yesterday's reflection, I am thinking of including this description in the following volume of the Reflections, with a (very summary) overall sketch of the "vast table of motives" - judging that the trickery of the occult motives has lasted long enough. I point out now that the principle of construction envisaged does not depend on any kind of conjecture on algebraic cycles, like "Hodge" or "Tate" (or one of the twelve variants discussed yesterday).

which for ten or twelve years had been the reserved and secret domain of a single person, has become a common hoard of three or four, who communicate with each other with the air of conspirators, or like Grand Initiates of some secret sect and ultra-selective, it only takes a few days to ask a few simple questions in black and white and submit them to everyone's attention, and a few weeks if we want to identify them with some care, clearly indicating what ingredients we have, and what others need to be developed. If in the fifteen years since 1970, and in the three years since the "memorable volume", neither one, first, nor any of the few afterwards, wanted to take these few days of their certainly precious time, without even talking about weeks, it is surely for excellent reasons, which none of them care to explore. But this atmosphere that they like to maintain, and this spirit in which they maintain themselves, are in themselves already a deterioration of an adventure of discovery, which has become a simple means of raising oneself above others, when this is not to despise them. Such an atmosphere is likely to propagate corruption, and it is the antipodes of creation, even though those who indulge in it would be the most brilliant of geniuses. By maintaining such dispositions - those of the miser brooding over his money - they cut themselves off from the creative force in themselves, just as they like to stifle it in others.

(178) (March 30) The day before yesterday I turned fifty-seven, and I took a little break. I made just a few typing corrections for the end of "The Key to Yin and Yang", which I continued yesterday. It's a relaxing and pleasant job - at least in the case where the person who does the typing also puts his effort into it, and a text in which I invest myself entirely does not come back to me disfigured. This is a recreation that I treated myself to for two days, to carefully reread around fifty pages, to detect here and there a comma that is still out of place...

The work tone is not at its peak. For weeks, a sadness within me has been warning me that there are more essential things awaiting me than bringing these notes I am writing to their natural end. I write as if going against the grain, and yet I know that, barring accidents and force majeure, I will not stop until I have finally reached the final point under the Burial. But the fact of compressing, of exiling this sadness, which from then on becomes heavy like a stone, of not giving it a voice in these notes (except allusively and in passing at this very moment), is a fairly clear sign that since

a good while, my reflection no longer has the quality of "meditation". It is part of the division between the one who writes (taking care not to put all of himself into it (*)), and the one who lives and feels (without stopping, however, to "lay" on what he experiences and imbue himself with its meaning). Now I feel that it is high time to arrive at this "end point" (without botching what remains to be seen and said...), and to return, within myself...

In addition to working on the notes, there is something else in recent days that is providing a diversion. It is the resumption, as if in spite of myself, of mathematical reflection. I have understood for a few days that a construction in the form of a theory of motives, with all the scope that I saw in it twenty years ago, is by no means as far "on the horizon" as it was. seemed to me. It could even be that a "fully adult" theory, with the complete formalism of the six operations (plus biduality), would be a matter of only a few years of work, for someone who would invest themselves entirely in it (without degrading his creative energy through distorted dispositions). It also appears to me that there are two "keys" (**) for the explicit description of "the" category of patterns on a diagram, say of finite type on the absolute base Z (case in which we should

(*) However, in the previous paragraph I have just written (without any internal reservation) that I "invested myself entirely" in the texts that I entrusted to be typed. This shows that the same words (or almost...), depending on the context, can have a different meaning or indicate a different nuance.

(**) There is, however, a third "key", which I do not mention here because the problem in question seems to me (rightly or wrongly) less delicate. This is the good definition of "De Rham-Mebkhout coefficients" (first without filtrations or F -structures) above, say, a smooth scheme on the absolute basis Z . This definition should at the same time provide the key to "the" good definition of the general crystal coefficients in $\text{car. } p > 0$, which my dear students (Berthelot in the lead this time) have still not known or wanted to identify.

When, in June 83 (about two years ago) Mebkhout explained to me his "philosophy" around the God theorem, I had the impression that his "purely algebraic" description ("De Rham" type) for the category of discrete constructible coefficients (on C) of a smooth scheme on the field C of complexes. was dual to the approach (never published) followed by Deligne in the seminar (already mentioned elsewhere) given by him at the IHES in 1969/70 (unless I am mistaken), using connection promodules. I assume that the passage from one point of view to another is done by the dualizing functor $R\text{Hom}(\cdot, \text{OX})$ with respect to the structural bundle of the envisaged diagram, which transforms $\mathcal{O}_X$ -modules of finite type (which can be considered as " OX -incoherent modules" provided with an integrable connection) into "pro-coherent" modules (also provided with an integrable connection). The advantage of Mebkhout's point of view is that it provides a simple and deep algebraic expression (M-consistency, holonomy, regularity) for the "good coefficients", which Deligne lacked. The advantage of Deligne's point of view is that it provides an equivalence (instead of an anti-equivalence) with the coefficients of a transcendent nature that must be expressed, and that it lends itself better to the expression of the multiplication structure

always be able to bring yourself back). On the one hand, there is the theory of the “mysterious functor”, with sufficient generality and flexibility to pass to the appropriate triangulated categories, making it possible to connect De Rham — Mebkhout coefficients and ordinary p -adic coefficients (as . nothing). On the other hand, there is the question of the explicit construction of the category of patterns on a finite field k (by a “purely algebraic” construction, preferably, without reference to algebraic geometry on k), and moreover, of the “motivic cohomology” functor going from separate schemes of finite type on k (and to begin with, projective and smooth schemes) towards this category. I had constructed the latter up to equivalence, using heuristically the conjectures of Weil and those of Tate (*). I have no doubt that this construction is correct. The work that remains to be done, undoubtedly much more delicate,

tive (tensor product) for the category of coefficients considered. I suppose that in practice, it will often be in our interest to work on both tables at the same time, mutually dual to each other. Deligne's interpretation seems to me closer to a direct geometric intuition, via that of a module (or promodule) with an integrable connection. This is expressed in particular by the fact that (if the basic body is C) a constructible bundle of C -vectorials corresponds to a uniquely connected promodule, instead of a complex of such promodules. This is why (to my great regret, as we can guess...) I foresee that this is his point of view (which he had nevertheless buried without regret, as if to bury thereby the problem of the coefficients bequeathed by the disavowed master...) which will be best suited to developing the formalism of the six variances, and as a third key ingredient in the construction of the categories of motifs. (May 9)
See also on this subject the subnote

and the obstacle”, n° 171 (viii), as well as “The five photos” (n° 171 (ix)).

(*) If I remember correctly, I limited myself to describing the category of semi-simple patterns. An immediate variant of the construction (following the same principle) also gives a plausible candidate for the category of not necessarily semi-simple motives. When I speak here of “motifs”, it is in fact “isomotifs” or motifs up to isogeny. But by using the “-adic realization” functors for any prime number, we manage to reconstitute from there the category of non-iso-patterns (where the Hom will therefore be modules of finite $^{\text{on}}$ type on Z , not on Q).

When I say that my construction heuristically used the Tate conjecture, this should not be taken literally. If it is true that there exist (above a finite body, in this case), on a smooth projective diagram, classes of cohomology which are “motivic” (in a sense which remains to be clarified precisely) without be “algebraic” (ie without coming from algebraic cycles), then there is reason to restate Tate's conjecture (just like that of Hodge, this time above C) by replacing “algebraic classes” with “motivic classes”. Assuming that we succeed (as I suggest below) in defining the canonical cohomological functor (and presumed “universal” in a suitable sense) on the category of projective and smooth schemas on the finite field k , towards the category (called “semi-simple patterns on k ”) already constructed, this will ipso facto provide a definition in the form of cohomology classes that we will call “motivic”, like the elements of $\text{Hom}(T$

$H^{\bullet}(\text{word}(X))$

(in dimension $2i$), where T is the Tate object, and $H^{\bullet}$ against is the hypothetical functor considered, this is why the

consists of “pinning” this category in terms of the given finite field k , and above all, of defining the “motivic cohomology” functor, if only firstly on the category of abelian schemas on k (which should be enough to “pin” the category sought...). This second problem seems to me to be less technical in nature, more directly “geometric”, than that of the mysterious functor. Moreover, it appears to me to be the key to a solution of the standard conjectures (*) and hence also, of the very irritating questions of completeness which arise in the cohomological theory in characteristic $p > 0$. So many reasons which make what a powerful attraction this question has for me!

This is the third evening where I go back to the notes with the idea of quickly reviewing the themes which seem to me the most burning, among those left behind by my students and by everyone, when I left the mathematical scene fifteen years ago (**).

This time I'm finally going to get there!

* *

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Project 1: Topos. I mention them here mainly for the record, having expressed myself in some detail about them in the note “My orphans” (n° 46). Given the disdain with which some of my students, Deligne in the lead, have tended to treat this crucial unifying notion, since my departure it has been condemned to a marginal existence. As I recall in the note cited, topos and multiplicities of all kinds are encountered at every step in geometry - but we can of course very well do without seeing them, as we did for millennia to see groups of symmetries, sets, or the number zero.

construction of this functor currently seems to me to be the crucial question among all, for the formal construction (and no longer hypothetical as in the sixties) of a theory of patterns.

(*) The term “standard conjecture” is not to be taken here in the literal sense any more than “Tate conjecture” in note b. from p. former. Rather, in the statement of these conjectures, it would be appropriate to broaden the class of cycles considered (initially reduced to only algebraic cycles). In the “definitive” expression of the “re-adjusted” standard conjectures (and even though they would be valid as they are), the “algebraic” cohomology classes will still be replaced by “motivic” classes. I will return to the standard conjectures in a more detailed manner, in “The motives my loves” (in volume 3 of the Reflections).

(**) For a very brief first “tour” of these themes, see last year’s note “My orphans” (n° 45).

A flexible and delicate language concerning topos, “sticking” intimately to topological intuition, was developed with great care in the first two volumes of SGA 4 (the famous “gargue of nonsense” that Deligne speaks of in the introduction at the first presentation of the brilliant volume called “SGA 4 1/2”). This is the natural outcome of the language and intuitions around the notion of “beam” introduced by Leray; this second stage (or this “second wind”) in the development of intuition and the “fasceutique” tool, seems to me to be of comparable scope to the first (finding its provisional expression in the well-known book by Godement) . From now on, it is this vision which made possible the appearance of cohomological tools -adic and crystalline, before it was buried sine die by the very people who pretended to appropriate these tools.

SGA 4's developments on the subject of topos do not claim to be complete and definitive, but I think they are more than sufficient for most immediate geometric uses of the toposical vision. Just like general topology or ordinary beam theory, “general toposic topology” does not seem to me to pose any truly profound questions in itself. It is a carefully developed language, serving a certain broadening of the topological and geometric intuition of forms, which is dictated to us by the things themselves. The discredit in which this vision was maintained, and the derision that hit it, are for me part of the great disgraces of the mathematical world of the 70s and 80s.

Here, it is not a question of a “dilapidated construction site” which needs to be brought back to life, but of a house entirely completed and installed, which those who lived there and who were called to make of it a place of work and life, chose to leave, destroying the worker who had built it. The house is spacious and healthy and everything is in its place, like the day the worker left to attend to other tasks. If she needs anything, it's not the work of her hands, or anyone else's. Perhaps the act of respect of the worker himself, for these things that these hands have made with love and that he knows are beautiful, will make these effluvia of violence and contempt dissipate, and will he make welcoming again what was made to welcome.

Project 2: Cohomological language. It concerns above all the language of derived categories, and on the other hand the points of view that I had introduced for non-commutative cohomology, both in the second half of the fifties.

The first current was supposed to be the subject of the famous “thesis” of Verdier, and the burial by Verdier himself of his thesis (*) was at the same time that of the point of view of the categories derived in homological algebra. This had played a crucial role in the flowering of the sixties on the cohomological theme in algebraic geometry, for the formalism of duality in particular, and the development of fixed point formulas (Lefschetz-Verdier type). Practical needs had revealed the inadequacy of the framework of triangulated categories developed by Verdier at the beginning of the sixties, a framework which has still not been renewed as it should.

On the current “non-commutative” side, we have a good foundational work with Giraud's thesis, but this is limited to a formalism of 1-fields, lending itself to a direct geometric expression of objects of cohomology up to dimension 2 only. The question of developing a non-commutative cohomological formalism in terms of n -fields and n -sheaves, imperatively suggested by numerous examples, encountered serious conceptual difficulties. Given the disaffection or, to put it better, the general contempt, into which questions of foundations have fallen in a certain beautiful world, these difficulties were never addressed before I faced them a little over two years ago. years (**).

I now see the two currents coming together in a new discipline, which I have proposed elsewhere (*) to be called topological algebra, a synthesis of traditional homological algebra (derived categories style, of course), of homotopic algebra, of the formalism (still in limbo) of n -categories, n -groupoids and suitable fields and sheaves, and finally of the vision of topos, which now provides the most “purely algebraic” nature framework.

(*) See on this subject the note “Thesis on credit and all-risk insurance” (n° 81), and “Glory a galore — or ambiguity” (n° 170(ii)).

(**) This is the reflection in my letter to Daniel Quillen of February 1983, where I discovered how to “jump with both feet” above the yawning “purgatory” of increasingly screwed compatibility relationships, which seem -blent introduces itself into the description in the form of n -categories (not strict, or n -fields as I call them now), for increasing n . The case $n = 2$ is already no easy task, and no one, I believe, has yet found the courage to explain them all for $n = 3$. This letter has become (as I recall below) the “coup sending” for the long journey “A la Pursuit des Champs”, started the following month on the momentum of the reflection initiated.

