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Part 1.

FATUITE AND RENEWAL

To those who were my elders
who welcomed me fraternally into this
world of theirs
and became mine

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

5. Work and discovery

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June 1983

5.1. (1) the child and the good God

□The mathematical notes on which I am now working are the first in thirteen years that I intended for publication. The reader will not be surprised that, after a long silence, my style of expression has changed. This change of expression is not, however, the sign of a change in style or working method¹ (1), still less that of a transformation that has taken place in the very nature of my work.

of my mathematical work. Not only did it remain the same - I became convinced that the nature of the work of discovery is the same from one discoverer to the next, that it is beyond the differences created by infinitely varying conditioning and temperament.

Discovery is a child's privilege. It's the little child I'm talking about, the child who isn't yet afraid of making mistakes, of looking stupid, of not being serious, of not being like everyone else. Nor is he afraid that the things he looks at have the bad taste of being different from what he expects them to be, from what they should be, or rather: from what it is well understood that they **are**. He ignores the mute, flawless consensus that is part of the air we breathe - the air of all right-thinking people, well known as such. God knows, there have been many 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; of information at every turn and push-button explanations - a closed space where information, cravings and fears pile up without ever letting in the wind from the open sea. With the exception of 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 one of immense inertia, of an often crushing weight.

¹(1)

(Added in March 1984) It's probably an overstatement to say that my "style" and "method" of working have not changed, whereas my style of expressing myself in mathematics has been profoundly transformed. Most of the time devoted over the last year to "La Poursuite des Champs" has been spent on my typewriter, typing out reflections that are destined to be published virtually as they are (apart from the addition of relatively short notes added later to facilitate reading by cross-referencing, error correction, etc. .). No scissors or glue to painstakingly prepare a "definitive" manuscript (which, above all, must reveal nothing of the process that led to it) - that's a lot of changes in "style" and "method"! Unless you dissociate the mathematical work itself from the writing and presentation of results, which is artificial, because it doesn't correspond to the reality of things, since mathematical work is indissolubly linked to writing.

5. Work and discovery

The little child discovers the world as it breathes - the ebb and flow of its breath makes it welcome the world into its delicate being, and projects itself into the world that welcomes it. Adults also discover, in those rare moments when they have forgotten their fears and their knowledge, when they look at things or themselves with eyes wide open, eager to know, new eyes - the eyes of a child.

* *
*

p. 2 □ 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, repeating himself millions and millions of times, without respite, groping his way, making millions and millions of mistakes and then rectifying his aim, without tiring. ... Each time, in this game of probing into things, responding to things ("that's not bad", or: "you're really messing up", or "it's going like clockwork, keep it up"), and the new probe rectifying or taking up the previous probe, in response to the previous response... . . . every time we go back and forth in this infinite dialogue between Creator and Things, which takes place at every moment and in every place of Creation, God learns, discovers and becomes more intimately acquainted with things, as they take on life and form and are transformed in His hands.

Such is the process of discovery and creation, such has it been from all eternity it seems (as far as we can tell). It has been like this, without man having to make his late entrance on the scene, barely a million or two years ago, and get his hands dirty - with, of late, the unfortunate consequences we know about.

Occasionally, one or other of us discovers one thing or another. Sometimes we rediscover in our own lives, with wonder, what it is to **discover**. Each of us has everything it takes to discover whatever attracts us in this vast world, including this marvellous capacity within us - the simplest, most obvious thing in the world! (A thing, however, that many have forgotten, just as we have forgotten to sing, or to breathe as a child breathes... .)

Everyone can rediscover what it is to discover and create, and no one can invent it. They were there before us, and they are what they are.

5.2. (2) Error and discovery

To return to the style of my mathematical work itself, or its "nature" or "approach", they are now as before those that the good Lord himself taught us all wordlessly, God knows when, long before we were born perhaps. **I do as he did**. It's also what everyone does instinctively, as soon as curiosity pushes them to know such and such a thing of all things, a thing invested from that moment on in the knowledge of all things. by this desire, this thirst...

p. 3 □ When I'm curious about something, mathematical or otherwise, I **question it**. I question it, without worrying about if my question is perhaps stupid, or if it will appear so, without being carefully weighed. Often the question takes the form of an assertion - an assertion which, in truth, is a sounding board. I believe my assertion more or less, depending of course on where I am in my understanding of the things I'm looking at. Often, especially in the early stages of a research project, the assertion is downright false - but you had to make it to be convinced. Often, all I had to do was write it down.

It's obvious that it's not true, whereas before writing it there was a blur, like a malaise, instead of this obviousness. Now it's possible to come back to the charge with less ignorance, with a question-assertion that's perhaps a little less "off the mark". Even more often, the assertion taken literally turns out to be wrong, but the intuition that, clumsily still, tried to express itself through it is right, though still vague. Little by little, this intuition will be decanted from an equally shapeless gangue of false or inadequate ideas, it will gradually emerge from the limbo of the misunderstood that only asks to be understood, of the unknown that only asks to be known, to take on a form of its own, refining and sharpening its contours, as the questions I ask these things in front of me become more precise or more pertinent, to define them more and more closely.

But it can also happen that, through this process, repeated probing converges on a certain image of the situation, emerging from the mists with sufficiently marked features to give rise to the beginnings of a conviction that this image does indeed express reality - when, however, it does not, when this image is tainted by a major error, likely to distort it profoundly. The work, sometimes laborious, which leads to the detection of such a misconception - starting with the first "take-offs" observed between the image obtained and certain obvious facts, or between this image and others which we also trusted - is often marked by a growing tension, as we approach the crux of the contradiction, which at first becomes more and more vague - until finally it explodes, with the discovery of the error.

and the collapse of a certain vision of things, coming as an immense relief, as a liberation. **The discovery of error is one of the most crucial moments** [□] **ciaux, a creative moment of all, in p** . 4
all work of discovery, whether mathematical or self-discovery. It's a moment when our knowledge of the thing being probed is suddenly renewed.

Fear of error and fear of truth are one and the same thing. He who fears error is powerless to discover. It's when we fear being wrong that the error within us becomes immovable as a rock. For in our fear, we cling to what we once thought "true", or to what has always been presented to us as true. When we are moved, not by the fear of seeing an illusory security vanish, but by a thirst for knowledge, then error, like suffering or sadness, passes through us without ever becoming fixed, and the trace of its passage is renewed knowledge.

5.3. (3) The unspeakable labours

It's surely no coincidence that the spontaneous process of true research never appears in the texts or discourse that are supposed to communicate and transmit the substance of what has been "found". More often than not, texts and speeches confine themselves to recording "**results**", in a form that must appear to ordinary mortals as so many austere and immutable laws, inscribed from all eternity on the granite tables of some sort of giant library, and dictated by some omniscient God to the initiated-scribes-savants and assimilated; to those who write learned books and no less learned articles, those who transmit knowledge from the pulpit, or in the more restricted circle of a seminar. Is there a single textbook, a single manual for schoolchildren, high-school students, university students, or even "our researchers", that can give the unfortunate reader the slightest idea of what research is all about - apart from the universally accepted idea that research is something you do when you're really good at it, when you've passed lots of exams and even competitions, the big shots, Pasteur and Curie and the Nobel Prize winners and all that...? The rest of us, readers or listeners, are just doing our best to swallow up the knowledge that these great men have so willingly consigned to the good of humanity, and we're just good enough (if we work hard) to pass our exams at the end of the year.

again...

p. 5 How many there are, including among the unfortunate "researchers" themselves, in need of theses or articles, including even among the most "learned" □ the most prestigious among us - who then has the simplicity to see that "to seek" is no more and no less than to **question** 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, questioning and listening, is the simplest, most spontaneous thing in the world, and one that no one in the world has the privilege of doing. It's a "gift" we've all been given from the cradle - made to express itself and blossom under an infinite number of faces, from one moment to the next and from one person to the next... .

When you dare to say such things, you'll get the same half-sad, half-understanding smiles from all sides, from the dunce who's sure he's a dunce, to the scholar who's sure he's a scholar and well above the common man, as if you've just made a joke that's a bit too big for words, as if you're displaying a naivety that's been stitched together with white thread; It's all very well to spit on no-one, of course - but don't push it - a dunce is a dunce, and not Einstein or Picasso!

In the face of such unanimous agreement, I'd be remiss if I didn't insist. Incurable as I am, I've lost yet another opportunity to keep quiet...

No, it's surely no coincidence that, in perfect harmony, instructive or edifying books and manuals of all kinds present "Knowledge" as if it had emerged fully dressed from the brilliant minds that recorded it for our benefit. Nor can this be said to be bad faith, even in those rare cases where the author is "in the know" enough to know that this image (which his text cannot fail to suggest) in no way corresponds to reality. In such cases, the presentation may be more than a collection of results and recipes, it may be infused with a breath of fresh air, animated by a living vision that is sometimes communicated from the author to the attentive reader. But an unspoken consensus, of considerable force it seems, ensures that the text leaves no trace of the **work of** which it is the product, even when it expresses with lapidary force the sometimes profound vision of things that is one of the true fruits of this work.

p. 6 To tell the truth, there have been times when I myself have felt the weight of this force, of this silent consensus, on the occasion of my project to write and publish these "Mathematical Reflections". If I try to fathom the tacit form that this consensus takes, or rather the one taken by the resistance within me to my □ project , triggered

by this consensus, the term "indecent" immediately comes to mind. The consensus, internalized in me I can't say for how long, tells me (and this is the first time I've taken the trouble to draw into the light of day, into the field of my gaze, what it's been mumbling to me with some insistence for weeks, if not months): "It's indecent to flaunt before others, even publicly, the ups and downs, the messy gropings around the edges, the "dirty laundry" in short, of a work of discovery. It's a waste of the reader's precious time. What's more, it's going to add up to pages and pages and pages of typesetting and printing - what a waste, at the price of scientific printed paper! You've got to be really vain to flaunt things that are of no interest to anyone, as if my own screw-ups were something remarkable - an opportunity to strut your stuff, in short". And even more secretly: "It's indecent to publish the notes of such a reflection, as it **really** goes on, just as it would be indecent to make love in a public square, or to expose, or just leave lying around, the blood-stained sheets of the labors of childbirth.... "

The taboo here takes the insidious yet imperious form of the sexual taboo. It is as I write this introduction that I begin to glimpse its extraordinary force, and the scope of this extraordinary fact itself, attesting to this force: that the true process of discovery, so simple in its simplicity, is to be found in the very fact of the taboo.

This is the case even in the relatively innocuous field of scientific discovery, not that of his willy or anything like that, thank God. This is the case even in the relatively innocuous field of scientific discovery, not that of his willy or anything like that, thank God - a "discovery" in short, fit to be placed in everyone's hands, and which (one might think) has nothing to hide... ..

If I wanted to follow the "thread" that's there - a thread that's by no means tenuous, but very thick and strong - surely it would take me much further than the few hundred pages of homologic-homotopic algebra that I'll eventually finish and deliver to the printer.

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

Decidedly this was an understatement, when at times I cautiously observed that "my style of expression" had changed, even suggesting that there was nothing there to be surprised about: you understand well, p. 7 when you haven't written for thirteen years, it's not the same as before, your "style of expression" has to change, of course. ... The difference is that I used to "express myself" (sic) like everyone else: I'd do the work, then do it again in reverse, carefully erasing all the erasures. Along the way, I'd make new erasures, disrupting the work and sometimes making it worse than the first draft. So it had to be done again - sometimes three or even four times, until everything was perfect. Not only were there no dubious corners or sweepings surreptitiously pushed under a suitable piece of furniture (I've never liked sweepings in corners, as long as you take the trouble to sweep); but above all, when reading the final text, the admittedly flattering impression that emerged (as with any other scientific text) was that **the author** (my modest self in this case) **was infallibility incarnate**. Infallibly, he would come across "the" right notions, then "the" right statements, with a well-oiled engine purring along, with demonstrations that "fell" with a dull noise, each at exactly the right moment!