This letter was not deemed worthy of being read by the recipient, nor of receiving a response. I ended up receiving a comment from the person concerned more than a year later, on which I express myself in the section “The weight of a past” (n° 50). (Cf. p. 136, second paragraph.)

(*) See subnote n° 1361 to the note “Yin the Servant — or generosity” (especially p. 638).

vast known, to implement topological intuition. The initial ideas for such a synthesis were brought together in the 1960s, including that of derivator, intended to replace the insufficient notion of triangulated category, and also applying to “non-additive” contexts. Certain important developments in homotopic algebra, such as the notions of homotopic limits and colimits developed by Bousfield and Kan at the beginning of the seventies without their knowledge of my ideas (treated in Grothendieckian bomb-nages by my dear students), are located in the straight line of these,

Two years ago I began to outline a project manager for the work I see to be done, with the letter to Daniel Quillen (**). This was the kick-off for the writing of “A la Pursuit des Champs”, the first volume of which (“Histoire de Models”) is practically finished, and will undoubtedly appear as volume 4 in the Réflexions. I foresee that I will still need one if not two other volumes, and one or two years of work, to complete this preliminary prospecting of a substance of great richness, and that twenty years later I still seem to be the only one to apprehend, this is indeed a project which was abandoned for around fifteen years, but which came back to life under my hands for almost a year. The writing of the Outline of a Program, then of Récoltes et Semailles, interrupted this work, which I however intend to resume and bring to a successful conclusion, as soon as the writing of R. and S. and that of the texts (all of limited dimensions) which must constitute, with the last part of R. et S., volume 3 of the Reflections.

Project 3: Six operations, biduality. This is the point of view that I introduced into the formalism of duality à la Poincaré or à la Serre, with discrete or continuous coefficients. The name “six operations” that I had introduced was carefully eradicated by my cohomologist students. They limit themselves to using here and there those that suit them, while leaving to profit and loss the structure that they form as a whole (with the formalism of biduality), and above all, the irreplaceable common thread that the point of view provides. (in particular to identify good “categories of coefficients”, see below). For more than twenty years that this formalism has existed and proven itself, no one among those who were “in the know” has taken the trouble (except in papers intended to remain secret and of which I have not not been aware of) to identify the algebraic “formula” common to the numerous situations where we have such a “all-purpose” duality expressed in a formalism of six operations

(**) Regarding this letter, see in particular the section “The weight of a past” (n° 50, page 136, 2nd paragraph).

(*)).

We see that this is not strictly speaking an “abandoned project” (since the formalization work to be provided here is derisory), but rather a fruitful point of view that is systematically avoided. (as was that of the topos). This abandonment was surely for many in the state of lamentable stagnation that I observe (with a few exceptions (**)) on the theme of the cohomology of algebraic varieties, especially in comparison to the vigorous development that I gave it between 1955 and 1970.

As I already announced in the Introduction (I 8, “The end of a secret”), following Harvests and Sowing (***), I intend to include a short sketch of the essential features of the formalism “six operations”. Thanks to the care of my students, its very existence is today unknown to all, with the sole exception of those who were directly associated with one or other of the two seminars SGA 4 (1963/64) and SGA 5 (1965/66) (*), and who have obviously forgotten it.

Thus I will have done what is in my power, to restore honor (if there are workers on the lookout for good tools) to a tool of perfect effectiveness, and a fruitful point of view which, in the theme cohomological, constantly leads us straight to the crucial problems.

The three abandoned “construction sites” (or houses, or tools...), which I have just reviewed, concern more a common algebraic language, to express the most diverse geometric situations, than any particular geometric situation, like the coho-

(*) (May 9) In one of the first presentations of SGA 5, I took great care to explain in detail this form, which was going to be like the driving force of the entire seminar to come, this presentation, the most crucial of all in SGA 5, has disappeared from the massacre edition. There is no trace of an allusion to its existence in all of volume 1 See note b. from p. (*) page 942 in the note “The ancestor” (n° 171(i)).

(**) The “few exceptions” are above all (before 1981) the two important works Weil I, II of Deligne, and some sporadic results in crystal cohomology, and in Dieudonné’s theory of Barsotti-Tate groups on bases of char. $p > 0$ general (which I initiated around 1969). There has been, as I have pointed out elsewhere, a revival in the wake of the theorem of the good Lord - Mebkhout (one always as ignored as the other...), with in particular the theory of Mebkhout beams (called wrongly “perverted” instead of what it may concern...), developed by Deligne et al.

(***) I remind you that this is volume 3 of the Reflections, also containing in principle the last part of Récoltes et Semailles.

(*) It is also the two seminars, as if by chance, that the text which presents itself as “central” and named (oh irony!) “SGA 4 1/2” recommends not to read...

(May 29) For the scope of the vision of the six operations, see the note “Useless details...” (n° 170 (v)), part (b) (“Machines for doing nothing...”)

mology of algebraic varieties. If in the second project, the one that I call "topological algebra", I happen to come across undoubtedly profound questions (such as questions linked to the homotopy groups of spheres), it is by accident, and not by deliberate intention. My main motivation, again, was and remains that of developing algebraic tools of sufficient generality and flexibility, for the development of this arithmetic geometry still in its early childhood, which I spent fifteen long and good years of my life to carry, to give birth and to nourish, from the embryo that was Weil's conjectures. It is in this geometry that the geometric substance itself is found, which during all these years has really been at the heart of my loves with mathematics, and the rest still today, it is from this substance that it will be question now in the three themes "among the most burning", which I still have to go into

revue.

Project 4: "problem of coefficients". This problem was already in the making in the very formulation of Weil's conjectures (**). He was at the center of my interest in cohomology throughout the sixties. It was clearly stated, with all the generality and all the necessary precision, for the main types of coefficients then glimpsed (***). I speak about this problem, visibly crucial for an understanding of the cohomology of algebraic varieties, from the first return to my work and the act of respect that is the note "My orphans" (n° 46), and I return to this subject in the note "The melody at the tomb — or sufficiency" (n° 167). Two essential threads: on the one hand the formalism of the six operations and of biduality, which we have just discussed. On the other hand, the need to find adequate generalizations, above a more or less general basic diagram, of the types of "coefficients" already known above a basic body, which intervene (even if this only tacitly) in the description of the cohomological functors already known on the category of projective and smooth schemes on this body: ℓ -adic, crystalline, De Rham cohomology, or finally (when $k = \mathbb{C}$, body of complexes) Betti cohomology or by Hodge.

(**) See on this subject the beginning of the note "The maneuvers" (n° 169), where I comment on the initial problem of Weil's conjectures.

(May 29) This beginning became autonomous in a note "The context "Weil conjectures" "(n° 169 (i)).

(***) It does not seem that "types of coefficients" of a new type have appeared, compared to those that I predicted from the second half of the sixties.

I do not think it is excessive to say that this problem contains in germ (*), both the “fully mature” “Hodge-Deligne theory” which is still waiting to emerge, as well as the “theory of the coefficients of De Rham-Mebkhout” which is also waiting (**); and it is for one and the same reason that both theories still remain in diapers today, instead of the adult state that the theory of p -adic coefficients had acquired in a year or two. (for first to the characteristics): it is the eagerness of my cohomologist students, Deligne in the lead, to bury the problem bequeathed by the master, at the same time as the master himself.

However fragmented the steps taken on the one hand by Deligne (filled with all the facilities of the spoiled child of science), and on the other by Mebkhout (in the most complete isolation imposed on him by those - even those best placed to welcome it), they nevertheless provide valuable guiding threads, to be able to identify certain crucial categories of coefficients. These important contributions were present in it; we are thinking in writing the note already cited “The melody at the tomb”. Since then, I have

(*) In making this observation, I in no way intend to minimize the originality or the importance of the contributions in question by Deligne and Mebkhout, any more than I intend to diminish the originality and importance of my own contribution to the birth and initial momentum of arithmetic geometry, noting that it “was already in germ” in Weil's conjectures.

(**) We can say, more or less, that the contributions in question firstly by Deligne (around 1969) and then by Mebkhout (after 1975) respond to the problem of defining suitable “De Rham coefficients” (which would make it possible to insert the ordinary De Rham cohomology of smooth schemes, into a formalism of six variances), in two very different directions. Deligne defines a “good” category of coefficients above the $\text{Spec}(\mathbb{C})$ scheme only, and the functors $Rf_!$, Rf_* in the case of the structural morphism $X \rightarrow \text{Spec}(\mathbb{C})$ of one. separate schema of finite type on $\mathbb{C}$ and for constant coefficients (alas!) on X . Mebkhout defines a “good” category of coefficients, valid in principle for any separated morphism f : complex analytical varieties). Another limitation of the theory developed so far by Mebkhout (in an atmosphere that could not be more discouraging, it must be said), is that it is currently only made for smooth to systematically use the crystalline point of view, which provides a satisfactory substitute for the sheaf of rings of differential operators, so convenient in the smooth case).

For desolate sites, these are desolate sites 1 they eloquently express the systematic disaffection of my ex-students (and of those marked by the ascendancy that they can exercise) vis-à-vis the main ideas force that I had introduced, and developed in certain directions, during the sixties.

plunged a little further into the bath of “yoga coefficients and motifs” which was already emerging during the sixties, and I now have a more precise and more complete image. So I think I will return to the problem of coefficients (and that of patterns at the same time) in volume 3 of the Reflections, following the outline of the formalism of the six variances.

Suffice it for me now to say that I see essentially three types of coefficients on a more (any prime number, or less arbitrary base diagram X ; the coefficients - fundamental (*), adic the coefficients of De Rham-Mebkhout (**)) (especially interesting for X of finite type on a basic scheme S , the most important cases being those where S is the spectrum of the rings $\mathbb{Z}$, $\mathbb{Q}$, or $\mathbb{C}$), finally the Betti coefficients (for would it be that for it also seems to have sunk with the rest...) seems to me the crucial ingredient, to which I will have to return in a more detailed manner in its place.

Project 5: Patterns. I expressed myself in sufficient detail on the burial of the motifs by my friend Pierre Deligne, with the blessing of the entire Congregation, so that it is useless to expand again here on this subject. I would rather like to highlight here a new fact which has just appeared to me, and which should have appeared there. at fifteen or twenty years old

(*) If I speak of “fundamental” types of coefficients, it is to suggest by this name that all the other types of important coefficients that I can now glimpse must be able to be described in terms of these, i.e. in “combining” them in a suitable way, either by providing suitable structural enrichments, or both at the same time, among the structural enrichments envisaged on the De Rham-Mebkhout coefficients, there is (in addition to the “filtration by the weights”, which seems “internal” to the category of coefficients considered), a “De Rham filtration” which plays a leading role in motivic applications. It is possible that this additional structure makes little sense (from the point of view of a formalism of the six operations) only when it is combined with a “discrete” structure à la Betti, which should make it possible to formulate the good properties that this filtration must satisfy. I think I will return in more detail to these questions, in “The motives my loves” (in vol. 3 of the Reflections).

(**) I remind you that for this type of De Rham-Mebkhout coefficients, I now see two dual variants of each other, that of Mebkhout and the one that I hesitate to call “de Deligne”, then what a child repudiated by

him! (May 29) For comments on the repudiated child, see the note “... and hindrance” (n° 171 (viii)). For details on the De Rham coefficients, see the note “The five photos (crystals and -Modules)”, n° 171 (ix).

Already. Just a month ago, the “shaped” construction of the category of patterns above a more or less general basic scheme (a finite type scheme on $\mathbb{Z}$ say, or only on the spectrum of an algebraically closed...) appeared to me as something decidedly “on the horizon”, drowned in the mists of a distant future. This state of mind was undoubtedly a tenacious legacy of days already long ago, when motivic reflection had started on very hypothetical bases, when we did not yet have even the formalism of ℓ -adic cohomology. There is also this “extenuating circumstance” for me, which is that my tasks of writing foundations, for things that were within reach, absorbed my energy to such an extent between 1958 and 1970, that my motivic reflections (and others, on themes which took on the appearance of “luxury” in view of my pressing tasks of the moment) were constantly reduced to the bare minimum, which I granted myself almost contrary to a bad conscience of the one who would “play truant”. In any case, I was left under the impression that the problems of coefficients were what was ripe to be done right away (but by others, since I was already busy elsewhere...), while the motives, for the moment, were just good for a “mathematical-fiction” book, if I found the leisure to write it, surely, things would have changed direction very quickly, if I had actually started writing it, instead of laboring over tasks that no one in the world then had the heart to continue, while everyone is happy to use what I made...

Still, I ended up realizing this thing, which is obvious in itself once you get started: as long as you take the trouble to describe coefficients sufficiently “ends”, that is to say, taking into account all the known structures associated with a pattern, we end up describing the pattern itself. Or more correctly perhaps, we end up describing a category, which will contain the (triangulated) category of motives as a full subcategory (which is already quite good) — just like the category of motives on the body of complexes appears (if we accept a fairly strong version of Hodge’s conjecture) as a full subcategory of the Hodge-Deligne category of structures. As for characterizing exactly, in “algebraic” terms directly adapted to the coefficients with which we work, what exactly this full subcategory is, ie which coefficients exactly “are patterns”, we fall into questions which risk being a lot more delicate. These are those which concern the compatibilities between various geometric-arithmetic structures associated with a pattern (compatibilities to which I have made

already alluded to, I believe, in the note cited “The melody at the tomb”). It is the solution to these problems (which seem to me irrelevant for the effective construction of a “theory of motives”) which is perhaps indeed “for a hundred years”. In any case, experience shows us again and again that such predictions (on the more or less “unaffordable” nature of a question) have little meaning, other than discouraging where courage is not well maintained... (April 1) A few more comments on the formalism of the “Galois group (or fundamental motivic group)”. This notion (which I

identified and began to develop in 1964, before having had the honor of knowing my future ex-student Pierre Deligne) gives rise to intuitions and a formalism of great precision and great finesse. Its existence and its essential features are independent of the particular construction that would have been adopted for the notion of pattern on a body (or “smooth” pattern on any diagram), as long as it satisfies a few reasonable conditions. . I had entrusted Neantro Saavedra with the task of putting into publishable form, in as general a context as possible, the dictionary that I had released around 1964 between, on the one hand, geometry in categories that I called “rigid tensorials” (k -linear categories with “ten-sorial product” operation satisfying suitable conditions, k being here a field), and on the other hand the theory of linear representations of pro-algebraic groups on k (or, more precisely and more generally, of “proalgebraic sheaves” on k). he completed this task in his thesis, published in Lecture Notes in 1972 (LN 265) (*). I had pushed this dictionary further (notably with regard to the translation of filtered or graduated structures etc.

(*) (May 10) Since these lines were written, I have had the opportunity to read the book in question, the author of which had not deemed it useful to send me a copy. I was able to see that in this book, Saavedra appears as a brilliant inventor of the new philosophy exposed there, faithfully following the notes that I had passed to him, and without practically pronouncing my name (nor for the notions introduced in this book). book and for crucial results, nor for already known notions such as that of crystal, laminated module or pattern). The very name “Tannakian category” which he renamed the main notion, is such a brilliant mystification that he surely did not invent it by himself any more than the theory of which he presents himself as the author. . This “partnership” moreover was entirely provisional, and my friend Pierre has already taken charge, ten after the publication of the volume, of doing what is necessary so that it returns (following everyone's expectations) to that which was already quite designated for this. For details of this brilliant operation on a remains (the first and only one of such magnitude, before the operation “SGA 4 1/2—SGA 5” done in the same inimitable style), see the following notes “The sixth nail in the coffin” (b. 1761 to 1767).

on certain fiber functors, or that of a notion of “polarization” associated with a Tannakian category), than is done in the thesis of Saavedra (**), or in the “memorable volume” LN 900 (where Saavedra's thesis is remade and the notion of a motivic Galois group is at the center of the problem, without my name being more pronounced on this subject than for any other concerning motives).

I also point out that the first step in the determination (up to equivalence) of the category of motifs on a finite field, which was discussed previously (***), was the determination of the motivic Galois group of the said finite body, which must be commutative (being generated topologically by the Frobenius element), and is in fact an extension of $Z^\wedge$ (generated by Frobenius) by a certain algebraic protorus on Q (*). The second step was the description of the element of $H^2(Q, T)$ which (according to Giraud's theory) classifies the G -sheaf of fiber functors (**).

As I express it in the note “Remembrance of a dream — or the birth of motifs” (n° 51), I came across the motivic Galois group while looking for the link between p -adic representations, for variable p , of a profinite Galois group $\text{Gal}(\overline{K}/K)$ in the adic modules, obtained for example by taking the $H^i(X, \mathcal{O}_X)$ where X is a smooth projective scheme on

(**) (May 10) This is a presumption that turns out to be erroneous. It was due to my conviction that Saavedra would absolutely not be able to “complete” the program that I had indicated to him, when already the mere mastery of the point of view “linear representations of proalgebraic sheaves” seemed for a long time to exceed him, and that his mathematical background was very limited. Given Saavedra's in no way exceptional means, it is unthinkable for me that in the less than two years between my departure (where he had no notion of cohomology, or the structure of algebraic groups) and the publication of the book, he had the possibility of assimilating (and this in a perfect way, as evidenced by the appearance of the book) the host of all-round notions with which we juggle there. See on this subject the note “Monsieur Verdoux — or the serving rider” in the series of notes already cited “The sixth nail in the coffin”.

(***) (May 10) I note that this determination, too, appears in Saavedra's inexhaustible book (without referring to my modest person, needless to say). It uses the cohomological theory of the global class body (determination of the group $H^2(Q, T)$, where T is a group of multiplicative type on Q) - this is therefore also one of the things that my ex-student (with apparently superhuman means) would have assimilated in less than two years...

(*) This is the motivic Galois group which classifies semi-simple patterns — To obtain the patterns on Q . general, you have to make your product by the additive group $\mathbb{A}^1$.

(**) The crucial point is that this class becomes zero (thanks to the existence of “cohomology-adic” fiber functors) in all places $p = \text{car. } k$, and the existence of the crystal fiber functor gives us sufficient information on the fate of this class in the missing place p .

X and i an integer (or possibly, a suitable submodule thereof). Serre looked at the image of the Galois group in $\text{Aut}(V(i))$ for all i , which is a reductive p -adic Lie group, and it seemed that its structure (in the sense of Lie theory) was independent of i . It was by searching for the deep reason for this phenomenon (itself still hypothetical until today), by relating it to Tate's conjectures, that I discovered the notion of a motivic Galois group, in the wake of that of “motive” and “motivic cohomology”.

If there was one simple and profound thing that I brought to light, and if there was a creative act in my life as a mathematician, it was with the birth of this crucial notion, linking geometry and Arithmetic. This is also why, on this memorable April 19 last year, I was suffocated by the feeling of unimaginable impudence, seeing this thing appropriated with this superb casualness, like the last of the trifles that would come to improvise here at the turn of a technical paragraph: see, it's as stupid as cabbages, we only have to apply here proposition 4.7.3 of our modest article exposing the theory of Tannakian categories. ... (**). This is how mathematics is done in the 1980s, after brilliant precedents in the 1970s (*).

But I'm getting off topic, okay — I was supposed to show a construction site, not create sentiment. I therefore point out that, as in the case of the profinite fundamental group, if X is a geometrically connected schema on a field k , there is reason to distinguish between the motivic fundamental group of the schema geometric” The two do not coincide, even if k is algebraically closed — because the fundamental motivic group of k is not trivial (it is connected, nothing more!). It is therefore necessary to introduce the “geometric” motivic fundamental group of X . It is defined as the core of the natural homomorphism

$$\pi_1^{\text{mot}, p}(X) \twoheadrightarrow \pi_1^{\text{against}, p}(\text{Spec}(k))$$

(**) In writing these lines, the association imposed itself on me with the very similar way of introducing the definition of the function L has coefficients in an p -adic sheaf, without reference to anyone and as the last of banalities that the same brilliant author would have just improvised. See on this subject the sub-note “... and nonsense” (n° 1696) to the note “The maneuvers” n° 169, p. 891.

(*) And even already, in the sixties — see on this subject the note “Eviction” (n° 63).

(relating to the choice of a fiber functor on the category of smooth patterns on X).

The point I wanted to get to is that this kernel, which we could denote (X/k) , should be the first step towards ρ_1^{mot} the construction of a “type of motivistic (geometric) homotopy of on k ”, to which I have already alluded in passing previously (**). The description in form of this “type of homotopy” (***), whose “cohomology” should be none other than the motivic cohomology of to a large extent, blood doubt independent) of the central task, which is that of the effective construction of the categories of motives and . is part of the conceptual work in- the formalism of the six operations for them.

Project 6: Standard conjectures. As I explained in a previous footnote (note (*) p.1202), these conjectures can be understood in two different senses.

First of all, in the literal sense as I formulated them during the Bombay Conference in 1967 (*). In this form, they seem to me to summarize the most crucial questions which currently arise in the theory of algebraic cycles, at least from the point of view of the so-called “homological” equivalence for these cycles.

At the time of formulating these conjectures, my main motivation was not however directed towards the cycles for themselves, but towards the means which they provide (perhaps...) to construct a theory of semi-simple patterns on a body, satisfying the wishes which should have been “common knowledge” for fifteen or twenty years (and which nevertheless still remain occult...). I will indicate in volume 3 of the Reflections various weakened variants of these conjectures, which would be sufficient to build such a theory (and the weakest of which is practically necessary and sufficient for this purpose). As I have already pointed out elsewhere, even

(**) In the note “Requiem for vague skeleton” (n° 165).

(***) As a type of object, I predict that it will be a type of relative homotopy (in the sense of Illusie) in the “extension” topos (in the sense of Giraud) of the fpqc topos of associated $\text{Spec}(C)$ to the sheaf (on this fpqc topos) of fiber functors on the category of smooth patterns on X . The relative cohomology (on the basic topos that we have just described) of this type of homotopy is quasi-consistent (and even “coherent”), and can be identified with the motivic cohomology of complex point of) associated by transcendent way with $X \times_K C$, at least when $X \times_K C$ is 1-connected.

(*) Algebraic Geometry, Bombay 1968, Oxford University Press (1969).

that the conjecture in initial form would prove to be valid on a determined body k (for finite k , for example, or even for all k), this would not mean by itself that the classes of cohomology that it is appropriate to call "motivic" (**) (and which we can hope to make various conjectures true, of the type of Hodge and Tate for example) are necessarily algebraic. If we discovered one day that there exist non-algebraic motivic cohomology classes, this would undoubtedly mean that the importance of algebraic cycles in the theory of motifs, i.e. in the arithmetic-geometric study of the cohomology of algebraic varieties, would be less than there was reason for me to believe at the beginning of the theory. Still, the effective construction of a theory of patterns that I now foresee is independent a priori of current conjectures (Hodge, Tate, or "standard" type) on algebraic cycles.

This does not prevent the standard conjectures and their variants on the one hand, and those of Hodge, Tate and their numerous variants on the other, conjectures which notably imply statements of the existence of algebraic cycles (ie of algebraicity of cohomology classes), or (in modified versions) statements of the existence of so-called "motivic" cohomology classes, are intimately linked to each other, as well as to the description of the main "types of coefficients", and, ultimately, to that of the category of reasons itself (*).

Here again, work of decantation, ordering and information, which had to be done for almost twenty years, was not done (nor, above all, made public) by those who preferred

(**) I think I can propose a reasonable definition of motivic cohomology classes on a projective and smooth algebraic variety, at least when the basic body has zero characteristics. For the general case, the crucial case (which was discussed previously) is that of a finite basic body. Modulo the description of motivic classes in the latter case, I think I can put forward "the" good definition of motivic classes. Compare with comments to note b. from p. (*) on page 1202.

(*) This does not contradict the assertion that I have just made, namely that the construction that I foresee of the category of motives (on a body let's say) is "independent" (ie "technically" or "logically" independent) of the various conjectures considered. These "intimate links" of which I speak (which mean, for example, that the twelve variants that I have seen of the Hodge and Tate type conjectures suggest so many different types of cohomological "coefficients") are of a heuristic nature, and non-technical - just like the link between the formula (called "conjectural") of Lefschetz-Verdier, and the formula of traces for the correspondence of Frobenius. In the latter case, this essential heuristic link, which is not a link of logical dependence, has been duly underlined in the two sub-notes "Real math..." , "... and "nonsense" " (n° s 1695 , 1696) in the note "The maneuvers".

until today, still burying fruitful ideas (when they were not published) or debunking them (when they were), and reserving the benefit (immediate) and the credit (later), rather than to inform and make available to all fascinating issues, crucial for our understanding of the links between geometry, topology and arithmetic. I see that what is lacking here is not at all competence or even brilliant gifts, but simple honesty, and a certain decency also in the relationship with a "scientific community" dispensing prestige and power, among those who do not, however, feel obliged* to the slightest obligation, to the slightest "return" in the form of a somewhat "service" attitude. This is why, while I have lost contact with the subject for more than fifteen years and I am no longer "in the know" about anything so much, it is me who is nevertheless going to make an effort to get back into the picture. bath of what was once familiar to me, at least to repair as best I can, in volume 3 of the Reflections, the omissions of those younger and more gifted than me, and to do at the end of the ends what they do not did not have the generosity to do so.

There I believe I have toured these "construction sites" which seem to me at present (and already since the moment of my departure from the mathematical scene) "the most burning", with a view to the construction of this "arithmetic geometry" which I laid the foundations for throughout the sixties. I in no way intend to say that I have made a summary overview of all the substantial questions that I am perhaps the only one to see and which are close to my heart. As far as I know, these are still at the point where I left them when I left the mathematical scene, and many have not yet even had the chance to be explained in the literature. Among these, I point out the discrete Riemann-Roch conjecture in the schematic framework (*). Also, there is the generalization of the theory of the local and global geometric class field, into a statement of duality which is essentially "geometric" in nature (while giving the classic "arithmetic" statements as corollaries). This is discussed in letters to Larry Breen from 1976, reproduced in the appendix to chap. I of "A la Pursuit des Champs" (which will therefore appear in vol. 4 of *Réflexions*). In these statements the main work in perspective will be in a careful description of the categories of

(*) This conjecture is explained for the first time, it seems, in subnote no. 871 of the note with the suggestive name "The massacre" — given that the conjecture is part of the massacred things of SGA 5, disappeared without even the trace of a name in the Illusie edition.

“coefficients” in which we work. An important role is played by a certain self-duality, discovered by Serre (**), in the category of unipotent algebraic groups up to root isogeny, above a field k of char. $p > 0$ (self-duality which is still not known, it seems to me, outside of the handful of people to whom I have happened to tell it). The question of a generalization of such statements to higher dimensions is (for me at least) a total mystery (but Milne would have insight in the case of an algebraic surface...).

These questions of duality go back, I believe, to the end of the fifties, where I also branched out into the construction of a “Jacobian” complex (of chains) of proalgebraic groups, associated with a finite type scheme on a body (to begin with...), in terms of suitable “local Jacobians” associated with these various local rings, in analogy with the “residual” or “dualizing” complex that I had constructed a few years before in coherent duality. All these questions of duality were relegated to second place in the sixties, notably by the tasks of the development of the “nonsense” of the étale and p -adic co-homology and the language of topos. A certain part of my program, relating to relative local and global Jacobians, was accomplished around 1977 (without mention of my modest person) by C. Contou-Carrère, who hastened to pack up given the welcome he received, made by Deligne and Raynaud (*). Today it takes a certain courage to take up and develop ideas that bear my mark too clearly (even though we would try our best to hide it). The only one who persisted in it was Zoghman Mebkhout, and the fate that was reserved for him and which culminated in the feats of the Colloquy Pervers, show quite clearly the risk we run.