Let's judge the effect on an unsuspecting reader, a high-school pupil learning Pythagoras' theorem or equations of the second degree, or even one of my colleagues in research institutions or so-called "higher education" (hello!) shouting (let's say) about reading such and such an article by such and such a prestigious colleague! As this kind of experience is repeated hundreds and thousands of times over the course of a pupil's, or even a student's or researcher's, life, amplified by the appropriate concert in the family and in the media of every country in the world, the effect is what you'd expect. You can see it in yourself as well as in others, if you take the trouble to pay attention: **it's the intimate conviction of your own nullity**, in contrast to the competence and importance of people "who know" and people "who do". This intimate conviction is sometimes compensated for, but by no means resolved or defused, by the development of an ability to memorize things that are misunderstood, or even by the development of a certain operative skill: multiplier matrices, "editing" a French composition with "thesis" and "antithesis"... . . It's the ability of the parrot or the learned monkey, more popular today than ever before, sanctioned by coveted diplomas, rewarded by comfortable careers' But the very one sewn with diplomas p. 8

and well-connected, covered in honors perhaps, is not fooled, deep down, by these factitious signs of importance, of "value". Nor, more rarely, is the person who has invested his or her all in the development of some genuine gift, and who in his or her professional life has been able to give his or her all and be creative - he or she is not convinced, deep down, by the brilliance of his or her notoriety, by which he or she often wants to give the impression to himself or herself and to others. The same unexamined doubt inhabits both of them, just as it does the first dunce who comes along, the same conviction they may never dare to acknowledge.

It's this doubt, this deep, unspoken conviction, that drives both of them to constantly surpass themselves.

5. Work and discovery

in the accumulation of honors or works, and to project onto others (above all those over whom they have some power. . .) the self-contempt that gnaws at them in secret - in an impossible attempt to escape it, by accumulating "proofs" of their superiority over others² (2).

²(2)

(Added in March 1984) When I reread these last two paragraphs, I had a certain feeling of unease, due to the fact that in reading them

In writing, I involve others, not myself. Obviously, the thought that my own person might be involved didn't occur to me when I was writing. I certainly didn't learn anything when I confined myself to putting down 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. As I continue my reflection, I'm led to remember that there has been no shortage of contemptuous attitudes towards others in my life. It would be strange if the link I've 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 towards myself, which I've come to realize) tell me that this must surely not be the case! For the time being, however, this is no more than a deduction, the only possible use of which would be to encourage me to see with my own eyes what's going on, and to see and examine (if it does indeed exist, or has existed) this as yet hypothetical contempt for myself, so deeply buried that it has totally escaped my gaze until now. It's true that there's been no shortage of things to look at! This one suddenly strikes me as one of the most crucial, because precisely because it is so hidden... . [(August 1984) *On this subject, however, see the last two paragraphs of the note "The Massacre", n° 87.*].

6. Dreams and the Dreamer

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February 1984

6.1. (5) The forbidden dream

I'm taking the opportunity of a three-month break in the writing of *La Poursuite des Champs*, to take the Introduction back to where I left it last June. I've just reread it carefully, more than six months later, and added a few subtitles.

When I wrote this Introduction, I was well aware that such reflections would inevitably give rise to many "misunderstandings" - and it would be pointless to try to anticipate them, as that would simply mean piling more on top of the first! The only thing I would add in this connection is that I have no intention of going to war against the scientific writing style that has been established by millennia of usage, and which I myself have practised assiduously for over twenty years of my life, and taught to my students as an essential part of the mathematician's craft. Rightly or wrongly, I still regard it as such and continue to teach it. I'd probably even be old-fashioned, with my insistence on a job done right to the end, hand-sewn from start to finish, and with no mercy shown to anyone.

dark corner. If I've had to put water in my wine over the last ten years or so, it's by necessity! For me, "writing
□ in form" remains an important stage in mathematical work,

both as an instrument of discovery, to test and deepen an understanding of things that would otherwise remain approximate and fragmentary, and as a means of communicating such an understanding. From a didactic point of view, the deductive mode of exposition, which in no way excludes the possibility of painting vast pictures, offers obvious advantages in terms of conciseness and ease of reference. These are real advantages, and significant ones at that, when it comes to presentations aimed at the general public.

p. 9

6. The Dream and the

mathematicians, let's say, and more specifically, to mathematicians who are already sufficiently familiar with some of the ins and outs of the subject at hand, or others close by.

These advantages, on the other hand, become entirely illusory when the presentation is aimed at children, young people or adults who are not at all "in the loop" beforehand, whose interest is not yet aroused, and who, moreover, are more often than not (and will remain, and for good reason. . .) in total ignorance of what the real process of discovery is. Readers, to put it better, who are unaware **of the very existence of** such work, which is within **the reach of anyone** gifted with curiosity and common sense - the work from which our intellectual knowledge of the Universe is constantly born and reborn, including that expressed in such imposing ordinances 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. It's an extraordinary fact, and one that first came to light in the reflection I began last year with the first part of this Introduction, at the same time as I glimpsed the deep roots of this puzzling fact. ...

Even though it's aimed at readers who are perfectly "in the know" in every respect, there's still one important thing that the "de rigueur" mode of exposure refuses to communicate. It's also something that's totally frowned upon in the circles of serious people, like us scientists in particular! I

want to talk about **dreams**. The dream, and the visions it breathes into us - impalpable like itself at first, and often reluctant to take shape. Long years, even a lifetime of intense work may not be enough pas perhaps

p. 10

to see a dream vision fully manifest, to see it condensed and polished to the hardness and brilliance of a diamond. This **is** our work, done by hand or by mind. When the job is done, or a part of it, we present the tangible result in the brightest light we can find, rejoice in it, and often take pride in it. Yet it's not in this diamond, which we've cut at great length, that we find the inspiration for cutting it. We may have fashioned a tool of great precision, an efficient tool - but the tool itself is limited, like all things made by human hands, even when they seem great to us. A vision, unnamed and uncountured at first, tenuous as a shred of mist, has guided our hand and kept us bent over the work, without feeling the passing hours or perhaps years. A flap that noiselessly detached itself from a bottomless sea of mist and gloom. ... What is limitless in us is Her, this Sea ready to conceive and give birth unceasingly, when our thirst fecundates Her. The Dream is born of these marriages, like the embryo nestled in the womb, awaiting the obscure labours that will lead it to a second birth, in the light of day.

Woe betide a world where dreams are scorned - it's also a world where what's deep inside us is scorned. I don't know if any other culture before ours - the culture of television, computers and transcontinental rockets - has professed such contempt. It must be one of the many ways in which we distinguish ourselves from our predecessors, whom we have so radically supplanted, eliminated as it were from the face of the planet. I know of no other 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 of a dream and nourished by it before coming to light? In our country (or should we say everywhere?), respect for dreams is called "superstition", and it's well known that our psychologists and psychiatrists have taken the measure of dreams in great length and breadth - hardly enough to clutter the memory of a small computer, surely. It's also true that no-one "back home" knows how to light a fire, or dares to watch their child being born or their mother or father dying in their own home.

have clinics and hospitals for that. Thank God for that. . . Our world, so proud of its power in atomic megatons and in the amount of information stored in its libraries and in its computers, is undoubtedly also the one in which everyone's **powerlessness**, fear and contempt for the simple, essential things in life reached its peak.

p. 11

Fortunately, dreams, like the original sex drive in even the most repressive society, have a way of enduring! Superstition or not, they continue to obstinately whisper to us knowledge that our waking minds are too heavy, or too pusillanimous, to grasp, and to give life and wings to the projects they have inspired.

I suggested earlier that dreams are often reluctant to take shape, but that's just an appearance, and doesn't really get to the heart of the matter. The "reluctance" would rather come from our waking mind, in its ordinary "plate" - and "reluctance" is a euphemism! Rather, it's a deep-seated mistrust, covering up an ancestral fear - **the fear of knowing**. Speaking of dreams in the true sense of the word, this fear is all the more powerful, all the more effective as a screen, because the message of the dream touches us more closely, because it carries with it the threat of a profound transformation of our very being, should it happen to be heard. But it seems that this mistrust is present and effective even in the relatively innocuous case of the mathematical "dream"; so much so that all dreams seem to be banned not only from texts (I don't know of any in any case where there is any trace of them), but also from discussions between colleagues, in small groups, or even one-on-one.

The reason for this apparent absence, this conspiracy of silence, is certainly not that the mathematical dream doesn't exist or no longer exists - our science would then have become sterile, which is by no means the case. Surely, the reason for this apparent absence, this conspiracy of silence, is closely linked to that other consensus - that of carefully erasing all trace and mention of the work through 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 it inspires and nourishes**. So much so, in fact, that the very term "mathematical dream" will seem nonsensical to many of us, so often driven by push-button clichés, rather than by the direct experience we can have of a simple, everyday, important reality.

6.2. (6) The Dreamer

In fact, I know from experience that when the mind is eager to get 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 in no way reluctant "to take shape" - to let itself be delicately described and deliver its message, always simple, never silly, and sometimes overwhelming. On the contrary, the Dreamer in us is an incomparable master at finding, or creating from one occasion to the next, the most appropriate language to circumvent our fears, to shake our torpor, with scenic means varying infinitely, from the absence of any visual or sensory element whatsoever, to the most breathtaking stagings. When He shows up, it's not to evade Himself, but to encourage us (almost always to no avail, but His benevolence never tires...) to get out of ourselves, out of the heaviness in which He sees us stuck, and which He sometimes takes the slightest pleasure in parodying in comical colors. Lending an ear to the Dreamer within us means communicating with ourselves, against the powerful barriers that would like to prevent us from doing so at all costs.

. 12

But who can do more, can do less. If we can communicate with ourselves through the dream, 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 involve forces of

resistance of comparable power. And to tell the truth, what else have I done in my mathematical past, if not follow, "dream" to the end, until their most manifest, most solid: irrefutable manifestation, shreds of dream detaching themselves one by one from a heavy, dense fabric of mists? And how many times did I tremble with impatience at my own obstinacy in jealously polishing to the last facet each precious or semi-precious stone in which my dreams condensed - rather than following a deeper impulse: that of following the multiform arcana of the mother fabric - to the indecisive confines of the dream and its patent incarnation, "publishable" in short, according to the canons in force! In fact, I was about to follow this impulse, to embark on a work of "mathematical science fiction", "a kind of daydream" about a theory of "patterns" that remained purely hypothetical at the time - and has remained so to this day.

p. 13 even today, and for good reason, for want of another "daydreamer" to embark on this adventure. It was towards the end of the sixties, when my life \square (without my suspecting it in the slightest) was about to change. took a completely different turn, which for the next ten years or so would relegate my mathematical passion to the sidelines.

But all things considered, "A la Poursuite des Champs", this first publication after fourteen years of silence, is very much in the spirit of that "waking dream" which was never written, and of which it seems to have been the provisional sequel. Admittedly, the themes of these two dreams are as dissimilar, at least at first glance, as it is possible for two mathematical themes to be; not to mention that the first, that of motifs, would seem to lie more on the horizon of what might be "feasible" with the means at hand, whereas the second, the famous "fields" and consorts, appear to be entirely within reach. These are dissimilarities that could be called fortuitous or accidental, and which will perhaps fade away much sooner than we expect¹ (3). They have relatively little impact, it seems to me, on the kind of work to which the two themes can give rise, since it's all about "daydreaming", or, to put it in less provocative terms: continuing the work of conceptual rough-casting until an overall vision of sufficient coherence and precision is achieved, to bring about the more or less complete conviction that the vision does indeed correspond, in essence, to the reality of things. In the case of the theme developed in this book, this should mean, more or less, that the detailed verification of the validity of this vision becomes a matter of pure craft. This may well require a considerable amount of work, with its share of astuteness and imagination, and no doubt also unexpected twists and perspectives, which will make it something other than a purely routine task (a "long exercise", as André Weil would say).

It's the kind of work, in short, that I've done over and over again in the past, that I've got at my fingertips and that there's no need for me to do again in the years still ahead of me. Insofar as I'm once again investing myself in mathematical work, it's on the fringes of "daydreaming" that my energy will surely be best employed. In this choice, it's not a concern for profitability that inspires me (assuming that such a concern could inspire anyone), but a dream, or dreams. If this new impetus within me is to prove a source of strength, it will have been drawn from the dream!

¹(3)

I am thinking in particular of the famous conjectures of Mordell, Tate and Shafarevich, all of which have been proven. three last year in a forty-page manuscript by Faltings, at a time when the well-established consensus of those "in the know" was that these conjectures were "out of reach"! As it happens, "the" fundamental conjecture that serves as the keystone of the "Anabelian algebraic geometry" program I'm so fond of, is close to Mordell's conjecture. (It would even seem that the latter is a consequence of the former, which just goes to show that this program is not a story for serious people. ...).)