If I wanted to make a list of the beautiful questions that I had discovered between 1955 and 1970 (and which I talked about to those around me here and there), I would have enough for days to come, and even weeks probably if I wanted to be somewhat explicit and get into the ins and outs. This is not the place to do it, and I doubt that I ever will, not to mention that if I hope that one day (who knows!) a young mathematician gets involved in one of these questions, just to get started and make himself known, it is better that he rediscovers it

(**) In addition to this beautiful idea from Serre, the “geometric” point of view introduced also influenced me by Lang in the global geometric class body, and by Serre in the local class body.

(*) See note “Coffin 3 — or the Jacobians a little too relative” (n° 95), and subnote n° 951 , subject of some of Contou-Carrère's misadventures in the great mathematical world.

At

himself, rather than running the risk of being given a certain label.

Beware of the Pervert Conferences that the future has in store for us...

(179) (April 2) It has been five weeks (since February 26, with the note “The Silence”, opening the series of notes grouped under the name “The Four Operations”) that I have been reviewing the main facts of a “material” or (somewhat) “technical” nature concerning the Burial. In “The Four Operations”, I limited myself to the “fraud” aspect in the strict sense of the term – that where this “threshold” which was discussed in the note of the same name (n° 172) is exceeded. , which separates bad dispositions (expressed by reflexes of “automatic rejection”, often despite the most elementary mathematician instinct) from patent bad faith and marked plagiarism. In the part I have just written, “The Desolate Construction Sites”, I see myself confronted above all with the “first level” of the Burial, below the “threshold” — the burial of a vast vision and ideas -powerful forces, which certainly no one is obliged to take up, and which everyone has the right to ignore or forget — even if it means “burying themselves”, by condemning their work (or at least the part of this work directly affected by the challenged vision) to more or less complete sterility.

Now I feel like I'm done with it, finally! As for the “tour of the construction sites” (abandoned), it gave me a more detailed apprehension of the Burial of my work, by making me reconnect at the same time, if only a little, with themes that I had lost sight of for fifteen years. This allowed me, above all, to get a clear idea of the emergency orders in what I intend to put in black and white in the next volumes of the Reflections. My purpose will no longer be, certainly, to lay meticulous foundations of science in science - this is something that I have done sufficiently, and if there should be no one else left to devote themselves to such a task, as I gave myself to it previously, too bad for each and everyone! Rather, my purpose will be to identify certain key ideas, in the service of an overall vision born between 1955 and 1970, and which I find again today (thanks especially to the efforts of some of those who were my students, and with the acquiescence of all) either forgotten, or ridiculed, or shamelessly appropriated and mutilated and emptied of most of their force. By taking them up again today, I finally let go of a drive for knowledge in me that often, during the sixties, I had kept to a bare minimum, for the benefit of endless tasks of

"service". Those days are over — and yet, I know that in this new phase in my mathematical passion, the impulse to serve is no less present than it was previously. I will "serve" no less than previously this ideal "community" of minds eager to know (*), which continues to give to my mathematical investments a deeper meaning than that of a personal pastime and a means self-aggrandizement.

In these investments, certainly "the boss" is no more absent than in the past. Confronted with malevolence and derision from the very people who for me had been "close to me" in the mathematical world, hurt many times in an elementary sense of decency by those whom I had loved and to whom I trusted without reservation, there is in me this irrepressible movement, in front of those who have lost the feeling of respect, to testify to my respect for myself, through respect for these living, vigorous and beautiful things that with my hands I have brought into the light of day. The best testimony, perhaps, that I can bring to this respect is by making myself the servant of these things, for a few years of the precious years which still remain vested in me. Thus, the mathematical reflections that I intend to develop in these coming years, in the continuation of the Reflections, will they still be, at the same time as the resumption of a child's game and the gift of a service, an act of respect.

(*) I speak for the first time, on the subject of the "mathematical community", in the first part of *Récoltes et Semailles*, in the section "The 'mathematical community': fiction and reality" (n^o 10). By referring here to an "ideal community of minds eager to know", it might seem that I am falling back again on something, the fictitious nature of which had become clear in the section cited. But in part VIII of *Fatuity and Renewal*, I had already been led for the first time in my life (better late than never...) to realize a collective dimension in my own "adventure of knowledge", at the mathematical level. (See on this subject the two sections "The solitary adventure" and "The weight of a past", nos. 47, 50, and more particularly, pages 134, 135.) It is also clear that the "community" (or "collectivity") which experiences this collective adventure, is of a completely different nature than any sociological entity, embodying itself in a specific environment at a given time, with such a particular "mentality", or (today) with such power structure and such class interests. This "ideal community" to which I refer, "without borders in space or time", is no less "real" for me than the sociological entity. It is more essentially, in the sense that it is indeed it (as I write in the remainder of the same sentence) which "continues to give to my mathematical investments a deeper meaning than that of a pass-personal time and a means of self-aggrandizement". It is no more "fictitious" than I am myself, who feels part of it, more lucidly than I did previously. The "fiction" consisted not of the perception of the existence of such a "community", but of the confusion between it and an environment with which I had identified.

Before ending with the Burial, I would like to make a short assessment, beyond the “material facts”, of what this reflection has taught me. I will first look at what she taught me about others, and finish with what she taught me about myself.

The fact which still remains the most striking, among all those which came to light during the reflection, is the degradation of morals and minds in the mathematical world of the 70s and 80s. This degradation is expressed, among others, by a hundred and thousand “little nothings”, like those which have come back to me in bursts over the course of the past eight or nine years – “nothings” which are nevertheless disconcerting enough to provoke the reflection of the first part of Récoltes et Semailles and his main question: how (and when) did things get to this point? And what was my role and what is my place in this insidious and relentless degradation that I see today?

This degradation culminates in operations like “SGA 4 1/2” — SGA 5” or that (even more incredible) of the Colloquy Pervers, going far beyond in cynicism and contempt anything I could have imagined, the day before the day I reluctantly discovered them.

This is not the place to return to these “nothings” (more than one of which was mentioned in my reflection in passing, here and there), nor to the major operations (served by the small maneuvers). The spirit that expresses itself in both, the “nothings” and the vast scams, is the same. The “threshold” that it can sometimes be good to draw between the acceptable and the villainous is itself very fragile and very artificial, a sort of safeguard of which, in any case, no one anymore (it seems) doesn't care. I do not regret, through this Funeral in which my person is crucially involved, to have had the opportunity to look closer than ever, perhaps, at this spirit, which is certainly not the privilege of this only Funeral (set in motion in honor of my modest person) nor of the only world of mathematicians. I can only say that I have no knowledge of this spirit having reigned in this world, or in any other science, at any time other than ours. This is one sign among many others, undoubtedly, of the terminal stage in the decomposition of a civilization and of what, despite everything, continued to give it meaning.

In recent days, my thoughts have lingered more than once on this strange coincidence, that my departure from the mathematical scene, more than fifteen years ago, was under the shock effect of a certain corruption in the scientific world, to which I had chosen to turn a blind eye for a long time (while believing I would stay away from it). I saw myself confronted with it

suddenly, in the very institution where I intended to end my days (*). Here, it was about the self-interested, almost universal connivance of scientists with military apparatus. This insidious control of the military over the scientific world as a whole is also a recent phenomenon, having only appeared (at least to the extent that we now know it) since the last world war. Certainly, if this “shock” disrupted my planned trajectory (planned by myself as by everyone) to the point of triggering my departure without return from a world with which I had identified until then (with a reserve tacit aside...), is that there was in me a pressing and urgent need for renewal, of which I only became aware in hindsight. I subsequently tended to minimize what had been the particular occasion to trigger this unusual departure. However, I also know to what extent are immense (at the same time as invisible) these forces of inertia which tend to keep us indefinitely in the same “trajectory” precisely, and which are opposed to internal renewal - and this to me also shows the power of the internal shock that it took to tear me away from a trajectory as solidly traced as mine was.

What I'm getting at is that the “special occasion” that triggered my departure is certainly not without meaning. This sense in any case was very strongly present in the first months, and undoubtedly even throughout the first year, which followed my departure. Subsequently, under the influx of new impressions and in the very dynamic of this first and tumultuous renewal, it was natural that this meaning receded into the background and that it ended up disappearing from my sight. But even though I cease to perceive this “meaning” of my past or present actions and their fruits, this meaning has not disappeared. And my return to a mathematical activity, with the more detailed contact that it implies with this world that I left, brought me back unexpectedly to this forgotten past. Because one of the very first fruits of this “return” (a return just as unexpected as my departure had been previously...) was the discovery, in this world which had been mine, of another corruption, which I do not believe never having known him. If I try to give a name to this new thing, it comes to me: the loss of respect. I have felt it painfully more than once, in recent years, when I saw “one of those whom I had loved, bluntly crushing another whom I now love, and in whom he recognizes me”. During the reflection on the Burial, I found it more than once again, and in more virulent tones, this time directed against

(*) See on this subject the note “The salutary tearing away” (n^o 42), and also “Brothers and spouses - or the double signature” and its sub-note (n^o s 134, 1341)

such things that I had brought into being by my hands, or against such successor who had dared to be inspired by them. During these moments, I really got to know the “breath” and the “smell” of this spirit, where the sense of respect was lost. But I also know well that this spirit “does not only blow around my home”, even though it is by its breath on me and on those I have in affection that I “know” it. ” truly — as one knows the taste of a bitter fruit only by eating it. This spirit today has become the spirit of time...

And I see clearly that these two corruptions, the one which triggered my departure and the one which awaited me upon my “return”, are not unrelated. If I try to define in words this diffuse feeling of a link, I would say that in the easy attitude of scientists towards the seductions of military money (to speak only of this aspect- there) and the amenities it offers, I detect a lack of self-respect, both on an individual and collective level (*). And it is in the loss of self-respect that I recognize the root of the loss of respect for others, and for the living work coming out of one's hands or those of the Creator.

I do not claim to have “understood” or the other “corruption”. On the one hand, there is “the spirit of the times”, whose particular dynamic escapes almost entirely (it seems to me) from individual action. This collective dynamic remains a total mystery to me, which I never thought of wanting to explore. There is on the other hand the way in which each being in particular, endowed with its faculties of perception and creativity, and weighted with all the weight of its particular conditioning, responds to this spirit of the time and makes this response (knowingly or not) one of the crucial elements of his particular adventure.

During my reflection, I tried at length to identify certain choices, and the forces at work behind these choices, in the case of the two main protagonists of the Funeral: the deceased, and the main Funeral Officiant (* *). What is certain is that I learned things along the way, but in no way did I succeed in my task. I can even say that I certainly didn't entirely succeed, as far as my protagonist is concerned. I gathered

(*) I am sorry to risk offending, here, some of my friends from yesteryear who adopt this “attitude of ease”, without, of course, feeling that they are lacking in self-respect! It is by no means certain that scientists at other times, if they had found themselves collectively faced with “seductions” of the same order, would have reacted differently. Opportunity is often the thief! (**)

(June 22) A third “main protagonist” ended up appearing to me, at the “last minute”, in the note “The family album” (n^o 173), part c. (He among all — or acquiescence), d. summer.

pieces of a puzzle, I put them together, and I am even convinced that the pieces are the right ones and that the assembly, more or less, is correct - but the knowledge of the whole still fails me, that remains an assemblage of pieces which, at present, remain foreign to me – foreign to my person and my experience, and therefore misunderstood. The work done will undoubtedly help me, on other occasions, to recognize myself as best I can, to be careful where it is in my interest to be careful (and the older I get, the more I realize that there is often interest...). But all this falls short of true understanding. And the question comes to me if ultimately the effort made in this direction was not an illusion - or that the goal at least (that of “understanding others” in such a conflict situation) was not an illusion (while the path followed was nevertheless rich in lessons...). I tell myself that I really understand the conflict in this person (or in any other to whom I have been closely linked and where I see similar contradictions breaking out), it is undoubtedly also understanding the conflict itself. And I know well that such an understanding cannot come to me from a meditation on others (who forever escapes my immediate knowledge), but only from a meditation on myself. If the long reflection “The key to yin and yang” must prove fertile, it is not by the occasional lapses into the person of others, but by the returns on my own life and on my own experience, and on the understanding I had of it.

(180) (April 3) I do not feel encouraged, ultimately, to try to do a retrospective in a few lines, or in a few pages, of what appeared to me about my main pro-tagonist in the Burial . In the current state of things, it seems to me that this would be little more than an exercise in style, and not the means for a renewal of a most fragmentary understanding. For now, I'm looking forward to getting to the end of this reflection on the Burial!

I know well, moreover, that this final point will not necessarily be the end of the Funeral itself. Surely, the months that come, with the echoes of all kinds that will come to me from these notes, the fruit of solitude, will be rich in surprises and lessons that solitary reflection could not have brought me. It is also not said that all the surprises that come to me will have a bitter taste, and perhaps even the very near future also reserves me some joy - appreciated all the more as it will be rare without doubt ; as I also had the joy, just last year (a prosperous year!) of receiving letters full of warmth from three of my colleagues or friends of yesteryear whom I had in particular esteem or affection

(*)).