6.3. (7) The legacy of Galois

□ It would seem that of all the natural sciences, it is only in mathematics that what I have called "dreaming", or "daydreaming", is subject to a seemingly absolute ban, more than twice a millennium old. In the other sciences, including reputedly "exact" sciences such as physics, dreaming is at least tolerated, even encouraged (depending on the era), under admittedly more "outlandish" names such as: "speculations", "hypotheses" (such as the famous "atomic hypothesis", the result of a dream, pardon the pun, of a speculation by Democritus), "theories"... . . . The transition from the status of a dream-which-dare-not-say-its-name to that of "scientific truth" takes place by insensible degrees, through a gradually widening consensus. In mathematics, on the other hand, it is almost always (these days at least) a sudden transformation, by virtue of the magic wand of a **demonstration**² (4). At a time when the notion of mathematical definition and demonstration was not, as it is today, clear and the object of a (more or less) general consensus, there were nonetheless visibly important notions that had an ambiguous existence - such as that of a "negative" number (rejected by Pascal) or that of an "imaginary" number. This ambiguity is reflected in the language still in use today.

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The gradual clarification of the notions of definition, statement, demonstration and mathematical theory has been extremely beneficial in this respect. It has made us aware of the power of the tools we have at our disposal to formulate with perfect precision what might otherwise have seemed unformulate - by virtue of a sufficiently rigorous use of everyday language, that is. If there's one thing that has fascinated me about mathematics since I was a child, it's precisely this power to capture in words, and to express perfectly, the essence of such mathematical things that at first glance present themselves in such elusive, or mysterious, form that they seem beyond words. ...

However, an unfortunate psychological side-effect of this power, of the resources offered by perfect precision and demonstration, is that they have further accentuated the traditional taboo on the "thematic dream"; that is, on anything that does not present itself under the conventional aspects of precision (albeit at the expense of a broader vision), guaranteed to be "right" thanks to well-designed demonstrations, or else (and increasingly so □ plus these days. . .) by sketches of demonstrations, supposedly able to form. Occasional **conjectures** are tolerated in a pinch, as long as they satisfy the conditions of precision of a questionnaire, where the only accepted answers would be "yes" or "no". (And, needless to say, on condition that the person who makes them is well known in the mathematical world). To my knowledge, there has been no example of the development, on an "experimental" basis, of a mathematical theory that would be explicitly conjectural in its essential parts. It's true that, according to modern standards, the entire calculus of the "infinitely small" developed from the seventeenth century onwards, which has since become the differential and integral calculus, would appear to be a daydream, eventually transformed into a

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²(4)

Even today, we come across "demonstrations" of uncertain status. For years, this was the case with Grauert's demonstration of the finite theorem that bears his name, which nobody (and there was no shortage of good-willers!) could read. This perplexity was resolved by other, more transparent demonstrations, some of which went further, taking over from the initial one. A similar, more extreme situation is the "solution" to the so-called "four-color problem", the computational part of which was solved with a computer (and a few million dollars). This is a "demonstration" that is no longer based on the intimate conviction that comes from understanding a mathematical situation, but on credit given to a machine devoid of the faculty of understanding, and whose structure and operation the mathematician user is unaware of. Even supposing that the calculation is confirmed by other computers, following other calculation programs, I don't consider the four-color problem to be closed. It will only have changed its face, in the sense that it will no longer be a question of looking for a counter-example, but only a demonstration (readable, of course!).

6. The Dream and the

serious mathematics only two centuries later, thanks to the magic wand of Cauchy. And I'm reminded of **Evariste Galois'** daydream, which had no luck with Cauchy himself; but this time it took less than a hundred years for another wand, this time from Jordan (if I remember correctly), to give the dream a new name, "Galois theory".

The observation that emerges from all this, and which is not to the advantage of "Mathematics 1984", is that it's fortunate that people like Newton, Leibnitz, Galois (and I'm sure many others, as I'm not well versed in history...) were not encumbered by our current canons, at a time when they were content to discover without taking the trouble to canonize!

The example of Galois, who came here without my calling him, strikes a chord with me. I seem to recall that a feeling of fraternal sympathy for him was awakened the first time I heard about him and his strange destiny, when I was still a high school or university student, I think. Like him, I felt a passion for mathematics - and like him, I felt like an outsider, a stranger in the "beautiful world" that (it seemed to me) had rejected him. Yet I ended up being part of this beautiful world myself, only to leave it one day, without regret... . This somewhat forgotten affinity reappeared to me quite recently, and in a whole new light, as I was writing "Esquisse d'un Programme" (on the occasion of my request for a admission as a researcher at the Centre National de la Recherche Scientifique). This report is mainly devoted to a sketch of my main themes of reflection over the last ten years or so. Of all

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Of these themes, the one that fascinates me the most, and which I intend to develop in particular over the next few years, is the very type of mathematical dream, which, incidentally, is similar to the "dream of patterns", for which it provides a new approach. In writing this sketch, I was reminded of the longest mathematical reflection I've pursued in one go in the last fourteen years. It lasted from January to June 1981, and I called it "The Long Walk through Galois Theory". One thing led to another, and I realized that the daydream I'd been pursuing sporadically for several years, which had come to be known as "Anabelian algebraic geometry", was nothing other than a continuation, "an ultimate culmination of Galois' theory, and no doubt in the spirit of Galois".

When this continuity became apparent to me, as I was writing the passage from which the quoted line is taken, a joy came over me that has not dissipated. It was one of the rewards of working in complete solitude. Its appearance was as unexpected as the more than fresh welcome I had received from two or three colleagues and old friends who were well "in the know", one of whom, incidentally, was my pupil, and to whom I had had the opportunity to talk, still "hot off the press" and in the joy of my heart, about these things I was in the process of discovering. ...

It reminds me that to take up Galois' legacy today is surely also to accept the risk of the solitude that was his in his time. Perhaps times are changing less than we think, but this "risk" often doesn't feel like a threat to me. While I am sometimes saddened and frustrated by the indifference or disdain of those I have loved, I have never been weighed down by loneliness, mathematical or otherwise, for many years. If ever there was a faithful friend I long to find again when I leave her, it's her!

6.4. (8) Dream and demonstration

But let's get back to the dream, and the prohibition that has plagued mathematics for millennia. This is perhaps the most inveterate of all the a-priorities, often implicit and rooted in habit, decreeing that one thing is "math" and another is not. It took millennia for such childish things to become accepted.

and ubiquitous that the symmetry groups of certain geometric figures, the topological forms of certain others, the number zero, the sets find admission in the sanctuaries!

When I talk to these

students of the topology of a sphere, and the shapes that can be deduced from a sphere by adding covers - things that don't surprise young children, but which baffle them because they think they know what "maths" is - the first spontaneous echo I get is: but that's not maths! Maths, of course, is the Pythagorean theorem, the heights of a triangle and second-degree polynomials... . These students are no more stupid than you or I. They're reacting as all the world's mathematicians have reacted from time immemorial to the present day, except for people like Pythagoras or Riemann and maybe five or six others. Even Poincaré, who wasn't the first to come along, managed to prove with a well-felt philosophical A plus B that infinite sets weren't math! Surely there must have been a time when triangles and squares weren't maths - they were drawings that kids or craftsmen traced on the sand or in the clay of vases, not to be confused...

This fundamental inertia of the mind, suffocated by its "knowledge", is certainly not peculiar to mathematicians. I'm straying a little from the point I'm trying to make: **the ban on mathematical dreams**, and through them, on anything that doesn't present itself in the usual guise of a finished product, ready for consumption. The little I've learned about the other natural sciences is enough to make me realize that a similarly rigorous ban would have condemned them to sterility, or to a tortoise's progress, rather like in the Middle Ages when there was no question of dehornifying the letter of the Holy Scriptures. But I'm also well aware that the deep source of discovery, just as the process of discovery in all its essential aspects, is the same in mathematics as in any other region or thing in the universe that our body and mind can experience. **To banish the dream is to banish the source** - to condemn it to an occult existence.

And I'm also well aware, from an experience that has not wavered since my first, juvenile love affair with mathematics, that in the unfolding of a vast or profound vision of mathematical things, it is this unfolding of a vision and understanding, this progressive penetration, that constantly **precedes** the demonstration, that makes it possible and gives it meaning. When a situation, from the humblest to the broadest, has been understood in its essential aspects, the demonstration of what is understood (and of the rest) falls like a ripe fruit at the right moment. Whereas the demonstration **plucked** like a still-green fruit from the tree of knowledge leaves an aftertaste of dissatisfaction, a frustration of our unquenchable thirst. Two or three times in my life as a mathematician, for want of anything better, I've had to pluck the fruit rather than pick it. I'm not saying I did wrong, or that I regret it. But what I did best and what I liked best, I took willingly, not by force. If mathematics has given me joy in profusion and continues to fascinate me in my middle age, it's not because of the demonstrations I've been able to wring out of it, but because of the inexhaustible mystery and perfect harmony I sense in it, always ready to reveal itself to a loving hand and gaze.

6.5. (9) Strangers welcome

I think the time has come to say something about my relationship with the world of mathematicians. This is quite different from my relationship with mathematics. The latter existed and was strong from an early age, long before I even suspected that there was a world and a milieu of mathematicians. A complex world, with its learned societies, periodicals, meetings, colloquia, congresses, primas-donnes and tâcherons, its power structure, its eminences grises, and the no less grey mass of the taillables et corvéables, in need of a thesis or articles, and of those too, rarer still, who are rich in means and ideas and

come up against closed doors, desperate to find the support of one of those powerful, pressurized and feared men who have that magic power: to get an article published... ..

I discovered the existence of a mathematical world when I arrived in Paris in 1948, at the age of twenty, with a Licence es Sciences from the University of Montpellier in my meagre suitcase, and a tightly-written, double-sided manuscript with no margins (paper was expensive!), representing three years of solitary reflection on what (I later learned) was then well known as "measurement theory" or "Lebesgue's integral". Since I'd never met anyone else, until the day I arrived in Paris, I thought I was the only person in the world "doing math", the only **mathematician**. (It was the same for me, and remains so to this day). I had juggled with sets that I called measurable (without ever having met a set that wasn't. . .) and with the almost everywhere, but didn't know what a topological space was. I remained a little lost in a dozen non-equivalent notions of "abstract space" and compactness, sinned in a little booklet (by someone called Appert

p. 19 I think, in *Actualités Scientifiques et Industrielles*), on which I had stumbled: God knows how. I'd never heard before, in a mathematical context at least, such strange or barbaric words as group, body, ring, module, complex, homology (and the list goes on!), which suddenly, without warning, came crashing down on me all at once. It was a rude shock!

If I "survived" this shock, and went on to do maths and even make a living of it, it's because in those early days, the mathematical world hardly resembled what it has since become. It's also possible that I'd been lucky enough to land in a more welcoming corner of this unsuspected world. I had a vague recommendation from one of my professors at the Faculty of Montpellier, Monsieur Soula (no more than any of his colleagues, he had not seen me often in his classes!), who had been a pupil of Cartan (father or son, I couldn't say). As Elie Cartan was already "out of the game" by then, his son Henri Cartan was the first "fellow student" I had the pleasure of meeting. I had no idea how auspicious this was! I was greeted by him with the kindly courtesy that distinguishes him, well known to the generations of Normaliens who had the good fortune to make their very first acquaintance with him. He must not have realized the extent of my ignorance, judging by the advice he gave me to guide my studies. Be that as it may, his benevolence was obviously directed at the person, not at the background or potential gifts, nor (later) at a reputation or notoriety. . .