As for an overall effect, however modest, of *Récoltes et Semailles* on the "spirit of the times" in the mathematical world, it is hardly necessary to say that I have not the slightest doubt about this. illusion. Perhaps, at most, the publication of these notes will put an end to such unprecedented inequity, and that it will readjust such an anomaly that is too glaring - and again, I am perhaps optimistic. And it is also possible that the unexpected reappearance of the deceased himself, thought dead and pretended for ages, will put an end, or at least a more circumspect dampening, to the muffled concert of derision which surrounded the work of his hands, that he had left. And if this reappearance does not at the same time put an end to the good-natured boycott on a vision and on strong and fruitful ideas, perhaps it will at least encourage some young mathematician, more generous than others, to draw inspiration from it. without reservation (at the risk of displeasing) and to make them their own with respect.

However, if I wrote *Récoltes et Semailles*, it is not for any of these things, some of which will perhaps come in addition, who knows! I wrote it "for me", of course, like everything I write - as a means of groping for understanding. But at the same time, the thought of others, of those I loved and whom I left one day, while my adventure took me elsewhere - this thought hardly left me throughout the writing. of *Harvests and Sowing* (*). These notes, at the same time as a reflection, and sometimes a meditation, have been and remain for me a gift given to those to whom, beyond myself, I address. And I know, certainly, that this gift will perhaps not be received by anyone except myself.

I won't regret having done it though. Furthermore, if it is not received today by one of those for whom it is intended, perhaps it will be received tomorrow. This testimony, both spontaneous and long-matured, where each page and each word comes in its moment and in its place, will be no less true tomorrow than today. But whether today or tomorrow, if there is an unexpected thing welcomed with joy, it will be to learn that my gift was received, if only by one, who would have recognized himself through me. ..

(181) More than for the "foreground" of the painting of the Burial, I do not feel encouraged to make a detailed retrospective of my insights and my perplexities concerning the

(*) These are letters from D. Mumford, IM Gelfand and J. Murre.

(*) This thought is expressed more than once in *Fatuity and Renewal* (the first part of *Harvests and Seedlings*). It is perhaps less apparent in the following parts, but is no less present.

two other plans, one formed by the “busy group of my students, carrying many shovels and ropes”, and the other by the “entire Congregation”. Concerning this, and its role in the Burial, I expressed myself in a fairly detailed manner in the note “The Gravedigger — or the entire Congregation” (n^o 97) (**). As for my perplexities concerning the role and motivations of my dear ex-students, they appear most clearly in the note “The Silence” (n^o 84), without however being seriously re-examined at any subsequent moment of the reflection, it is therefore at this level, that of the “second plane” of the Burial painting, that my work leaves the most to be desired! (*). There was no work comparable to that which I did in the note cited “The Gravedigger...”. This part of the picture deepens in two subsequent notes, in the light of the dynamics of yin and yang: “The providential circumstance - or the Apotheosis” and “The disavowal (1) - or the reminder” (n^o s 151, 152).

This note “The Gravedigger — or the entire Congregation”, which is the last note among those written in the “first breath” of the reflection on the Burial, is also undoubtedly its culmination. With the hindsight of almost a year, I am no longer convinced, however, that a certain collective motivation which seemed quite obvious, behind the Burial of my modest person (seen as an act of “retaliation for a diss -dence”), touches the real nerve of the Burial, at the level of the collective will, what makes me doubt it is that this motivation seems to me to be entirely absent, or otherwise of a derisory significance in comparison of other forces at play, in the case of each of my students (**). Now, one of the most striking facts in the entire Burial is precisely the “unanimous agreement” which exists between its three successive “plans”, whose acts and omissions follow one another and complement each other (as orchestrated by a common desire for “unfailing coherence”), as perfectly as during a funeral ceremony in the literal sense of the term. In such remarkable unanimity, in such uniformity in the interior arrangements and in the actions, we also guess a common motivation, the same “nerve” which animates everyone.

(**) (June 22) My still vague perception of the Congregation came to fruition in an unexpected way last-ment in the note already cited “The family album” (n^o 173), parts c., d., e.

(*) (June 22) For a (modest) continuation of the reflection on the “second plane” of the painting, see however the note of June 19 “five theses for a massacre - or filial piety” (n^o 1767). (**) this fact appears in the reflection of the note “Patte é Velours — or the smiles” (n^o s 137), p. 644–645.

I do not intend to suggest that this “diffuse resentment” that I have observed here and there, caused by my “dissidence” felt (superficially) as a desertion, and (more profoundly) as an inadmissible challenge — that this grudge is null and void, and that it does not play a certain role. But I now doubt that this role is decisive whether it is due to this common “nerve” — which would therefore be common to all, except to those very people whose role in the Burial was the most crucial of all! (Namely, those who were my students and thus, the first depositaries of a certain heritage.)

This “cause” (of relatively rational appearance) which is my “dissidence”, seems to me to be incommensurate with the breath of violence that I felt in an operation like that of the massacre of a “splendid seminar”, under the complacent eye of the Congregation; and also incommensurate with the equally violent iniquity which is displayed in a Pervers conference to the applause of the assembled crowd. Nor was it that I was an odious colleague or boss, and too feared for the accumulated animosity he provoked to be released while he was around; that she waited until he was declared dead and buried to finally unload against him and against those in whom he was even slightly “recognized”. Nothing, in the echoes that reach me here and there, goes in the direction of a fear that my person would have inspired and which would subsequently have found its late revenge (*), nor of acts or behavior whatsoever imprecise, which I would be criticized for and which could fuel animosity or violence (which, however, never says its name).

(*) It is true that I spoke at length, in “Fatuity and Renewal”, of the fear which surrounded, from a moment that I was unable to place, the “man of notoriety”, and the signs of which I sometimes perceived around my person. But this was the diffuse fear attached to notoriety precisely, and not to my person itself - it disappeared as soon as a slightly personal contact was able to be established. I have the impression that at the level of personal contact, I was perceived more as “the good guy”, than as the person who

would be feared.

It was no different, I am convinced, even with this student discussed in the section “The blunder — or twenty years later” (nř 27), in whom a certain “stage fright” continued to manifest itself for quite a long time, with each new encounter. This stage fright appears to me today as a sign of an invasive inner insecurity (“Unsicherheit”), which later found compensation and an outlet in attitudes of domination and contempt. Among his many students, the three that I had the opportunity to know were each severely tested by his seemingly “gratuitous” malevolent attitudes. Obviously, the spirit which has taken root and reigns almost everywhere in mathematical circles has favored the appearance of such aberrant behavior, which in turn contributes to shaping this spirit and imprinting on it this disconcerting mark of brutality. felted...

This is a typical situation of the violence that I called “gratuity”, or “without cause”, if this violence ended up being at the center of my attention, in the long meditation “The key to yin and yang” (which itself constitutes the heart of *Récoltes et Semailles*), this is surely not a coincidence. I don't know this violence only yesterday, far from it, and it was not in my life as a mathematician that I was confronted with it for the first time, face to face. And if it sometimes happened to me to forget her existence in the world of men, it was never for long, because she herself took care quite quickly to remember me. And to talk about today - by a strange and (I admit) very often unwelcome (or at least, unwelcome...) “coincidence”, I do not remember having seen myself confronted in my life to the familiar signs of such violence in a way as insistent, repetitive, harassing, as since my “return to math” and especially since the writing of *Récoltes et Semailles*; and even more strongly, in these very last months and weeks.

Surely, there is an insistent message there, which comes back to me again and again, and which will undoubtedly come back until it is heard. I began to listen to him, in the last weeks of the long meditation on yin and yang — knowing that I had not yet reached the end of what he had to tell me. In the two months that have passed since then, underground work must have continued in silence. It seems to me that what is essential and hidden (*) has begun to be separated from more apparent accessory things (or, at least, less difficult to admit). The image of the “dwarf and the giant” (provided by my friend Pierre) continued to haunt me. Behind this image, I believe I detect an archetype of considerable strength, which would be like the shadow, or one of the shadows, of the repression suffered in early childhood. Its role would be that of an outlet, and compensation, for the repression of the creative force, repression long internalized in this “unexpressed conviction

(*) When writing this line, I was aware that the term “hidden” here was a stopgap, a sort of concession to the “Consensus”. Often, I was able to see, by discovering something that I had ignored all my life, that this thing was in no way “hidden”, but on the contrary in plain sight, obvious, sometimes to the point that it was obvious. , without me agreeing to see it. This is most often the case in the discovery of something new, whether it is mathematical work, or work of self-discovery. The cause for such blindness, for this blocking of the faculties of common sense or elementary intuition, is in no way a deficiency of these faculties. It is rather found in an almost insurmountable inertia of the mind to deviate from the rut of well-established consensuses - whether these are admitted in society as a whole, or in a more limited environment of which one is part, or even even, that they be concluded and sealed in our interior only, like the articles of a treaty that the “boss” would have concluded with himself and for his sole convenience...

of impotence"... In this anticipated archetype, I believe I sense a powerful driving force for acts of gratuitous violence, striking the one perceived as a "giant", as the bearer of intact force — acts being triggered without a "cause" other than that of a propitious opportunity only, when the risk involved seems nil, or minimal.

Perhaps I have already said too much, when with these lines I have just touched upon a tenuous and insistent intuition, signaling to me a work that must be done, and which remains before me. For this work, the Burial is only one of the materials, with many others that come to me from my so-called "private" life. This is not the place to pursue it or even to approach it. Its place is not in notes intended to be published.

(182) (April 4) In this promised retrospective, of what my reflection has taught me about others, my thought, as if in spite of myself, returns insistently to my own person. This is a good sign for me — a sign of the strong need within me to return to what is essential. It is from the knowledge of myself that an understanding of others comes to me, and not the other way around. And more than once since I started meditating, the concern to "understand others" has been a means of diversion from the essential task, that of getting to know myself.

Before returning to myself deliberately (and contrary to my impatience to arrive at the famous "end point"!), I would like to include one more testimony which reached me recently, concerning my friend Pierre. This is the only testimony of its kind that I have been aware of since my departure from the mathematical scene. It gives a very different perspective on my friend from those who are known to me elsewhere. It also reminds me again, very opportunely, that reality is constantly more complex and richer than the images I can try to conjure up of it (*).

The testimony in question is not direct. These are the impressions of a (more or less chance) meeting of a foreign mathematician with Deligne, which this colleague spoke about

(*) I in no way intend to suggest by this that the effort we make (and that I myself constantly make) to form an image of reality, as "faithful" as possible, and to adjust this image through the "information" of all kinds that comes to us — whether this effort is vain or sterile. On the contrary, there is a highly effective dialectic there to put us in contact with reality and to "know" it. Only to the extent that the image (weighted, by the nature of things, with its own inertia) remains entirely inert, frozen, does it also become an obstacle to the apprehension of reality, or to put it better: a means effective in suppressing our faculties of apprehension, and in "evacuating" the knowledge that we indeed have of reality.

(once again, I presume) to my correspondent, who sent me the story in a letter. With the authorization of my correspondent and the colleague (whom I call "z" in the following) who told him the story, I give here the translation of the part of the letter concerning this meeting. My correspondent assumes that the scene must take place in the year 1981. (NB it is also the year of the Pervers Colloquium, a conference which had not been discussed between my correspondent and me.)

"... One day Z. went to Bures for a conference, and found himself there in a room ["the tea room"¹ at IHES, obviously] where tea was served, and where there was had many mathematicians. The door opens and Deligne enters the room. Mr. Z. recounts the scene quite vividly: he looked limp, his arms dangling, we felt a certain isolation around him. All the others seemed to be staring at him, a bit like the rare bird, without anyone knowing how to say anything to him, z. was sitting a little apart, near the window, and Deligne, rather undecided, sat down next to him. Z. didn't really know what to say to him. Then the thought occurred to him to simply say how extraordinary he found the set of ideas around "equal topology" etc., and the new ideas that you brought to the table. ["You", here and in the following, means: me, Grothendieck, to whom my correspondent is addressing]. Immediately Deligne's eyes began to shine, he said to her, yes, this is one of the best things there is in mathematics; and how beautiful it was to listen to your (*) lectures... and he said: just think about this, and that... listing a lot of things where Z. didn't understand anything (according to what he told me himself), but he saw the enthusiasm that had suddenly appeared in his interlocutor. And Deligne added: what a shame, that you (*) have withdrawn! He was sure that crystal cohomology and many other things would not be in this rather forbidding state, but that they would now be well-standing constructions just like flat cohomology, if you (*) were there really attacked in-

core...

(*) As before, "you" here refers to me, Grothendieck.

Two things struck me in this story. There is the impression of isolation, which seems to have struck Mr. Z. I would be hard-pressed to say whether this impression comes from a very particular moment in Deligne's life, or whether such isolation ended by permeating its relationships with all of its peers. I have had no other testimony along these lines.

The other striking thing, and also unique among the echoes that came back to me, was the sudden appearance of this enthusiasm, this warmth, at the mention of my name and a certain past. It was a past that he had long ago decided to declare null and void. And the roots too, which he had in this past. And in this past, too, there was still a freshness of childhood, this freshness that he had banished from his life as an "adult", as an important and admired man. It must have been part of the good tone around him, not to allude to this past, to the times when he was still just one student among others, in love with a beautiful passion... - no more that in the house of the wealthy man, surrounded by stylish furniture, there is no talk of modest, even needy, beginnings...

And now this stranger, seated next to him by the greatest chance, suddenly and warmly begins to speak, as if it were the most natural thing in the world, about something that no one ever talks about (not in front of him). him, at least...) 1 surely, it was as if suddenly this select and formal atmosphere had vanished, and this warmth of an unknown person awakened in him the same warmth, and - the space of an instant — connects it to. new to a distant source, believed to be forever forgotten and lost...

(183) I finally come to the most personal part of this retrospective review that began more than a month ago. It remains for me to quickly review what this reflection has taught me about myself.