In the year that followed, I was host to one of Cartan's lectures at "l'Ecole" (on differential formalism on varieties), to which I clung firmly; and to the "Séminaire Cartan", witnessing in amazement the discussions between him and Serre, with "Suites Spectrales" (brr!) and drawings (called "diagrams") full of arrows covering the whole board. Those were the heroic days of the theory of "beams", "cara-paces" and a whole arsenal whose meaning totally escaped me, even though I was trying so hard to make sense of it.

to swallow definitions and statements and check demonstrations. At the Séminaire Cartan there were also periodic appearances by Chevalley, Weil, and the days of the Bourbaki Seminars (bringing together une

p. 20 In the early hours of the morning, when the crowd was still in its early twenties or thirties (participants and listeners at most), the other members of the famous Bourbaki gang - Dieudonné, Schwartz, Godement and Delsarte - would turn up like a group of noisy friends. They were all on a first-name basis, spoke the same language that almost totally escaped me, smoked a lot and laughed a lot, and the only thing missing was the crates of beer to complete the atmosphere - which was replaced by chalk and sponge. It was a very different atmosphere from Leray's lectures at the Collège de France (on Schauder's theory of topological degree in infinite-dimensional spaces, poor me!), which I went to listen to on Cartan's advice. I had gone to see Monsieur Leray at the Collège de France to ask him (if I remember correctly) what his lecture would be about. I don't remember what he told me,

or whether I understood anything at all - only that here, too, I felt a benevolent welcome, addressed to the first stranger who came along. It was this and nothing else, surely, that made me go to this course and bravely hold on to it, as I had done at the Cartan Seminar, even though the meaning of what Leray was expounding there almost totally escaped me at the time.

The strange thing was that, in this world to which I was a newcomer and whose language I hardly understood and spoke even less, I didn't feel like a stranger. While I hardly ever had the opportunity to speak (and with good reason!) with one of those cheerful fellows like Weil or Dieudonné, or with one of those more distinguished gentlemen like Cartan, Leray or Chevalley, I nevertheless felt **accepted**, I'd almost say: **one of them**. I can't recall a single occasion when I was treated with condescension by one of these men, or when my thirst for knowledge, and later, again, my joy in discovery, was dismissed with smugness or disdain³ (5). If it hadn't been so, I wouldn't have "become a mathematician" as they say - I'd have chosen another profession, where I could give my all without having to face scorn. ...

Although I was "objectively" a stranger to this world, just as I was a stranger to France, a link united me to these men from another background, another culture, another destiny: a shared passion. I doubt that, in that crucial year when I was discovering the world of mathematicians, any one of them, not even Cartan, of whom I was a bit of a pupil but who had many others (and some who weren't so clueless!), perceived in me the same passion that I had ^{inhabited} ^{them}. For them, I had to be one among a mass of course listeners and seminars, taking notes and obviously not quite up to speed. If I perhaps stood out in any way from the other listeners, it was that I wasn't afraid to ask questions, which more often than not had to do with my phenomenal ignorance of both language and mathematics. The answers could be brief, or even astonished, but never did the bemused oddball that I was then encounter a rebuff, a "putting in my place", either in the informal milieu of the Bourbaki group, or in the more austere setting of the Leray course at the Collège de France. In those years, ever since I arrived in Paris with a letter to Elie Cartan in my pocket, I've never had the impression of finding myself in front of a clan, a closed or even hostile world. If I've ever experienced this inner contraction in the face of contempt, it wasn't in that world; at least not in those days. Respect for the individual was part of the air I breathed. You didn't have to earn respect, prove yourself before you were accepted, and treated with any kind of kindness. Strangely enough, it was enough to be a person, to have a human face.

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³(5)

This fact is all the more remarkable given that up until 1957, I was regarded with a certain reserve by more than one member of the company.

of the Bourbaki Group, which, I believe, co-opted me with some reluctance. A good-natured quip put me among the "dangerous specialists" (in Functional Analysis). At times, I sensed a more serious, unspoken reserve in Cartan - for some years, I must have given him the impression of someone inclined towards gratuitous, superficial generalization. I saw him quite surprised to find in the first (and only) rather long essay I wrote for Bourbaki (on differential formalism on varieties) a reflection of any substance - he hadn't been too keen when I'd offered to take it on. (This reflection came in handy again years later, when I developed the residue formalism from the point of view of coherent duality). I was more often than not left in the lurch during Bourbaki congresses, especially during the joint readings of the essays, being quite unable to keep up with the readings and discussions at the rate they were going. Maybe I'm just not cut out for collective work. In any case, the difficulty I had in integrating myself into the common work, or the reservations I may have aroused for other reasons in Cartan and others, never drew sarcasm or rebuff, or even a shadow of condescension, except at most once or twice from Weil (definitely a case apart!). At no time did Cartan deviate from an equal kindness towards me, imbued with cordiality and also with that distinctive touch of humor that for me remains inseparable from his person.

6.6. (10) The "Mathematical Community": fiction and reality

So it's hardly surprising that, perhaps from that year onwards, and more and more clearly in any case over the years that followed, I felt part of this world, to which I was happy to refer under the meaningful name of "**mathematical community**". Before writing these lines, I never had the opportunity to examine the meaning I gave to this name, even though I identified with this "community" to a large extent. It's clear now that this community represented for me nothing more and nothing less than a kind of ideal extension, in space and in time, of the benevolent world that had welcomed me and accepted me as one of their own; a world, moreover, to which I was linked by one of the great passions that have dominated my life.

This "community", with which I gradually became identified, was not an entirely fictitious extrapolation of the mathematical milieu that had initially welcomed me. The initial milieu gradually expanded, by which I mean: the circle of mathematicians I was led to frequent regularly, driven by themes of common interests and personal affinities, has gone from strength to strength in the ten or twenty years since that first contact. In concrete ^{ter}mes, it's the circle of colleagues and friends, or rather this structure concentric, ranging from the colleagues with whom I was most closely associated (first Dieudonné, Schwartz, Godement, later above all Serre, later still people like Andreotti, Lang, Tate, Zariski, Hironaka, Mumford, Bott, Mike Artin, not to mention the people in the Bourbaki group, which was also gradually expanding, and the students who came to me from the 1960s onwards... .), to other colleagues I'd met here and there and with whom I had more or less close affinities - it was this microcosm, formed by chance encounters and affinities, that represented the concrete content of this name, charged with warmth and resonance for me: the mathematical community. When I identified with it as a warm, living entity, it was in fact this microcosm with which I identified.

It was only after the "great turning point" of 1970, the first **awakening** I should say, that I realized that this cozy, friendly microcosm represented only a tiny portion of the "mathematical world", and that the traits I liked to attribute to this world, which I continued to ignore and had never thought of taking an interest in, were fictitious traits.

Over the past twenty-two years, this microcosm itself had changed its face, in a world that was also changing. Certainly, over the years, I too had changed, without suspecting it, as had the world around me. I don't know if my friends and colleagues were more aware of this change than I was, in the world around them, in their own microcosm, and in themselves. Nor can I say when or how this strange change came about - it probably came about insidiously, in fits and starts: **the man of notoriety was feared**. I myself was feared - if not by my students, then by my friends, or by those who knew me personally, at least by those who knew me only through notoriety, and who did not feel themselves protected by comparable notoriety.

I only became aware of the fear that is rife in the mathematical world (and just as much, if not more, in other scientific circles) than in the aftermath of my "awakening" nearly fifteen years ago. Over the preceding fifteen years, I had gradually and unsuspectingly assumed the role of the "great boss", in the world of mathematical Who is Who. ^{Without} also suspecting it, I was a prisoner of this role, which isolated me from all but a few "peers" and a few students (and still. . .) who decidedly "wanted it". It was only when I stepped out of this role that at least some of the fear surrounding it fell away. Tongues were loosened that had been silent before me for years.

The testimony they brought me was not only one of fear. It was also the testimony

taken. The contempt of those in power towards others, a contempt that creates and fuels fear.

I didn't have much experience of fear, but of contempt, in times when a person's persona and life didn't carry much weight. It had pleased me to forget the time of contempt, and here it was again! Perhaps it had never stopped, when I'd simply moved on to another world (as it seemed to me), or looked the other way, or simply pretended not to see or hear anything, apart from the fascinating and interminable mathematical discussions? These were the days when I finally accepted the fact that contempt was rampant all around me, in the world I'd chosen as my own, with which I'd identified, which I'd vouched for and which had pampered me.

6.7. (11) Meeting with Claude Chevalley, or: freedom and good feelings

Perhaps the preceding lines give the impression that I was overwhelmed by the testimonials that poured in almost overnight. Not so. These testimonies were recorded at a superficial level. They were simply added to other facts that I had just learned, or that I had known but avoided paying attention to until then. Today, I would ex-prime the lesson I learned then as follows: "scientists", from the most illustrious to the most obscure, are people just like everyone else! I had deluded myself into thinking that "we" were something better, that we had something extra - it took me a good year or two to get rid of that stubborn illusion!

Among the friends who helped me, only one was part of the milieu I'd just left, with no desire to return.⁴

(6). It's Claude Chevalley. While he didn't make speeches and wasn't interested in mine, I think I can say that I learned more important and more hidden things from him than the one I've just said.

In the days when I used to see him quite regularly (the days of the "Survivre" group, which he had joined with p. 24 a mixed conviction), he often baffled me. I don't know how, but I felt he had a special gift for me.

⁴(6) My friends from Survivre et Vivre

Among these friends, I should probably also count Pierre Samuel, whom I had previously known mainly through Bourbaki, just like Chevalley, and who (like Chevalley) played an important role in the Survivre et Vivre group. It doesn't seem to me that Samuel was so much into this illusion of the superiority of the scientific queue. Above all, I feel he contributed a great deal through the common sense and smiling good humor he brought to joint work, discussions and relations with others, as well as gracefully taking on the role of "ugly reformer" in a group inclined towards radical analyses and options. He stayed with Survivre et Vivre for some time after I withdrew, acting as editor of the newsletter of the same name, and left with good grace (to join Friends of the Earth) when he felt that his presence in the group had ceased to be useful.

Samuel belonged to the same restricted milieu as I did, which didn't prevent him from being one of the friends I made during those bubbling years, from whom I believe I learned something (as bad a student as I was. . .). These ways of being, just like Chevalley's even though they hardly resemble each other, were a better antidote for my "meritocratic" inclinations than the sharpest analysis!

It now seems to me that for all the friends from that period from whom I learned something, it was more through their way of being and their sensitivity, which differed from mine, and from whom "something" was communicated, than through explanations, discussions, etc. . . . In this respect, I especially remember, in addition to Chevalley and Samuel, Denis Guedj (who had a great influence on the Survivre et Vivre group), Daniel Sibony (who kept his distance from this group, while pursuing its evolution with a half-disdainful, half-narcotic eye), Gordon Edwards (who was a co-actor in the birth of the "movement" in June 1970 in Montreal, and who for years did prodigious feats of energy to maintain an "American edition" of the Survivre et Vivre newsletter in English), Jean Delord (a physicist about my age, a fine and warm-hearted man, who took a liking to me and the Survivre microcosm), Fred Snell (another US-based physicist from Buffalo, whose country house I stayed in for a few months in 1972).

Of all these friends, five are mathematicians, two are physicists, and all are scientists - which seems to show that the milieu closest to me in those years remained a milieu of scientists, and especially mathematicians.

knowledge that eluded me, an understanding of certain essential and simple things, which can certainly be expressed in simple words, but without the understanding "passing" from one to the other. I realize now that there was a difference in maturity between him and me, which meant that I often felt at odds with him, in a kind of dialogue of the deaf that was not due to a lack of mutual sympathy or esteem. Although he didn't express himself in these terms (as far as I can remember), it must have been clear to him that the "questioning" (of the "social role of the scientist", of science, etc. . .) to which I was then arriving, either on my own, or through the logic of joint reflection and activity within the "Survivre" group (which later became "Survivre et Vivre")-that questioning remained basically superficial. They concerned the world in which I lived, and even the role I played in it - but they didn't really involve me in any profound way. My vision of myself, during those heady years, didn't change a bit. It wasn't 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 persistent illusion, not about others or the world around me, but about myself. It was another awakening, more far-reaching than the first that 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.

I don't recall Chevalley ever alluding to self-knowledge, or "self-discovery" for that matter. In retrospect, however, it's clear that he must have started getting to know himself a long time ago. He sometimes spoke about himself, just a few words on the occasion of this or that, with disconcerting simplicity. He's one of the two or three people I've never heard come up with a cliché. He spoke very little, and what he said expressed not ideas that he had adopted and made his own, but a personal perception and understanding of things.