The first thing that reflection made me discover was a certain past - my past as a mathematician, on which I had never previously bothered to dwell, even for the space of a moment. moment. Behind the apparent flatness of a color-coded and problem-free surface, I saw once again the depth of everything that is commonly neglected, swept away (as if by a surreptitious, well-delivered sweep) of the surface. he comfortable conscious image that we are accustomed to having of ourselves and of what surrounds us. Among the "blunders" (or sweepings...) never examined, at least not in my life as a mathematician, there is the insidious, and sometimes invasive, action of conceit in the relationship with such of my

friends. From the beginning, this conceit had taken the form of a sort of mathematical elitism, which remained tacit and of which I was in no way conscious, as my attitude seemed self-evident. this elitism (or “meritocratism”, as Chevalley and Guedj called it), must have hardened over the years. It crystallized into this “sporty” attitude that I ended up discovering towards the end of the “first breath” of reflection. Beneath a good exterior, this attitude sanctioned dispositions of jealous possessiveness towards what was felt to be “guarded hunting grounds” for myself, and for those whom I was pleased to welcome there, given their brilliant qualities.

These very “boss” provisions do not, fortunately, exhaust the content of what was, between 1948 and 1970, my relationship with my friends, colleagues and students in the mathematical world, or with mathematics itself. — it's far from it. Nevertheless, they constituted an insidious background note, which I never took the trouble to note until last year, in the first part (or the “first breath”) of *Récoltes et Semailles*. This progressive discovery culminates with the section “Sporting mathematics” (n° 40). This seems to me to mark the moment of a qualitative change in thinking. I felt it in the moment like the passage of a pass, which would have opened up a sudden escape onto a new panorama...

With the hindsight of yet another year, I now see this first long period of my life as a mathematician among mathematicians, between 1948 and 1970, as a sort of barter of the “birthright” which belongs to me (as it is up to everyone), to live fully (if that is my choice) a particular and unique adventure, against the “dish of lentils” of an identification (which I would have wanted without reservations, without ever achieving it completely). fact...) with an idyllic and fictitious “mathematical community”, and at the same time providing comfortable advantages (*). With this image, I do not claim to have said everything about this period, which is certainly too rich to be contained in a cookie-cutter formula.

But the image seems to me to capture an important aspect, which appeared for the first time in this first phase of reflection. This aspect reappears in the name “Fatuity and Renewal” which this part of *Récoltes et Semailles* took (after the fact).

The most personal and deepest part of this first phase is made up of the last three “chapters” (**) VI to VII: “Harvests”, “The child is having fun” and “The solitary adventure”

(*) This is the ambiguity discussed in a previous note by b. from p. (note (*) on p. 1219).

(**) Of course (and as I specify in the Introduction to R and S), these “chapters”, grouping consecutive sections linked by a common theme or by particular affinities, were established after the fact, a

to hush up". In "Harvest", I first reconnect with certain moments of my life (not just my life as a mathematician, this time) — moments charged with the force of renewal. It was as if, moved by an unknown force, by some secret and imperious voice, I was seeking to rediscover these same dispositions of innocence, to cross the threshold that I obscurely still felt before me. Without knowing how to predict it, of course, at that moment I still had to discover a possessive attitude towards mathematics itself. I continued to climb a slope, without haste and without hesitation, as if my feet were following an invisible path that only they "saw". I knew, without having to tell myself, that he was leading me where I needed to go, while little by little, step by step, the mists dissipated.

This is how I reached this new threshold in my journey, or rather this pass:

"... And I had the impression, as soon as I arrived at this point, of someone who arrives at a belvedere, from where he sees unfold the landscape that he has just covered, of which at each moment he could not receive only a portion. And there is now this perception of extension and space, which is a liberation..."

As soon as I crossed this sensitive point of reflection, it deepened into a meditation on myself. Already the next day, I felt the need to introduce this image of the "boss" and the "worker", aka the child, an image which had become familiar to me for two or three years already. But I was far from suspecting to what extent it would prove useful in the reflection still to come, whereas for almost two months already, I believed myself to be on the verge of reaching the end, to immediately return to my notes mathematics with "A la Pursuit des Champs"!

In the four sections forming the "chapter" "The child is having fun", I put myself back in touch with certain aspects and adventures of my relationship with mathematics. I had already probed them at length almost three years previously (between July and December 1981), but I had had plenty of time since then to forget them. My purpose this time is above all to put myself in a position to probe the meaning of my unforeseen return to a long-term mathematical investment, and to manage to "place myself" between the two passions, apparently mutually exclusive, which now dominate my life. ! mathematics, and meditation.

Once the writing of what was to be (only) the first part of *Récoltes et Semailles* was completed. In *Fatuity and Renewal*, I occasionally refer to it as "parts" of R and S (which should not be confused with the five parts "Fatuousness and Renewal" etc. in which the whole reflection from February 1984 to today has grouped together).

This mutual “exclusion” of these two passions seems less draconian to me now than it did two years ago. In “A la Pursuit des Champs”, mathematical reflection sometimes gives way, or even becomes the occasion, for a somewhat personal reflection, where my person, as a being gifted with sensitivity and feelings, a curiosity (not just mathematical) and a destiny, is no longer entirely absent. And in the opposite direction, in this reflection on myself that is *Récoltes et Semailles*, this very reflection puts me back in contact with old mathematical loves, and becomes the occasion here and there for the beginnings of mathematical reflection (*) .

It is possible that these possibilities of coexistence, even of symbiosis, between these two different expressions of the drive for knowledge in me must, by the very nature of things, remain quite limited. But it was clear to me in any case, during last year's reflection (and even, already since the long meditation continued three years before), that these two passions are in no way antagonistic in nature, nor even in essence different. In the last part of the reflection, “The solitary adventure”, I try to identify as closely as possible exactly how these passions differ, and also the “adventures” that they both open up to me. . It was during this questioning that I discovered this obvious fact, which I had pretended to ignore all my life: that mathematics is “a collective adventure”, and that my own mathematical adventure does not take on its meaning. than through its links to this larger collective adventure of which it is a part.

To tell the truth, I only touch on this fact in passing, in the section “The solitary adventure”, while my purpose at this moment is rather to describe in words something that was well known to me on the other hand, and which I nevertheless continued to have difficulty fully accepting: the fact is that meditation is a solitary adventure. This effort to formulate a “known” thing was certainly not in vain, far from it! She made me deepen this knowledge, while at the same time making me discover this obvious and new fact (for me at least), of the link which connects me to another adventure (which at that moment I would have wanted, or someone 'one or something in me would have wanted to distance itself...), the mathematical adventure which is collective.

The ground is now ready so that the next day, in the “Observation of a division” section, I will penetrate to the very heart of my perplexities. It is the observation, first of all, that the

(*) (May 10) These “starters for reflection” have already borne fruit, through the renewal of my understanding of certain themes, left behind for fifteen years.

"the boss's bet", and even though he would like to deceive himself (as would rather be in his nature...) can only be the collective adventure - the only one likely to bring him substantial "returns". "The child alone by nature is solitary"; it is the only child who can attract an adventure that no one else in the world wants, and a knowledge, tangible certainly and very often obvious, which he will nevertheless not be able to share with anyone. And now it is there, quite unfortunately at the discretion of the "boss", that the "preference of the dull" is going in the case of my "company".

This observation leads to the observation of a division within me, the boss-child division. This is the first time that I have made such an observation in conditions of extreme attention and rigor. This is not a decree, which I would have formulated in accordance with this or that "way of seeing" or philosophy or whatever, and which would claim a more or less universal validity, it is a simple observation in fact, resulting from a careful examination of a very particular case, that of my modest person, at a certain stage of my development. Perhaps this division will disappear one day, without the boss stopping doing what is necessary, while leaving the child worker to work as he pleases. That's not my concern today, and it doesn't have to be. Each day has enough trouble of its...

(April 5) It is true that this division was revealed to me nine years ago, on a river, by a parable staged with overwhelming force. It was two days after having discovered meditation, this long-ignored power which is within me, at my disposal at any moment - and it was by going to the depths of the meaning of this dream that I rediscovered this within myself which is not divided, the other in me, silent and invisible for so long, "a very dear being, thought dead for a long life...". The new thing, the essential thing that appeared then, was not the division, which I knew only too well, nor what the dream revealed to me with such force about the nature of this division, incarnated in two familiar and loved beings, neither of whom had a name and who were the same, but it was this reunion, coming after four hours of intense meditation, like the intense labors of childbirth.

I knew well then, and in the days and weeks that followed, that this reunion was not the end of the division. But thanks to them, I saw this division with new eyes - as an important thing, certainly, but all in all "accessory" in front of another more essential reality, that of an undivided, indestructible unity, of that in me that I had found, and whom I later recognized as "the child". This double knowledge

sance was present then in a very lively and acute way. It became blunted in the years that followed, in the sense that knowledge of this "accessory" division, which was nonetheless very real and tangible, tended to be glossed over. While "the boss" had allowed himself to be led to "bet" heavily on meditation (the famous "three-legged horse"...), he had a great desire to suggest (without having the audacity, or the clumsiness, to never say it clearly...) that with meditation and all that, division was now an outdated thing, there was no longer as much to say at all, barely a small blunder here and another there, okay we're not going to deny it, but it was still almost as if there weren't any; All you had to do was look at the dull worker so happy to have his heart's content and a boss-cake walking on tiptoe so as not to disturb him - the true idyll, in other words! I wonder if the reflection of last year, that of before the turning point (with "sports mathematics"), especially where I made a very unexpected retrospective on "my passions" (in the section of the same name, n° 35), is not exactly a bit in these tones again, where the lighting forces a hint of rosé...

Still, this "observation of a division" then very opportunely put me back in contact with a reality that I had tended to lose sight of for many years. At the same time, he made me rediscover in a new light, with new eyes, this division perceived very clearly eight years before. I can say this without the slightest reservation or the slightest doubt, because I remember well that at the time of this "observation", there was no association with the episode of the reunion, and with what it meant. He had taught precisely about a certain division and its nature. This association only ended up presenting itself recently, when I picked up the thread of the notes from the day before. This clearly shows to what extent the "incidental" (and unwanted!) content of the knowledge that appeared during this episode has been glossed over. This must have been done all the more easily, as there was no reflection at this time, and after the crucial turning point of the reunion, on the subject of this content, and the image (appearing from years later) of the "boss" and the "child worker", perhaps best suited to express this content, was still lacking.

It seems to me now that it is this renewed "observation" of division which represents the most important thing I learned about myself in this first part of Harvests and Sowing. This observation is contained in a few lines from one of the shortest sections of this part of the reflection. One might think that if it had come to this, there would perhaps have been no need to pursue over one hundred and fifty pages the mysteries of the manifestations of

conceit through my life as a mathematician. Surely nothing could be truer, in terms of current “common sense”. But it is also true that this “common sense” cut with a billhook is in no way capable of understanding the delicate and profound paths of a work of discovery, whether it is self-discovery, or work more crude (*) of mathematical discovery. I have the firm conviction that in this long reflection Harvests and Sowing, each thing comes in its place and in its time, prepared and matured by all those who preceded it.

(184) (April 6) With this short observation of a division, towards the end of March last year (a little over a year ago), I initially thought I had completed the reflection Harvests and sowing. I had no idea that there would be five times as many more (counted in number of pages)! In the days that follow, I get busy with this and that, and my thoughts begin to return to mathematical themes. However, one more “small point”, left unresolved in the reflection, continues to run through my head. Beyond a perplexity which could seem like a pure detail, I must have vaguely felt that I had not yet really explored the forces at work in the pattern's “shift” towards a long-term mathematical investment. Or, if I had clearly discovered the essential mechanisms, my understanding still remained pale and fleeting, for lack of having “settled” sufficiently on the thing for it to penetrate further. This “last little point” would become the means by which I would return to what remained imbued with an impression of vagueness. This resumption of reflection is accomplished in the section which was then (and for three more weeks) supposed to close *Récoltes et Semailles*, and which immediately took the name “The weight of a past”. This name expresses well the unexpected discovery of this weight of my past as a mathematician, at the same time as the strength of the link which continues to connect me to the collective adventure. And again, what I glimpsed that day is only the summit of modest proportions of an iceberg, whose

(*) If the work of scientific discovery appears to me to be “more crude” than that of self-discovery, it is (it seems to me) for two reasons. On the one hand, it only involves our intellectual faculties, that is to say a tiny part of our being. (Scientific work also has a tendency to hypertrophy this part of our faculties, at the expense of others and of an overall balance of the person, and ultimately, to transform the latter into a sort of monster- computer...) On the other hand, the internal resistances (opposing the discovery of reality) brought into play by scientific work, are most often incommensurate with those which oppose self-knowledge. This is also why the “scientific adventure” is only very rarely, and almost never more nowadays, an “adventure of truth” — an adventure, therefore, which calls upon our capacities for humility and of courage to accept an unwelcome truth, firstly towards ourselves, and then towards the outside world.

colossal submerged part would appear gradually, over the months and the entire year that would follow...

This section, which closes this first breath of reflection, is at the same time like a beginning and a call for the second. This “weight of a past”, visibly, has its root in my attachment to a work, and even more than to the completed work, brought to fruition, in the attachment to key ideas and visions of which I feel well, whose fertility and power I “know” intimately, and which I have realized more or less confusedly and for years that they nevertheless vegetate in thankless and arid terrain, secretly and insidiously hostile. .. Also this reflection “The weight of a past”, which reminds me of the work, and my links to the work, becomes the occasion for a long note where, for the first time Since my “departure”, I have spoken out about this work and the fate that happened to it. What had been vaguely felt for ten or fifteen years, finally takes shape and manifests itself in words, sometimes hesitant to come, and which, once written in black and white, clearly tell me a message which until then I had avoided take notice. Subsequently, given the length of this note written in one go, I subdivided it into two, with the names “My orphans” and “Refusal of an inheritance — or the price of a contradiction” (n^os 46, 47).