That's why I'm sure he often baffled me, even back in the days when we were still meeting in the Bourbaki group. What he was saying often upset ways of seeing that were ^{dear} □ to me, and that for

p. 25 That's why I considered them "true". There was an inner autonomy in him that I lacked, and which I began to perceive obscurely at the time of "Survivre et Vivre". This autonomy is not a matter of intellect or discourse. It's not something you can "adopt", like ideas, points of view, etc. Fortunately, the idea would never have occurred to me to want to "make my own" this autonomy perceived in another person. I had to find my own autonomy. That also meant learning (or relearning) to be myself. But in those years, I had no idea of my lack of maturity, of inner autonomy. If I eventually discovered it, it must have been the encounter with Chevalley that was one of the leavenings that silently worked within me, while I was embarking on major projects. It wasn't speeches or words that sowed that seed. To sow it, it was enough for a person I met along the way to dispense with speeches, and just be himself.

It seems to me that in those early seventies, when we met regularly to publish the bulletin "Survivre et Vivre", Chevalley was trying, without insistence, to communicate a message to me that I was then too clumsy to grasp, or too wrapped up in my militant tasks. I was dimly aware that he had something to teach me about freedom - about inner freedom. Whereas I tended to operate on the basis of high moral principles, and had begun to sound that trumpet in the early issues of *Survivre* as a matter of course, he had a particular aversion to moralizing. I think that was the thing that most baffled me about him in the early days of *Survivre*. For him, such discourse was just an attempt at constraint, superimposed on a multitude of other external constraints stifling the individual. Of course, you can spend your whole life discussing a

such a way of seeing, the pros and cons. It completely overturned my own, which (as you might imagine) was driven by the noblest and most generous feelings. It was incomprehensible to me that Chevalley, for whom I had the highest esteem and with whom I felt a bit like a comrade-in-arms, should take such malicious pleasure in not sharing these feelings! I didn't understand that the truth, the reality of things, is only one thing.

It's not a question of good feelings, points of view or preferences. Chevalley **saw** one thing, everything simple and real, and I couldn't see it. It wasn't that he'd read it somewhere; there's nothing

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What do seeing something and reading about it have in common? You can read a text with your hands (in Braille) or with your ears (if someone reads it 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 everything else to have the leisure to look at the effect of my good feelings and principles on myself and others, starting with my own children.

He must have seen that I often didn't use my eyes, that I didn't even want to. Strange that he never let me know. Or did he, without my hearing? Or did he refrain, judging it a waste of time? Or maybe the idea didn't even occur to him - it was my business after all, not his, whether I used my eyes or not!

6.8. (12) Merit and contempt

I'd like to take a closer look, in the light of my own limited experience, at when and how contempt took hold in the world of mathematicians, and more particularly in that "microcosm" of colleagues, friends and students that had become like my second home. And at the same time, to see what part I played in this transformation.

It seems to me I can say, without reservation, that in 1948-49, in the circle of mathematicians I mentioned earlier (whose center for me was the original Bourbaki group), I didn't encounter the slightest trace of contempt, or simply disdain or condescension, towards myself or any of the other young people, French or foreign, who came there to learn the mathematical profession. The men who played a leading role, through their position or prestige, such as Leray, Cartan and Weil, were not feared by me, nor I believe by any of my fellow students. With the exception of Leray and Cartan, who were very "distinguished gentlemen", it took me quite a while to realize that each of these louts, who barged in with Cartan like a friend and obviously "in the know", was a university professor just like Cartan himself, didn't aim from hand to mouth like me, but received what I considered astronomical emoluments, and was, what's more, a mathematician of international stature and influence.

Following a suggestion from Weil, I spent the next three years in Nancy, which at that time was a Bourbaki's headquarters, along with Delsarte, Dieudonné, Schwartz, Godement (and a little later also Serre) taught at the University. There was only a handful of four or five young people there with me (including Lions, Malgrange, Bruhat and Berger, unless I'm mistaken), so we were much less "drowned in the crowd" than in Paris. The atmosphere was all the more familiar, everyone knew each other personally, and I think we were all on first-name terms. When I look back, however, this is the first and only time I saw a mathematician treat a student with undisguised contempt. The unfortunate fellow had come for the day from another town to work with his boss (he was to prepare a doctoral thesis, which he eventually passed with flying colors, and has since acquired a degree in mathematics).

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6. The Dream and the

a certain notoriety, I think). I was quite taken aback by the scene. If someone had used that kind of tone with me for even a second, I'd have slammed the door in their face! As it was, I knew the "boss" well, I was even up to you with him, not the student I only knew by sight. My eldest had, in addition to an extensive culture (not only mathematical) and an incisive mind, a kind of peremptory authority that impressed me at the time (and for quite a long time afterwards, right into the early 70s). He exerted a certain ascendancy over me. I don't remember whether I asked him a question about his attitude, only the conclusion I drew from the scene: this unfortunate pupil must really be a loser, to deserve to be treated like that - something like that. It didn't occur to me then that if the student did indeed suck, that was a reason to advise him to do something else, and to stop working with him, but by no means to treat him with contempt. I had identified myself with the "math whizzes" such as this prestigious elder, at the expense of the "nobodies" whom it would be licit to despise. So I followed the ready-made path of connivance with contempt, which suited me, by emphasizing the fact that I was accepted into the brotherhood of deserving people, the math whizzes!⁵ (7)

Of course, I wouldn't have said to myself any more than anyone else: people who try to make maths without getting there are good to despise! I would have heard someone say something of this water, around this time or any other, I would have taken it back beautifully, sincerely sorry for a ignorance spiritual.

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phenomenal. The fact is, I was bathed in ambiguity, playing both sides of the fence: on the one hand, fine principles and feelings, on the other: poor guy, you'd have to be a real loser to be treated like that (the implication being: this kind of misadventure couldn't happen to me, that's for sure!).

In the end, it seems to me that the incident I reported, and above all the (seemingly harmless) role I played in it, is in fact typical of an ambiguity in me that has 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 1970⁶ (8), without me clearly detecting it until today, when I'm writing these lines. It's a pity I didn't notice it then. Perhaps the time wasn't ripe for me. In any case, the evidence I was receiving at the time about the reign of contempt to which I had chosen to turn a blind eye, did not implicate me personally, nor indeed any of my colleagues and friends in the part of my dear microcosm closest to me⁷ (9). It was more to the tune of: ah! how sad it is to have to

⁵(7)

The preceding paragraph is the first in the entire introduction to be heavily crossed out on my original manuscript, and provided with

numerous overloads. At first, the description of the incident and the choice of words went against the grain.

- a force was clearly pushing him to get over the incident as quickly as possible, as if to clear his conscience and "get down to business". These are the familiar signs of **resistance**, here against the elucidation of this episode, and its significance as a revelation 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 discovery of a contradiction and its meaning, in mathematical work: it is then **the inertia** of the mind, its reluctance to part with an erroneous or insufficient vision (but in which our person is in no way involved), which plays the role of "resistance". Resistance is active in nature, inventive if necessary to succeed in drowning a fish even without water, whereas the inertia I spoke of is simply a passive force. In this case, even more than in the case of mathematical work, the discovery that has just appeared in all its simplicity, in all its obviousness, is followed in the instant by a feeling of relief from a weight, a feeling of **liberation**. It's not just a feeling - it's rather an acute, grateful perception of what has just happened, which **is** a liberation.

⁶(8)

As will become clear in the following pages, this ambiguity in no way "dissipated in the aftermath of the 1970 awakening". This is typical of the strategic retreat of the "self", which abandons to profit and loss the period "before the awakening", which immediately becomes the demarcation line for an irreproachable "after"!

⁷(9)

That's not entirely true; there is at least one exception among my closest colleagues, as will become clear later on. There was a typical "laziness" of memory, which often tends to "pass over" facts that don't "fit" with a familiar, long-established view of things.

To learn (or: to teach you) such things, who'd have thought it, you'd really have to be a bastard (I was going to say: null, sorry!) to treat living beings that way! Not so different from the other air after all, just replace "nul" by "salaud" and "se faire traïter" by "traïter" and you're done! And honor, of course, is intact, for the champion of good causes!

What's clear from this is my connivance with attitudes of contempt. At the very least, it goes back to the very beginnings of the 1950s, in other words, to the years following the warm welcome I received from Cartan and his friends. If I didn't "see anything" later on, when contempt was becoming commonplace just about everywhere, it's because I didn't want to see - any more than in this isolated and particularly flagrant case, where you really had to pull out all the stops to pretend not to see or feel anything!

This connivance was in close symbiosis with my new identity, that of a respected member of a group, the group of deserving people, the math whizzes. I remember feeling particularly satisfied, proud even, that in this world I'd chosen for myself, which had co-opted me, it wasn't social position, nor the fact that I'd become a member of it, that I'd become a member of it.

even (but no!) the only reputation that counted, still had to be deserved - you could be a University professor or academician or whatever, if you were just a mediocre mathematician (poor p. 29 guy!) we were nothing, what counted was merit, profound, original ideas, technical virtuosity, vast visions and all that!

This ideology of merit, with which I had identified wholeheartedly (even though it remained, of course, implicit and unspoken), still took a heavy toll on me in the aftermath, as I said, of the famous awakening of 1970. I'm not sure it disappeared without a trace from that moment on. For that to have happened, I would probably have had to detect it clearly in myself, whereas it seems to me I was mostly denouncing it in others. In fact, it was Chevalley who was one of the first, along with Denis Guedj, whom I also met through Survivre, to draw my attention to this ideology (they called it "**meritocracy**", or something like that), and its violence and contempt. 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 going there. Looking back, I'm sure he must have realized that I'd been part of that ideology, and maybe even that traces of it still remained in some corners. But I don't remember him ever suggesting it. Perhaps he preferred to leave it to me to dot the i's and cross the t's, and I waited until now to do so. Better late than never!

6.9. (13) strength and thickness

It's quite possible that the incident I've reported also marks the moment of an inner shift within me, towards a more or less unconditional identification with the brotherhood of merit, at the expense of people considered to be worthless, or simply "without genius" as we would have said a few generations before (this term was no longer in vogue even in my day): dull, mediocre people - at best "resonance boxes" (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 that at the time mobilize considerable psychic energy, retained this episode, is not linked to any other directly related memory, and appears so innocuous, makes this feeling of a "tipping point" that would have taken place then plausible.

□ In a meditation less than five years ago, I came to the realization that this ideology of "we great and noble minds... .", in a particularly extreme and virulent form, had reigned supreme.

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in my mother since she was a child, and dominated her relationship with others, whom she liked to look down on from her lofty height with an often disdainful, even contemptuous commiseration. In fact, I admired my parents unreservedly. The first and only group with which I identified myself, before the famous "mathematical community", was the family group reduced to my mother, my father and myself, who had had the honor of being recognized by my mother as worthy of having them as parents. In other words, the seeds of contempt must have been sown in me from childhood. The time might be ripe to follow the vicissitudes, through my childhood and adult life, of these seeds, and the harvests of delusion, isolation and conflict into which some of them have risen. But that's not the place here, where I have a more limited purpose. I think I can say that this attitude of contempt has never in my life taken on a vehemence and destructive force comparable to those I saw in my mother's life, (when I bothered to look at my parents' lives, twenty-two years after my mother's death, and thirty-seven years after my father's). But now is as good a time as any to examine carefully, here, at least, what place this attitude has had in my life as a mathematician.

Before doing so, to put the incident reported in the preceding paragraph into its general context, I'd like to emphasize that it stands entirely alone among my memories of the fifties, and even later. Even today, when I note a sometimes disconcerting erosion of certain elementary forms of courtesy and respect for others in my own milieu⁸ (10), the direct and undisguised expression of contempt from boss to pupil must be a rare enough occurrence. As far as the fifties are concerned, I have very few recollections of fear surrounding a figure of notoriety, or of a contemptuous or simply disdainful attitude. If I dig in this direction, I can say that the first time I was received at Dieudonné's home in Nancy, with the delicate friendliness he always showed me, I was a little taken aback by the way this refined and affable man talked about his students.

- they were all morons! It was a chore to give them lectures, which it was obvious they didn't understand. ... After 1970 I heard the echoes□ coming from the amphitheater side, and I knew that Dieudonné was well and truly feared by students. And yet, while he was renowned for having strong opinions and for delivering them with a sometimes thunderous frankness, I never saw him behave in a hurtful or humiliating way, even in the presence of colleagues whom he held in low esteem, or at times of his legendary temper tantrums, which subsided as quickly and easily as they had arisen.

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I didn't associate myself with Dieudonné's feelings about his students, but neither did I distance myself from his attitude, which was presented as the most obvious thing in the world, as almost self-evident from someone with a passion for mathematics. Thanks to the benevolent authority of my elder brother, this attitude seemed to me to be at least one of the possible attitudes one could reasonably have towards students and teaching tasks.

It seems to me that for Dieudonné and myself, both imbued with the same ideology of merit, its isolating effect was largely neutralized when we found ourselves in front of a real person, whose very presence silently reminded us of realities more essential than those of so-called "merit", and re-established a forgotten link. The same must have been true for most of our colleagues and friends, no less imbued than Dieudonné or myself with the widespread superiority syndrome. This is no doubt still the case today for many of them.

⁸(10)

For example, I've lost count of the number of letters, on mathematical as well as practical and personal matters, sent to colleagues or ex-students whom I once considered friends, and who have never received a reply. This doesn't seem to be just preferential treatment reserved for me, but a sign of a change in mores, according to echoes in the same vein. (Admittedly, these concern cases where the person sending a mathematical letter was not known to the recipient, a prominent mathematician... .)

Weil also had a reputation for being feared by his students, and he's the only one in my microcosm, in the fifties, whom I had the impression was feared even among colleagues of more modest status (or simply temperament). At times, he would display an attitude of unremitting haughtiness, which could disconcert even the most hardened self-confidence. My susceptibility helped, and once or twice this led to a passing quarrel. I didn't perceive in his manner a hint of contempt or a deliberate intention to hurt or crush; rather, he had the attitude of a spoiled child, taking pleasure (sometimes maliciously) in making people uncomfortable, as if to convince himself of the power he wielded. In fact, he had a truly astonishing ascendancy over the Bourbaki group, which he sometimes gave me the impression of bossing around, rather like a kindergarten teacher bossing around a group of well-behaved children.

□ I can recall only one other occasion in the fifties when I felt a brutal expression, undisguised contempt. It came from a foreign colleague and friend, about my age. He had an uncommon mathematical power. A few years earlier, when this power was already quite evident, I had been struck by his submission (which seemed to me almost obsequious) to the great professor whose modest assistant he still was. His exceptional abilities soon earned him an international reputation, and a key position at a particularly prestigious university. There, he ruled over a small army of student assistants, apparently just as absolutely as his boss had ruled over him and his fellow students. To my question (if I remember correctly) whether he had any students (by which I mean: who did a good job with him), he replied, with an air of false casualness (I'm translating into French): "douze pièces!" - where "pièces" was the name by which he referred to his pupils and assistants. It's certainly rare for a mathematician to have such a large number of students at the same time doing research under his direction - and surely my interlocutor took a secret pride in this, which he tried to hide under that careless air, as if to say: "oh, just twelve pieces, not even worth talking about!". It must have been around 1959, I already had a good shell so surely, I did get a gutful though! I had to tell him on the spot one way or another, and I don't think he resented it. Perhaps even his relationship with his students wasn't as sinister as his expression might suggest (I didn't get a testimonial from one of his students), and he'd simply been caught up in his childish desire to strut before me in all his glory. Looking back, I can see that this incident must have marked a turning point in our relationship, which had been one of friendship - I sensed in him a kind 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, I still felt uneasy about him - I definitely didn't feel part of the same world as him...

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Yet we were part of the same world - and without realizing it any more than he did, I was probably getting thicker too. In this respect, I still have a vivid memory of the International Congress of Edinburgh, in 1958, Since the previous year, with my work on the Riemann-□Roch theorem, I was promoted to superstar, and (although I didn't have to tell myself this in no uncertain terms at the time) I was also one of the stars of the Congress (where I gave a talk on the vigorous start made by scheme theory in that same year). Hirzebruch (another star of the day, with his very own Riemann-Roch theorem) was giving an opening speech, in honor of Hodge, who was retiring this year. At one point, Hirzebruch suggested that mathematics was made by the work of young people in particular, rather than that of mature mathematicians. This triggered a general outcry of approval in the Congress hall, where young people formed the majority. I was thrilled and very much in agreement, of course - I was thirty years old, which could still pass for young, and the world belonged to me! In my enthusiasm, I had to shout out loud and bang my head on the table. I happened to be sitting next to Lady Hodge, the wife of the

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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 that had just been unleashed without restraint in front of this lady at the end of her life. I felt something then, of which the word "shame" perhaps gives a distorted image - rather, a humble truth about who I was then. I didn't have to bang on any more tables that day. ...

6.10. (14) Birth of fear

It was around this time, I suppose, when (without having sought it out) I began to be seen as a star in the mathematical world, that a certain fear must also have begun to surround my person, for many unknown or lesser-known colleagues. I suppose so, without being able to place it in a precise memory, in an image that would have struck me and become fixed in my memory, like that incident reported earlier (which undoubtedly marked my first encounter with contempt in my adopted environment). It must have happened insensitively, without attracting my attention, without manifesting itself in some particular, typical incident that memory would have retained, perhaps just as deliberately anodyne as that other incident. What my memory of these transitional years gives me "en bloc" is that it

p. 34 it was not uncommon for people who approached me, whether after my seminar, or during a gathering such as the Bourbaki seminar or some colloque or congress, to have to overcome a kind of stage fright, which remained more or less apparent during our discussion, if any. When the discussion lasted more than a few minutes, this discomfort usually disappeared gradually as we talked and the conversation became more animated. Occasionally, though rarely, the discomfort would persist to the point of becoming a real obstacle to communication, even at the impersonal level of a mathematical discussion, and I would then feel a confused sense of helpless suffering in front of me, exasperated with itself. I'm talking about all this without really "remembering", as if through a fog that nonetheless restores to me impressions that must have been recorded, and no doubt evacuated as I went along. I'm unable to place in time, other than by supposition, the appearance of this discomfort, an expression of fear.

I don't believe that this fear emanated from me personally, and that it was limited to an attitude, to behaviors that would have set me apart from my colleagues. If this had been the case, it seems to me that I would have started to hear echoes of it in the early seventies, when I stepped out of a role to which I had previously lent myself, the role of the star, the "big boss". I think it was this role, and not myself, that was surrounded by fear. And this role, it seems to me, with this halo of fear that has nothing in common with respect, did not exist, not yet, in the early fifties, at least not in the mathematical milieu that had welcomed me from the very moment I met it, in 1948.

Before this "awakening" in 1970, I wouldn't have thought of describing as "fear" the stage fright and embarrassment I was sometimes confronted with by colleagues who weren't part of my most familiar environment. I was embarrassed by it myself when it manifested itself, and did my utmost to dispel it. A remarkable thing, typical of the lack of attention paid to this sort of thing in my beloved microcosm: I can't recall a single time, in the twenty years I've been part of this milieu, when the question was broached between a colleague and myself, or by others in front of me!⁹ (11) This "fog" that takes the place of my memory does not give me

⁹(11) Aldo Andreotti, Ionel Bucur

Of course, it's not impossible that I've forgotten - not to mention that my particularly "polar" disposition at the time would hardly encourage anyone to talk to me about such things, nor would it lead me to remember any such conversation that might well have taken place. What is certain is that it must have been very exceptional, to say the least, for the question to have been raised.

nor any impression of conscious or unconscious gratification that such situations might have aroused in me. I don't think there was any on a conscious level, but I wouldn't venture to say that I wasn't touched by it occasionally unconsciously, in the early years. If so, this must have been fleeting, and not reflected in behavior that would have acted as a fixative for discomfort. It's certainly not that my fatuity wasn't committed to the role I was playing! But if I invested in this role without counting the cost, then what motivated my ego was not the ambition to impress the "rank colleague", but to constantly surpass myself in order to force the ever-renewed esteem of my "peers" - and above all, perhaps, of the elders who had given me credit and accepted me as one of their own even before I had had a chance to show my worth. It seems to me that the inner attitude I had towards the fear I was the object of, which I tried my best to ignore while at the same time dispelling it as best I could wherever it manifested itself - that this attitude can be considered typical throughout the sixties in the milieu (the "microcosm") of which I was a part.

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The situation has deteriorated considerably in the ten or fifteen years since then, at least judging by the signs that reach me from time to time from this world, and the situations of which I have been a close witness, even sometimes a co-actor. More than once, among those of my former friends or pupils who had been dearest to me, I have been confronted with the familiar, unmistakable signs of contempt; with the (seemingly "gratuitous") desire to discourage, humiliate and crush. A wind of contempt blew through this world that had been dear to me. It blows, regardless of "merit" or "demerit", burning with its breath the humblest vocations as well as the most beautiful passions. Is there a single one of my old companions, each protected by solid walls with "his own", settled (as I once was) in the hushed fear that surrounds his person - is there a single one who feels this breath? I know one and only one, among my old friends, who felt it and told me about it, without calling it by name. And I know another who felt it one day, as if against his will, only to forget it the very next day¹⁰ (12). For one of my old friends, feeling this breath and taking it on

of fear be addressed (without even calling it by that name. . .), and it needs to be addressed just as much today, especially in the "beau monde".

Of my many friends in this world, apart from Chevalley, who must have been aware of this atmosphere of fear at least during the sixties, the only other one I can think of who must have perceived it clearly was Aldo Andreotti. I had met him, his wife Barbara and their twin children (still very small) in 1955 (at a party at Weil's in Chicago, I believe). We remained close friends until the "great turning point" of 1970, when I left the milieu that had been ours and lost touch with them. Aldo had a very keen sensitivity, which hadn't been dulled by his dealings with mathematics and detective stories like mine. He had a gift for spontaneous sympathy for those he came into contact with. 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 shared mathematical interests (of which there were plenty), and he was one of the few mathematicians with whom I talked a little about my life, and he about his. His father, like mine, was Jewish, and had suffered in Mussolini's Italy, as I had 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 was always in people, not in mathematical "potential" or fame. He was one of the most engaging people I've ever had the good fortune to meet.

This evocation of Aldo brings back memories of Ionel Bucur, who was also taken from us unexpectedly and before his time, and like Aldo, missed even more (I think) as a friend whom we like to meet again, than as a partner in mathematical discussions. We sensed in him a kindness, alongside an uncommon modesty, a propensity for constantly stepping aside. It's a mystery how a man so little inclined to think of himself as important, or to impress anyone, ended up as Dean of the Faculty of Sciences in Bucharest; no doubt because he didn't feel like challenging the responsibilities that he was far from coveting, but which his colleagues or the political authorities were placing on his shoulders, which were, it must be said, robust. He was the son of peasants (something that must have played a role in a country where "class" is an important criterion), and had the common sense and simplicity of one. Surely he must have been aware of the fear that surrounds the man of notoriety, but surely it must also have seemed to him a matter of course, the natural attribute of a position of power. I don't think, however, that he himself ever inspired fear in anyone, certainly not in his wife Florica or their daughter Alexandra, nor in his colleagues or students - and the echoes I've been able to gather point in this direction.

¹⁰(12)

as it is for me, means accepting to take a look at ourselves.

6.11. (15) Harvesting and sowing

I don't think, I wouldn't dream of being indignant about a wind that blows, when I've clearly seen that I'm not the only one.

p. 36 I am no stranger to this wind, as a fatuity in me would have me believe. And even though I au□rais been a stranger to it, my indignation would have been a paltry offering to those who are humiliated. and those who humiliate, whom I have loved one and all.

I was no stranger to this wind, because of my connivance with the contempt and fear in the world I had chosen. It suited me to turn a blind eye to these and many other blunders, both in my professional life and in my family life. In both, I reaped what I sowed - and what others sowed before me or with me, from my parents (and my parents' parents. . .) to my new friends of yesteryear. And others besides me are reaping today from the seeds that were sown: my children (and my children's children), as well as one of my pupils today, treated with contempt by another of my pupils of yesteryear.

And there is neither bitterness nor resignation in me, nor self-pity, when I speak of sowing and reaping. For I have learned that in even the bitter harvest there is substantial flesh which it is up to us to feed on. When this substance is eaten and becomes part of our flesh, the bitterness has disappeared, which was merely a sign of our resistance to a food destined for us.

And I also know that there are no harvests that are not also the sowing of other harvests, often more bitter than those that preceded them. There are still times when something in me tightens at the seemingly endless chain of carefree sowing and bitter reaping, handed down and repeated from generation to generation. But I'm no longer overwhelmed or revolted by it, as if it were a cruel and inescapable fate, and even less am I its complacent and blind prisoner, as I once was. For I know that there is a nourishing substance in everything that happens to me, whether the seeds are sown by me or by someone else.

- it's up to me to eat and see it turn into knowledge. And it's no different for my children and all those I've loved and those I love at this moment, when they reap what I sowed in times of fatuity and carelessness, or what I still happen to sow today.

The word "tomorrow" is to be taken literally, not as a metaphor.

7. The double face

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7.1. (16) Marshes and first rows

But I haven't yet come to the end of this reflection, on my part in the appearance of contempt and its progression, in this world to which I blithely continued to refer by the name of „mathematic community". It's this reflection, I feel now, who do I have better to offer to those I have loved in this world, as I prepare, not to return, but to express myself once again.

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Above all, I think I need to examine the kind of relationships I had with the people who were part of that world, when I was still part of it like them.

Thinking about it now, I'm struck by the fact that there was a whole part of this world that I used to come into contact with regularly, but which escaped my attention as if it hadn't existed. I must have perceived it at the time as a kind of "swamp" with no clearly defined function in my mind, not even that of a "sounding board" I suppose - as a kind of grey, anonymous mass of those who in seminars and colloquia invariably sat in the back rows, as if they'd been assigned there by birth, those who never opened their mouths during a talk to hazard a question, certain as they must have been in advance that their question could only be off the mark. If they asked a question of people like me, reputed to be "in the know", it was in the corridors, when it was obvious that "the skills" weren't pretending to want to talk amongst themselves - they then asked their question quickly and as if on tiptoe, ashamed of abusing the precious time of important people like us. Sometimes the question seemed to be off the mark, and I'd try (I guess) to say in a few words why; often it was relevant, and I'd answer it as best I could, I think. In both cases, it was rare for a question asked in such a mood (or, should I say, in such an atmosphere) to be followed up 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 such cases (even as we were applying ourselves to the task).

7. The double face

I felt, of course, as did my interlocutor, that there was something false and artificial about the situation we were in. Of course, I sensed, as did my interlocutor, what was false and artificial about the situation in which we were involved - without my ever having formulated it to myself, and without his ever having formulated it to himself either. We both functioned as

p. 38 strange automatons, and a strange connivance bound us together: that of pretending to ignore the anguish that embraced one of us, obscurely perceived by the other - that ^{particle}□d'angoisse dans l'air chargé d'angoisse that saturated the place, that everyone surely perceived as we did, and that everyone chose to ignore by mutual agreement¹ (13).

This confused perception of anguish didn't become conscious in me until after the first "awakening", in 1970, when this "swamp" came out of the half-light in which I'd been happy to keep it in my mind until then. Suddenly, most of my new friends were precisely those whom, a year earlier, I would have tacitly placed in that nameless, contours-less land. Suddenly, the so-called marsh was coming alive in the faces of friends linked to me by a shared adventure - another adventure!

7.2. (17) Terry Mirkil

To tell the truth, even before this crucial turning point, I'd been friends with comrades (who later became "colleagues") whom I'd probably have located in the "swamp", had the question been put to me (and had they not been my friends. . .). It took this reflection, and a lot of digging into my memories, to bring me back to mind, and for scattered memories to come together. I met these three friends in the very early days, when I was learning the trade in Nancy like them - at a time when we were still in the same boat, when nothing designated me as an "eminence". It's probably no coincidence that there were no other such friendships in the twenty years that followed. The four of us were foreigners, which was certainly a significant bond - my relations with the young "normaliens", parachuted into Nancy like me, were far less personal, and we hardly saw each other except at 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 didn't really know himself what he was "looking for". We continued to see or write to each other from time to time, and eventually lost touch. My relationship with the other two friends was longer-lasting, stronger and much less superficial. Our mathematical interests played little or no part.

¹(13)

Clearly, the foregoing description has no pretension other than to try and render as best I can, in concrete words, what this "fog" of memory delivers to me, which has not been condensed into any kind of case that is even remotely precise, of which I could have given here a description that was even remotely "realistic" or "objective". It would be a misrepresentation to suggest that colleagues who are reluctant to sit in the front rows, or who lack star or eminence status, are necessarily tied up in anguish when talking to one of the latter. This was clearly **not the** case for most of the friends I knew in this milieu, even among those who sometimes haunted conferences and seminars. What is unreservedly true is that the status of "eminence" creates a barrier, a gulf vis-à-vis those without such status, and that this gulf rarely disappears, even if only for the space of a discussion. I would add that the subjective distinction (which nevertheless seems very real to me) between the "front ranks" and the "marshes" can in no way be reduced to sociological criteria (of social position, posts, titles, etc. . .) or even of "status" or renown, but that it also reflects psychological particularities of temperament or dispositions that are more delicate to pin down. When I arrived in Paris at the age of twenty, I knew that I was a mathematician, that I had **done** maths, and despite the disorientation I've already mentioned, I basically felt "one of them", although I was the only one to know it, and I wasn't even sure that I would continue to do math. Today, I'd be more inclined to sit in the back rows (on the rare occasions when the question arises).

With Terry Mirkil and his wife Presocia, slim and fragile as he ^{was} [□] ^{rable}, with an air of gentleness in both of us, we often spent evenings, and sometimes nights, in Nancy, singing, playing the piano (Terry played then), talking about music, which was their passion, and about other important things

in our lives. Not the **most** important ones, it's true - not the ones that are always so carefully hushed up. ... This friendship has given me a lot, though. Terry had a finesse and discernment that I lacked, when most of my energy was already focused on mathematics. Much more than me, he had retained a sense of the simple, essential things - the sun, the rain, the earth, the wind, the song, friendship After Terry found a position to his liking at Dartmouth College, not so far from Harvard, where I made frequent visits (from the late fifties onwards), we continued to meet and write to each other. In the meantime, I knew he was prone to depressions, which led to long stays in "madhouses", as he called them in the only laconic letter he ever wrote to me, following one of those "horrible stays". When we met, there was never any mention of them - except once or twice, very incidentally, to answer my astonishment that he and Presocia weren't adopting children. I don't think it ever occurred to me that he and I could talk about the substance of the problem, or even touch on it - certainly not even the idea that there might be problems to look at, in my friend or mine. ... There was an unspoken, impenetrable taboo about these things.

Gradually, the meetings and letters became less frequent. It's true that I was becoming more and more a 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 the accumulation of works - while my family life was mysteriously, inexorably deteriorating. ...

When I learned one day, through a letter from one of Terry's colleagues at Dartmouth, that my friend had committed suicide (this was long after he was already dead and buried. . .), this news came to me as if through a fog, like an echo from a very distant world that I would have left, God knows when. A world inside me, perhaps, that had died long before Terry ended his life, devastated by the violence of an anguish he hadn't known or wanted to resolve, and that I hadn't known or wanted to guess... .

7.3. (18) Vingt ans de fatuité, or: l'ami tireless

□ My relationship with Terry was not distorted, at any time I believe, by the difference in our statuses in the mathematical world, or by any feeling of superiority I might have derived from it. This friendship, and one or two others that life gave me in those days (regardless of whether I "deserved" it!) was surely one of the few antidotes then against a secret fatuity, fuelled by social status and, even more so, by the awareness I'd gained of my mathematical power and the value I myself placed on it. The same could not be said of my relationship with my third friend. Over the years, he and his wife (whom he'd met around the time we met in Nancy) showed me a warm friendship, marked by delicacy and simplicity, whenever we met, in their home or mine. In this friendship there was clearly no ulterior motive, linked to status or cerebral abilities. And yet, for over twenty years, my relationship with them remained marked by that deep ambiguity within me, that division I spoke of, which marked my life as a mathematician. In their presence, each time anew, I couldn't help feeling their affectionate friendship and responding to it, almost unwillingly! At the same time, for more than twenty years, I managed the feat of looking at my friend with disdain, from the height of my greatness. This must have been the case from the very first years in Nancy, and for a long time, my prejudice extended to his wife, as well.

7. The double face

if it could only be understood in advance that his wife could only be as "insignificant" as he was. Between my mother and me, we were fond of referring to him only by a mocking nickname, which must have stayed with me long after my mother's death 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 exerted over me throughout her life, and for almost twenty years after her death, during which I continued to be imbued with the values that had dominated her own life. My friend's gentle, affable, non-combative nature was tacitly classified as "insignificant", and became the object of mocking disdain. It's only now, taking the trouble for the first time to examine what that relationship had been, that I'm discovering

p. 41 the full extent of this forced isolation from the warm sympathy of others, which had marked her for so long. My friend Terry, no more combative or forceful than this other friend, had l'heure, lui, d'être agréé 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 blossom without inner resistance within me. His investment in mathematics was no more fervent, nor were his "gifts" any more promising, without my using this as an excuse to cut myself off from him and his wife by this shell of disdain and smugness!

What still remains incomprehensible to me in this other relationship is that my friend's affectionate friendship was never discouraged by the reticence he could not fail to sense in me, with each new encounter. And yet, today I know that I was **something other** than that shell and that disdain, something other than a cerebral muscle and a fatuity that drew vanity from it. As in them, there was the child in me - the child I ignored, the object of disdain. I had cut myself off from him, and yet he lived somewhere inside me, healthy and vigorous as the day I was born. The affection of my friends, less cut off from their roots than I was, surely went to the child. And it was surely he, too, who responded in secret, on the sly, when the Big Chief's back was turned.

7.4. (19) The world without love

As for this relationship with these truly enduring friends, it seems to me that I've put my finger on the most blatant, the most grotesque case in my life of the effects of a certain fatuity (among other things) in a personal relationship. Maybe I'm just fooling myself again, but I think it's also the only case where my relationship with a colleague or friend in the mathematical world (or indeed anywhere else) has been permanently invested by fatuity, instead of just appearing occasionally, discreetly and fleetingly. In fact, it seems to me that among the many friends I had in the mathematical world at the time, and whom I liked to keep company with, there was not one for whom I could imagine they had experienced a similar misguidance, in a relationship with a colleague, friend or not. Of all my friends, I was perhaps the least "cool", the most "polite", the least inclined to show a hint of humor (it only came to me later), the most inclined to take myself terribly seriously. In fact, I probably wouldn't have sought out the company of people like me (assuming there ever were any)!

p. 42 The amazing thing was that my friends, "swamp" or not "swamp," put up with me and even took affection. It's a good and important thing to say here - even though we often saw each other only to discuss maths for hours and days on end : affection flowed, as it still does today, between the friends of the time (according to sometimes fortuitous affinities) and me, from that first moment when I was received with affection in Nancy, in 1949, in the home of Laurent and Hélène Schwartz (where I was somewhat part of the family), that of Dieudonné, that of Godement (which at one time I also haunted regularly

).

This affectionate warmth that surrounded my first steps in the mathematical world, and which I have tended to forget, has been important throughout my life as a mathematician. It must surely have given 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 the name "mathematical community".

Clearly, for many young mathematicians today, it's being cut off during their apprenticeship, and often well beyond, from any current of affection or warmth; seeing their work reflected in the eyes of a distant boss and his parsimonious comments, rather as if they were reading a circular from the Ministry of Research and Industry, that clips the wings of work and robs it of any deeper meaning than that of a dull, uncertain livelihood.

But I'm anticipating this disgrace, perhaps the most profound of all, in the mathematical world of the 70s and 80s - the mathematical world in which those who were my students, and the students of my friends of yesteryear, set the tone. A world where, often, the boss assigns his subject of work to the student, as one throws a bone to a dog - that or nothing! Like assigning a cell to a prisoner: this is where you will purge your solitude! Where such meticulous, solid work, the fruit of years of patient effort, is dismissed with the smiling contempt of the all-knowing, all-powerful: "this work doesn't amuse me!" and the matter is closed. Good for the garbage can, let's say no more about it. . .