We can consider that this double note constitutes the kick-off for the reflection on the Burial (*). This would continue three weeks later, on April 19, under the influence of the emotion aroused by the “memorable volume” LN 900, consecrating the exhumation of the motifs under the leadership of the “new father” Deligne. This “second wind” of reflection continues intensely until towards the end of May - mid-June, where it ends (while I believe myself once again on the verge of putting the final point, the truth of truth!) by the ‘illness episode (*).

This second breath is not, strictly speaking, a reflection on myself or on my past, but rather an “investigation” into the Burial that I had just discovered, at the same time as an effort to “digest ” as best as possible and gradually, the facts

(*) This circumstance unfortunately does not appear in the table of contents at Burial I (or The Robe of the Emperor of China), where the double-note in question forms Cortère II (The Orphans), and not Cortège I (which is The posthumous student), this is due to the order in which the references to the “notes” (n^os 44 to 47) follow one another within the final section “The weight of a , .. past” (n^o 50) of Fatuity and Renewal, section that these notes are supposed to comment on.

(*) On the subject of this illness episode, see the two notes “The incident — or the body and the mind” and “The trap — or ease and exhaustion” (n^os 98, 99).

patent and yet (probably given my ineradicable naivety) breathtaking, incredible.

If it nevertheless taught me something about myself, it was above all by making me realize the strength of my attachment to my past and to my work. I was deeply touched, seeing the work as if torn into pieces, some pieces for the trash, others to make fun of it, and still others shamelessly appropriated, like a trifle for everyone...

I knew then that I had not "gone out of the ride" yet, as much as I had believed in the exultation which had followed the crossing of a certain "pass" and the vast panorama which had then appeared. open in front of me (**)! Or to put it another way, I was then able to measure the full weight of this past, and all the force of the ego mechanisms that continue to attach me to it. It was a big surprise!

There is, however, yet another thing about myself that I discover during this second phase of reflection, likely to complete what I had learned during the first. In this, I had revealed above all a certain "other side" of an attitude of conceit in myself, through attitudes of exclusion towards such colleagues or even friends that, for some reason or another, I did not fit into the world of the "elite" of which I myself felt part (tacitly, of course!). The other side of the same coin is an attitude of complacency and ambiguity in my relationship with younger mathematicians (and in particular, my students), whom I had, so to speak, co-opted as being part of them, of "my world"; either because of their brilliant abilities, or simply because I had accepted them as students and they were therefore perceived by me as placed under my "protection".

I begin to put my finger on this attitude in the note "The ascension" (n° 63) of May 10, followed by the note "Being apart" (n° 67) of May 27, one and the other devoted to my relationship with my young and brilliant friend Pierre. This reflection deepens in the note "Ambiguity" (n° 63) of June 1, where it focuses on my relationships with my students in general. This is where I finally detect a certain ambiguity which, for lack of having ever been spotted by me and examined, had followed me until recent years. I was also confronted with this ambiguity again very recently, in a slightly different context, in the subnote "The eviction (2)" (n° 1691) in the second part of this here, dated March 16). I see myself led to note that the eviction of my person from the SGA seminar (which represents the sum of an investment of ten years of my life) (*), eviction implemented by the care

(**) This exultation is expressed in the section "Finish the merry-go-round!" n° 41), and is muted five or six weeks later, in the note "A foot in the merry-go-round" (n° 72).

especially from some of the closest of my former students, is simply the natural harvest of an ambiguous attitude that I had enjoyed maintaining with them, concerning their rightful place and mine in the work of vast dimensions SGA, in which one or the other of them had invested for the space of a year or two.

(185) It remains for me to review what the “third breath” of reflection taught me about myself, beginning last September 22 (after the end of the illness episode) and about to touch at its end (**). It concerns here, above all, the reflection pursued in “The key to yin and yang”, which is the part which seems to me the most personal and the most profound of *Récoltes et semences*, without any deliberate intention, it is my person and my relationship to the world which is most often at the center of attention. When it seems to deviate from it at times, to move towards seemingly more general themes, or to dwell on the person of my friend Pierre, it is always at the center however, to the actor-observer , to the one who feels, perceives, questions and probes, that it returns without delay, as if attracted by an invisible force. Before anything else and without wanting to be, it is therefore a meditation on my life and on myself, approached from an unexpected angle: that of the Funer

This is also the part of reflection that appears to me to be the richest, the one through which I learned the most. Many “known” things were located in relation to each other, and things which were only glimpsed or anticipated, or “known” but neglected, drowned in the confused darkness of the all-come, began to emerge from the 'shadow and to reveal and their weight, and their contours. It was like a new opening, the invitation for a new great departure into the unknown - at a moment when it seemed that this famous “long-term mathematical investment” was going to put an end to the work of discovering myself for years. -even...

There is no question of reviewing the different stages in detail here.

(*) For the latest episodes of this eviction, see the note “Les Pompes Funèbres — “in *Dienste of science*” (n° 175).

(**) I am setting aside here the fifth part of R and S, which was originally a “digression” within the Funeral ceremony (or even, within “The Key to yin and yang”). this part is not completed at the time of writing this retrospective on *Récoltes et Semences*, and is not included in this one.

(June 22) It appeared over the following weeks that the part of the reflection “The four operations” (or the Burial (3)), following “The key to yin and yang”, constitutes a “fourth wind” by *Récoltes et Semences*, which is not included in this final retrospective.

of this long reflection, nor to make a “list” of everything she taught me. I would rather like to say in a few words what seems to me to be the most important for the knowledge of myself, as material therefore for a maturation which still continues over the days, months and years.

This reflection had begun in the spirit of a “parenthesis” that I opened (the space of a note or two to break everything...) to put the reader (and at the same time, to put myself back- even) “in the bath” of a dialectical yin-yang (or “feminine-masculine”) vision of things. The reason for opening such a parenthesis was the need to be able to situate, in terms of an intuition of yin and yang, a striking impression that the examination of a certain “Eulogy” had given me (*): that of a deliberate intention of “reversal” of roles in an original yin-yang relationship. this “parenthesis” opens on October 2. It was only on November 10, after a hundred tight pages of reflections on the games of yin and yang in my life in particular and in existence in general, and (finally) in the game of mathematical discovery, that the The moment finally seems ripe to formulate at least (**) this association of ideas that appeared six months ago, while waiting to be able to probe it with full knowledge of the facts, fourteen days later again (***). (And it was almost two months later again, on January 14, that the famous parenthesis on yin and yang finally closed, without me even realizing for some time that it had already closed ...)

Very quickly and without having sought or anticipated it, it is “the conflict” in human life and in the person that places itself at the center of attention. The egoic energy suddenly and powerfully mobilized by the discovery of the Burial, came as an unexpected additional force to confront me again, and on the spot, with the “mystery of conflict” which had been calling out to me for years (*). Already throughout the preceding years, this mystery had gradually come to the forefront of things that I would have wanted to probe and understand, as far as possible, without ever having “jumped” the step” and threw myself completely into it...

Little by little in the course of reflection what, in my life, has been like the “core” is revealed

(*) For this “Eulogy” (by the skillfully measured and administered compliment...) see the two notes of this name (nǚ s 104, 105), as well as the note “The jewels” (nǚ s 170(iii)) which gives a partial summary.

(**) In the note “The reversal (3) — or yin buries yang” (nǚ 137).

(***) At the beginning of the note “Velvet paw — or smiles” (nǚ 137).

(*) This “questioning” began to be perceived especially since my long meditation on my parents, which continued between August 1979 and March 1980.

hard", the formidable center of this mystery, like the very heart of the "enigma of Evil": the violence that we can call "gratuitous", or "without cause", violence for the sole pleasure, one would say, to injure, to harm or to devastate - a violence which never speaks its name, often muffled, under an air of innocent and affable ingenuity, and all the more effective to touch and to devastate - the "claw in the velvet", delicate, lively and merciless... It is on this violence that the attention ends up being focused, during the reflection continued in the series of notes "The claw in the velvet" (nŷ s 137–140), and it is she too who remains at the center of attention until the end of the key. It still forms the high point, in the final note evoking the "endless chain" of karma, transmitted from parents to children and from children to grandchildren, from generation to generation since the dawn of time.

This is the first time in my life that I am confronted with this mystery of violence "without hatred and without mercy" — a violence deeply rooted in the lives of men, and which has marked my life, since my young years, 'an indelible imprint. This is also the first time that I have noticed this imprint in my being. It is also the observation, at the same time, of the simple fact of the existence of this violence, of its formidable omnipresence, in my own life as in that of everyone (**). This simple and sole observation contains the germ of at the same time an acceptance of this formidable fact. It is in this observation, perhaps, that we find the most important thing I learned (or at least began to learn), during all the Récoltes et Semailles reflection.

This is not an outcome, a culmination of a reflection, Rather, it is a first step, carrying me beyond a threshold leading into the unknown. For my journey and for my maturation, this humble step appears to me to have greater significance than the embryos of a "response" that I glimpsed (in the days that followed) to the question of the "cause" of the "violence without cause" (*). This question itself only takes on its full meaning, much heavier than a simple question of "psychic mechanics", once the very existence and scope of the fact about which one is questioning is fully seen and assumed.

Some will say that I am going off topic, that the observation of a general psychological fact (or that I claim to be such), concerning each and all, falls within the objective knowledge reserved for scientific disciplines (such as psychology, psychiatry,

(**) This observation constitutes the high point of the reflection continued in the note "Without hatred and without mercy" (nŷ 157).

(*) See the note of the same name (nŷ 159).

sociology or that — I still know), that it is not in the domain (felt as vague and impalpable, if not entirely far-fetched) of the famous “self-knowledge”. But I see (not in a vague and impalpable way, but as clearly as a familiar and patent mathematical fact...) that apart from self-discovery, such an observation loses its living meaning - it loses this which makes it something other than an exercise in philosophical-psychological style, than the development of a “thesis” (very interesting certainly and all that...). This observation in itself is a discovery, an intimately personal discovery that no person in the world can make in my place, and that I cannot make in place of any other person in the world. This discovery is a step, almost the last, in a journey of self-discovery. It places me in relation to an important, formidable thing, which marked me and which until now I had insisted on neglecting, as if it were through some sort of particular bad luck (perhaps due to this or that particularities in my modest person) that I have seen myself exposed to it throughout my life, and that I have seen others being exposed to it or inflicting it, as long as I take the trouble to open my eyes and look around me.

It is no coincidence, surely, that from the beginning of this reflection on violence, I saw myself led, by the very internal logic of reflection, to do (also for the first time in my life) a look back at the few cases that I remember, where it was myself who subjected others, and without thinking twice about it of course, to this violence “which goes beyond understanding” (*). The point of this return is not that it gives me the opportunity to beat myself up (and in public, what's more) - something that I have completely neglected to do. But it opened a door for me to a deeper understanding of violence - a door that it is now up to me to cross, whenever I please.

(186) This is what appears to me to be the most important, in the perspective of the journey to discover myself, this last phase of reflection on yin and yang, centered on violence, is continues throughout the last four parts: “The Claw in the Velvet”, “Violence — or the Games and the Goad”, “The Other Self” and “Conflict and Discovery — or the Enigma of Evil ”, from December 7 to January 14 (which represent a little more than a third of the Key).

(*) See the note “The violence of the just” (n° 141) which follows the cited part “The claw in the velvet” of the Key.

Looking back, it seems to me that the main role of the previous eight parts of the Key was to have finally led me to this crucial reflection. Many of the things that I develop in this preliminary part are things that have been familiar to me for years, and which I nevertheless had to “recall” to allow a reader “who arrives” to follow, and to give the reflection an internal coherence, which otherwise risked being lacking, or being apparent only to me. At times the style is affected by these inner dispositions of someone who is eager to put an end to these reminders as quickly as possible, to finally get to the “score of the subject” - while often these so-called reminders were of a much greater, and worthy of me to put even a little on them, than this “quick” which I was so eager to get to (and to which, haste or not, I only got to more than a month later late..-). These provisions seem sensitive to me, especially in the three consecutive parts “The couple”, “Our Mother Death”, “Refusal and acceptance”. Even there, it is true, by resuming contact with supposedly “known” things, I could not help but at the same time renew my acquaintance, and in a sometimes new light – even for such impersonal things. , at first glance, that the inventory of these “doors to the world” which are each groups of yin-yang couples (or “keyholes”) linked by immediate affinities.

But it is with the following three parts (those also preceding the last four, centered on the theme of violence) that I once again approach previously unexplored shores: “Yin and yang mathematics”, “The reversal of yin and yang”, “Masters and Servants”.

It is in the first of these parts that the “great surprise” takes place, which would shed new light on the meaning, or a certain meaning at least, of the Burial. It is about the fact that in my approach to mathematics, and more generally, in my spontaneous approach to discovering the world, the basic tone of my being is yin, “feminine”. To put it another way, while the conditioned structure of the self, the “boss” of my company, is yang (not to say, zinc-tinged “macho”), my original nature, the “child” in me (who is also the worker who shapes what the child discovers while playing...) is predominantly “feminine”. Moreover, it is not this particularity alone that distinguishes my personal “style” of approach to mathematics from that of anyone else. It seems to me, in fact, that even among mathematicians, it is not so rare that this original background (or “dominant”) note is yin. What is exceptional, however, in my case (it seems to me), is that in my process of discovery and in particular, in my mathematical work, I have been fully faithful to this original nature all my life, without no inclination dfy ap-

make alterations or corrections, whether by virtue of the wishes of an internal Censor (who in any case has never seen anything but fire, so far would we be from suspecting a “feminine” sensitivity and creative approach in a matter “between men” like mathematics!), or out of concern to conform to the canons of good taste in force in the outside world, and more particularly, in the scientific world. There is no doubt for me that it is mainly thanks to this fidelity to my own nature, in this limited area of my life at least (*), that my mathematical creativity was able to unfold fully and without hindrance, like a vigorous tree, firmly planted in the ground, spreading freely to the rhythm of the nights and the days, the winds and the seasons. It was thus, even though my “gifts” were rather modest, and the beginnings were by no means under the best auspices (*).