Such disgraces, I know, did not exist in the milieu I knew, among the friends I haunted, in the fifties and sixties. It's true that, in 1970, I learned that it was rather the daily bread in the scientific world outside maths - and even in maths it wasn't so apparently rare, open contempt, blatant abuse of power (and no recourse), even among some renowned colleagues whom I had had the opportunity to meet. But in the circle of friends I had naively taken to be "the" mathematical world, or at least a faithful miniature expression of it, I knew nothing of the sort.

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And yet, the seeds of contempt must already have been there, sown by my friends and me, and sprouted in our pupils. And not only in our pupils, but also in some of my former companions and friends. But my role is not to denounce or even to fight: you can't fight corruption. To see it in such and such of my students whom I once loved, or in such and such of the companions of yesteryear, something in me tightens - and rather than accept the knowledge that a pain brings me, I often refuse the pain and struggle and take refuge in refusal and a fighting attitude: such a thing has no place! And yet it is - and I even know deep down what it means. In more ways than one, I'm no stranger to it, if one of my former students or companions, whom I've loved, likes to discreetly crush another whom I love and in whom he recognizes me.

Once again I digress, doubly so I might say - as if the wind of contempt only blew around my home! Yet it's by blowing on me above all, and on those who are close and dear to me, that I am touched by it and know it. But the time is not ripe to talk about it, except to myself alone, in silence. Instead, it's time for me to resume the thread of my reflection-testimony, which could well be called "In pursuit of contempt" - contempt in myself and around me, in the mathematical milieu that was mine in the fifties and sixties.

7.5. (20) A world without conflict ?

I'd thought I'd mention the "marsh" in a few lines, just to say that it was there but that I didn't frequent it - and as is so often the case in meditation (and also in mathematical work), the "nothing" we look at turns out to be rich in life and mystery, and in hitherto neglected knowledge. Like that other "nothing", which also happened to be located in Nancy (decidedly the cradle of my new identity!), the "nothing" of that student who was surely a bit of a loser, who was being treated like... . I thought about it again

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in a flash earlier, when I wrote (perhaps a little hastily?) that "these disgraces" didn't yet exist "back home". Let's just say that this is the only□and only incident of its kind that I can report, which resembles (we must to the "disgrace" to which I alluded, without dwelling too much on a detailed description. Those who have experienced it know what I mean, without having to draw a picture. And also those who, without having experienced it, are not so quick to close their eyes whenever they are confronted with it. As for the others, those who despise to their heart's content as well as those who are content to close their eyes (as I myself successfully did for twenty years), even an album of drawings would be a wasted effort... .

It remains for me to examine my personal and professional relationships with my colleagues and students over these two decades, and incidentally also what I may have known 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 these relationships**. I should add at once that this is something that in those days seemed quite natural to me - like the least of things. Conflict, between people of good will, mentally and spiritually mature and all that (the least of things, again!), had no place. Where there was conflict, I looked on it as a kind of unfortunate misunderstanding: with the right amount of goodwill and explanation, it could only be resolved as quickly as possible and without a trace! If I chose mathematics as my preferred activity from an early age, it's surely because I felt that this was the path where my vision of the world had the best chance of not coming up against disturbing denials at every step. Once you've **demonstrated** something, after all, everyone agrees, i.e. people of good will and all that.

As it happens, I was right. And the story of those two decades spent in the quiet, "conflict-free" (?) world of my beloved "mathematical community", is also the story of a long inner stagnation within me, eyes and ears plugged, learning nothing except maths or little else - while in my private life (first in the relationship between my mother and me, then in the family I founded immediately after her death) a silent destruction was rampant that at no time during those years did I dare

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look. But that's another story. ... The "awakening" of 1970, of which I have spoken often in these lines, was a turning point not only in my life as a mathematician□and a radical change of milieu, but a turning point (give or take 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 quite furtive, at the conflict in my life. It was the moment when a doubt began to grow in me, which matured over the years that followed, that the conflict in my life, and the conflict I sometimes feared in the lives of others, was not just a misunderstanding, a "burr" that could be wiped away with a sponge.

This (at least relative) absence of conflict, in the environment I had chosen as my own, seems to me in retrospect a rather remarkable thing, when I've come to learn that conflict rages wherever humans live, in families as much as in workplaces, be they factories, laboratories or teachers' or assistants' offices. It's almost as if I'd stumbled, in September or October 1948, unsuspectingly landing in Paris on the only heavenly island in the Universe where people live without conflict with each other!

All of a sudden, after everything I've learned since 1970, it seems really extraordinary. Surely it deserves a closer look - is it myth, or reality? I can see the affection that flowed between so many of my friends and me, and later between students and me, I don't have to invent it - but it almost seems as if I'm obliged to invent conflict, in this heavenly world from which conflict seems banished!

It's true, in the course of this reflection I've had the opportunity to touch on two situations of conflict, each revealing an inner attitude within me: One is the "l'élève nul" incident in Nancy, the ins and outs of which I don't know between the direct protagonists. The other is a situation of conflict within myself, a division, in my relationship with the "indefatigable friend" - but this never expressed itself as a conflict between people, the only form of conflict generally recognized. Remarkably, in the conventional sense of the word, the relationship between these friends and myself was entirely free of conflict - at no time was there 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 I was participate more or less regularly, so until the late fifties, this group embodied for me, the ideal of a collective work respecting both the minute appearance of detail in this work p. 46

The Bourbaki Group is a group of people who share the same values, not of themselves, but of the freedom of each and every one of its members. At no time did I sense among my friends in the Bourbaki group any hint of coercion, either on myself or on anyone else, veteran member or guest, who had come on a trial basis to see if things would "click" between him and the group. At no time was there any hint of a struggle for influence, be it over differences of opinion on this or that agenda item, or a rivalry for hegemony over the group. The group functioned without a leader, and apparently no one in their right mind, as far as I could see, aspired to that role. Of course, as in any group, one member exerted a greater influence on the group, or on other members, than another. Weil played a special role in this respect, which I've already mentioned. When he was present, he was a bit of a "playmaker"² (14). Twice, I think, my sensibilities were offended, and I left - these are the only signs of "conflict" of which I am aware. Gradually, Serre exerted an ascendancy over the group comparable to that of Weil. While I was a member of Bourbaki, this did not give rise to any rivalry between the two men, nor was I aware of any enmity developing between them later on. With the benefit of twenty-five years' hindsight, Bourbaki, as I knew him in the 1950s, still seems to me a remarkable example of success in terms of the quality of relationships within a group formed around a common project. This quality of the group strikes me as even rarer than the quality of the books that came out of it. It was one of the many privileges of my life, full of privileges, to have met Bourbaki, and to have been part of it for a few years. If I didn't stay, it wasn't because of conflicts or because the quality I mentioned had deteriorated, but because more personal tasks attracted me even more strongly, and I devoted all my energy to them. Nor did this departure cast a shadow over my relationship with the group or any of its members.

I'd have to review the conflict situations I've been involved in, which have pitted me against

²(14)

You'd think this would contradict the assertion that there was no leader, but it's not so. For Bourbaki alumni, it seems to me that Weil was perceived as the soul of the group, but never as a "leader". When he was there and when he liked it, he became the "ringleader" as I said, but he didn't lay down the law. When he was in a bad mood, he could block discussion on a subject he disliked, even if it meant taking up the subject again at another congress when Weil wasn't there, or even the next day when he was no longer obstructing. Decisions were taken unanimously by the members present, given that it was by no means out of the question (nor even rare) for one person to be in the right against the unanimity of all the others. This may seem an aberrant principle for group work. The extraordinary thing is that it actually worked!

7. The double face

p. 47 to one of my colleagues or students, between 1948 and 1970. The only thing that stands out at all are the two passing quarrels with Weil, which have already been mentioned. A few passing shadows, my relations with Serre, because of my susceptibility to a certain casualness, sometimes disconcerting way in which he would cut things short when a conversation had finished interesting him, or express his lack of interest in, or even aversion to, a particular piece of work I was involved in, or a particular view of things I insisted on, perhaps a little too much and too often! It never got to the point of a falling out. Temperamental differences aside, our mathematical affinities were particularly strong, and he must have felt as I did that we complemented each other.

The only other mathematician with whom I felt a comparable or even stronger affinity was Deligne. In this respect, I remember that the question of Deligne's appointment to the IHES in 1969 gave rise to tensions, which I didn't perceive as a "conflict" (which would have been expressed by a quarrel, or by a turning point in a relationship between colleagues).

It seems to me that I've come full circle - that in terms of conflict between people, visible through tangible manifestations, in relations between colleagues or between colleagues and students in the environment I haunted, that's all during those twenty-two years, incredible as it may seem. In other words, no conflict in the paradise I'd chosen - so, are we to believe, no contempt? Another contradiction in mathematics?

I'll definitely have to take a closer look!

7.6. (21) A well-kept secret

p. 48 I'm sure I forgot a few minor episodes yesterday, such as a temporary "chill" 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 colleagues and friends failed to remember, in one of their publications, that an idea or result I had shared with them must have played 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 hasn't entirely disappeared with age! Except on one occasion, I refrained from mentioning it to those concerned, whose good faith was certainly above suspicion. The opposite situation must surely have occurred as well, without that I receive any echo of it. I am not aware of any case, in my "microcosm", where a question of priority is the occasion of a brouille or enmity, or even of bitter-sweet remarks between the interested parties. Even so, the only time I've ever had such a discussion (in what seemed to me an egregious case) there was a spat of sorts, which cleared the atmosphere without leaving a residue of resentment. It concerned a particularly brilliant colleague, whose abilities included the ability to assimilate everything he heard with impressive speed, and it seems to me that he often had an unfortunate tendency to take as his own the ideas of others that he had just learned from their mouths.

There's a difficulty here that all mathematicians (and not just mathematicians) have to deal with to a greater or lesser degree, and it's not just due to the egotistical drive that pushes most of us (and I'm no exception) to attribute "merits" to ourselves, whether real or supposed. The understanding of a situation (mathematical or otherwise), however we achieve it, with or without the assistance of others, is in itself something of a personal essence, a personal experience whose fruit is a vision, also necessarily personal. A vision can sometimes be communicated, but the vision communicated is different from the initial vision. This being the case, we need to be extremely vigilant when it comes to identifying the part played by others in shaping our vision. I'm sure I didn't always have this vigilance, which was the least of my worries, even though I expected it of others in relation to my own vision.

screw me! Mike Artin was the first and only person to suggest to me, with the joking air of someone revealing an open secret, that it was both impossible and perfectly pointless to bother trying to discern which part was "one's own" and which was "someone else's", when you manage to take a substance head-on and make sense of it. I was a little taken aback by this, even though it was not at all part of the deontology that had been taught to me by example by Cartan, Dieudonné, Schwartz and others. Yet I had a vague feeling that there was a truth in his words, and just as much in his laughing gaze, that had eluded me until then³. My relationship with mathematics (and above all, with mathematical production) was heavily 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, without forgetting to eat and drink.

7.7. (22) Bourbaki, or my great luck - and its downside

Even before plunging a little further below the visible surface, there is a realization that is self-evident.

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The **mathematical milieu I inhabited for two decades, in the 50s and 60s, was indeed a "world without conflict"**, so to speak! That's a pretty extraordinary thing in itself, and one that deserves a few words of reflection.

I should make it clear right away that this was a very restricted milieu, the central part of my mathematical microcosm, limited to my immediate "environment" - the twenty or so colleagues and friends I met regularly, and to whom I was most closely linked. Reviewing them, I was struck by the fact that more than half of these colleagues were active Bourbaki members. Clearly, **the core and soul of this microcosm was Bourbaki**. It was, pretty much, 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 and Cartier. I continued to be a regular at the Séminaire Bourbaki, or rather, I became one at that time, and it was there that I gave most of my talks (on schema theory).

It was undoubtedly in the sixties that the "tone" in the Bourbaki group shifted towards an increasingly pronounced elitism, of which I was certainly a part at the time, and which for that reason I was unlikely to notice. I still remember how astonished I was, in 1970, to discover how unpopular the very name of Bourbaki had become in large sections (of me hitherto unaware) of the mathematical world, as a synonym more or less for elitism, narrow dogmatism, the cult of "canonical" form at the expense of living understanding, hermeticism, castrating spontaneity and so on! And it wasn't just in the "swamp" that Bourbaki got a bad press: in the sixties, and perhaps even earlier, I'd heard occasional echoes of it from mathematicians with a different turn of mind, allergic to the "Bourbaki style"