At the moment when I make this unexpected observation about my approach to mathematics, in the note “The rising sea...” (n° 122) (**), it comes a bit like a sort of unexpected curiosity, a little “on the margins” of my life, where relationships with others are all about

(*) As I had the opportunity to say and repeat on various occasions during R and S, one of the two strongest egoic forces that have dominated my life since the age of eight (and until in 1976, when I was forty-eight years old), was the repression of “feminine” traits in me, for the benefit of traits perceived as “manly”. It was only during the reflection “The key to yin and yang” that I realized that this repression was not exercised in my mathematical work (nor, later, in meditation, or work of self-discovery). The original “feminine” dominant of my being was able to have fun, in an activity generally perceived (and rightly so) as “virile” par excellence! (See on this subject the note “The most “macho” of the arts”, n° 119.)

(*) If I speak of “modest donations”, it is in no way out of false modesty. This is something that I have been able to observe again and again, both in contact with brilliant mathematicians, incomparably keener than me in grasping the essential and in learning and assimilating new ideas, as well as in working relationships with such anonymous students without serious mathematical background, but whose curiosity and mathematical inventiveness were momentarily awakened.

I talk a little about my “beginnings” (at least, the beginnings of my contacts with the world of mathematicians, in 1948) in the section “The Welcome Stranger” (n° 9). It was three years earlier, however, in 1945, that my “life as a mathematician” began, where most of my energy was devoted to mathematical research work. Until around 1949 or 1950, the prospects for me, as a foreigner in France, of finding a living as a mathematician, seemed very problematic. In case such a possibility did not present itself, I considered learning carpentry, as a livelihood that might suit my taste.

(**) See also the later note “The arrow and the wave” (n° 130).

marked it with my yang and superyang options. It is only in the continuation of the reflection, centered on the dynamics of the conflict, and on the occasion of a return to the Burial, that I realize to what extent the relationship of my fellow mathematicians to my person and above all, in my work, has been marked by this unusual particularity, bringing into play in them reflexes of reserve (when not rejection) in the face of a style of approach obscurely felt as “out of place” (not to say, inappropriate). Such reactions were common from my beginnings in the mathematical world, but tempered in these clement times by the atmosphere of respect for others which then prevailed, at least in the mathematical circles where I had the good fortune to ‘to land. Later, they had to be turned back without more, given “the power of Grothendieck’s results” (to quote a letter from Borel to Mebkhout, where these “reservations” are mentioned). They have become the rule on the other hand, and are sometimes displayed comfortably behind a certain discretion of tone (which remains rigorous) since my departure from the mathematical scene, while the respect of yesteryear has eroded and has disappeared for a long time, and the person concerned (supposed to be dead and buried) is no longer present to respond...

This unforeseen aspect of the Burial, as being the symbolic burial of the “mathematical feminine” in my modest person, is explored in the two notes “The providential circumstance — or the Apotheosis” and “The disavowal — or the reminder” (n° s 151, 152), of December 23 and 24, right in the middle of the meditation on violence.

There remains one last aspect of my person that I would like to evoke again, which appeared while writing the Key to yin and yang, in the last of the parts cited, “Masters and Servants” (which immediately precedes the turning point in reflection initiated with “The claw in velvet”). It is about the “service drive”, and the leading role that it played in the choice of my investments in mathematics and as a living force at work in vast and endless foundational tasks, which no one else after me has yet found the courage (or humility...) to start again and continue. This aspect, present in me with exceptional strength, eloquently attests to the “feminine” dominance of my original nature, which was preserved (or even taken refuge...) in mathematical activity (where no one would have thought of going and looking for it...).

The thought occurs to me at the moment that it is even possible that this impulse contributes its part, of a non-egotistic nature this time, in this “shift” which has taken place in favor of an intense mathematical activity, relegating to the background, for an indefinite period, the work of meditation. This, by its very nature, is solitary work, work which (it seems to me),

unless we deceive ourselves, cannot be part of the perspective of an investment in the service of all, or of some "ideal community of beings eager to know". It would therefore seem that there is a deep drive, distinct from the egoistic desire for confirmation or approval, a drive expressing the person's deep ties with the species of which he or she is a part, which must find itself frustrated in a work of long-term meditation, in the sense I understand it. And this is perhaps an additional cause, in addition to those (alone already quite powerful) which come from the structure of the ego (from the dispositions of the "boss", therefore), which means that a Such work seems such a rare thing that I am not sure I have ever encountered a trace of it in others.

(187) (April 7) I think I have finished going through this retrospective review, on what the whole *Récoltes et Semailles* reflection has taught me. I have only excluded from this retrospective the fifth part of *Récoltes et Semailles* (*), which is not yet finished. It began as a "digression" in the "Key of Yin and Yang", a digression which ultimately extended over a whole month, and materialized in a hundred pages of "reading notes" on the autobiography of CG Jung. As the end of this digression was still not clearly in sight, I postponed it until later. Above all, I was eager to bring the Funeral to a successful conclusion, for it to be written, typed, printed and sent to the right and to the left, finally - and for no one to speak of it again!

I also have a feeling that this fifth part will bring me unexpected insights into this same Funeral, but yes! — by the examination that I plan there of Jung's relationship with Sigmund Freud, who for years had acted as a teacher for the young Jung, still searching for his path. When I first read the chapter (of the autobiography) devoted to this relationship, I saw nothing but fire - then a certain number of unusual things caught my attention, I came back to some, I skimmed again this chapter. Obviously, this relationship is fraught with ambiguity, which Freud himself seems to have felt strongly, and which Jung likes to ignore completely (as the first seminarian would do...), putting Freud's unease on the takes into account his only "neurosis" (which he takes pleasure in describing in vivid colors, perhaps even a little too vivid to be entirely true...). Still, various associations have come to me with the relationship to me of my friend and (also) non-student Deligne, associations that I intend to follow and perhaps explore for a while.

(*) (June 22) And also, the fourth (which I am currently writing)! See note to b. from p. (**) page 1240.

tinet. I have a feeling that what happened with the Burial, in terms of the psychological mechanisms involved, is in no way a unique and atypical combination of circumstances, quite the contrary! And I suspect that Jung's relationship with Freud could well provide additional light in this regard.

But for me, at least now, this fifth part (which will perhaps be called “Jung — or the stuckness of an adventure” (*)), it is no longer the Burial, even if it came out of it — and I would even say: it is no longer *Récoltes et Semailles* 1 It is “the After” — in the same way as the echoes of all kinds, surely including green and unripe ones, which will I return to the sending of the three parts “Fattuity and Renewal”, “The Burial (I) — or The Robe of the Emperor of China”, and “The Burial (III) — or the Four Operations” (**). This will already be a thousand pages or more, once this part is finished being typed up — it's already quite a bit! Each day has enough trouble of its...

This haste to finish it and “send it off” is undoubtedly, above all, the haste of the hobbyhorse who smells of gunpowder, impatient to launch into the fray (*). But perhaps also, more deeply, there is the desire to see a certain past detached from me. These “thousand pages” materialize in a striking way all the weight of this past - and to see this work completed, down to the last of the stewardship tasks (the very last of which will undoubtedly be the sending of *Récoltes et Semailles* to the one hundred and thirty recipients already planned on my provisional sending list... (**)), this also appears to me, almost instinctively, as the moment when I will have let go of this weight. Illusion? Only the future will tell me...

And so I come to the “final agreements” before this famous “final point”, which for more than a year now I thought I saw before me, and which from day to day, from week to week, month after month found itself pushed back, by the influx of the unforeseen which demanded its

(*) thinking of writing “stagnation”, I saw myself writing “burial” instead. It is not said that the new name suggested by this slip: “Jung — or the burial of an adventure” is not just as appropriate, or even that it no longer hits the mark, as the one I had foreseen.

(**) Do not confuse the fourth part of *Récoltes et Semailles*, with the subtitle “Les Quatre Operations”, with the rest of the notes grouped under this name, which appear in this part (notes n°s 167 –1767).

(*) Such provisions are already discussed in the final section “The weight of a past” (n° 50) of “Fattuity and Renewal”, in a slightly different light (where the “warhorse” is replaced by the bull, going in pursuit of a piece of red cloth that is “waved in front of his nose” ...).

(**) The famous “weight” will then become even more “striking”, with two hundred thousand pages (200 x 1000), instead of a thousand!

place.

What remains to be said in these latest agreements? There is a gratitude, expressed in “thanks”, this reflection is the fruit of solitude, and yet I have been helped in many ways.

The most obvious help came to me from Zoghman Mebkhout, in many ways as well: through the patience with which he put me “in the bath” of philosophy around the theorem of the good God-Mebkhout; by the trust he showed me by sharing with me, despite all odds, the difficulties and setbacks he experienced in his relationships with those who were my students; by the help he gave me in finding my way through a dense mathematical literature, with which I had lost contact; finally, by the friendly and unreserved interest that he took, from the moment he learned of it, in this work in which he saw me engaged, in which he above all (I believe) perceived and welcomed the testimony .

I am also grateful to Pierre Deligne, for coming to see me and read (last October) the part of the Funeral then written, and for sharing with me his comments (*). This visit also helped me in more than one way.

Finally, I was helped by the good will and the atmosphere of sympathy that I found among the USTL secretaries who ensured the typing of the manuscript: Miss Boulet, Mrs. Boucher, Miss Brun, Mrs. Cellier, Miss Lacan, Ms. Mori, Two of them took their personal time to carry out part of the typing on time, without wanting to accept payment for this work — a gesture which touched me greatly. It is Miss Lacan, on the other hand, who alone ensured the typing of the entire second half of all of my notes for Récoltes et Semailles, with exemplary care and efficiency. To everyone, I am happy to express my gratitude here.

I am also thinking of all those who, at many times during my work, may have seemed to disturb this work and my peace of mind, in an often unwelcome way (**). Surely, these “disturbances” themselves, which at times have tested me and some of which still leave in me the residue of sadness, also have their role

(*) for this visit and the details provided to me by Deligne, see the two notes (n^os 163, 164) forming the “Last duties (or visit)” part of the Funeral (III).

(**) Reference is made here and there to these “disturbances” in the notes of recent months. See about this, in particular, the note “The messenger (2)” (n^o 181)

to play in the work that is mine, and to bring me a message that it is up to me to listen to and assimilate. When sadness or resentment resolves into gratitude, I will know that this message has been received...

(188) These final accords of the Burial have, for almost a year already, had their name found: De Profundis! In the Introduction (I 7, "The Order of Funerals") I go even further, announcing (imprudently perhaps...) that it is the "complete satisfaction" of the deceased which forms "the final note and the final chord of the memorable Funeral". I was excusable then for making this prognosis (as if it were a thing of the past) — at the time of writing these lines (in May last year) it indeed seemed a very short-term prognosis, whereas I thought I was on the verge of arriving at these final chords of "De Profundis".

It is true that, in a much more acute way than last year (when the "second wind" of reflection was coming to an end), I realize to what extent I am far from having really "completed the tour". " of the Burial, kings apart from the material facts alone (which I seem to "hold" to my full sufficiency (*)). If it is true, as it seemed to me at times, that understanding the Burial also means "understanding the conflict", it is probable that the time I have left to live will not be enough to do this "tour". " — not in depth, at least.

Thus, I can say that it is in very different moods from those which were mine when writing the Introduction to the Burial, that I am now writing this final note. Does this mean that I am finishing this reflection, without this feeling of "complete satisfaction" being present?

I do not think so. As soon as a vision deepens, such work which had given birth to the vision and prepared for its deepening, and which may have seemed "completed", reveals itself to be unfinished, by the appearance of a "beyond" of what had been done. However, the meaning of work, and of the satisfaction or dissatisfaction that it makes us feel, is not in its outcome, and does not depend on whether this work is destined or not to find outcome. The meaning of work is in the work itself, it is in the present moment - in the dispositions in which we do it, in the love we put into it (or in the absence of love...) - not in a hypothetical future beyond our reach.

(*) (May 10) However, after these lines were written, more than a month passed "settling in" as best we could. ill of the new facts that have appeared, in a good twenty sub-notes added at the last minute!

In March last year, even before having discovered the Burial, I wrote in the introduction (I 1, "Dream and fulfillment", p. iv):

"...I leave this job with the complete satisfaction of someone who knows that he has completed a job. There is nothing, no matter how "small", that I have avoided, or that it would have been important to me to say and that I would not have said, and which in this moment would leave in me the residue of a dissatisfaction, of a regret, however "small" they may be."

I know, now, that this work that I thought was "completed" is not yet complete today, and perhaps never will be. But I also know that this is, after all, an incidental thing. This "complete satisfaction", which I felt strongly at the very moment when I wrote these lines which try to define it as closely as possible, it followed me throughout the writing of *Récoltes et Semailles*. She is an old friend of mine, who had already accompanied me throughout my life as a mathematician, letting me know in a low voice that I am on the right track. I found it later, in the work of meditation — it is indeed the same.

When I stop hearing it, the work loses its meaning. This is why his voice is precious to me, and why I take great care in my work never to stray from it. It is thanks to this that work has been, throughout my life, a source of joy, in this "complete satisfaction" of those who give their all to it.

It was no different in the work which is being completed — this work which is "Harvest", and which is at the same time "Semailles"...

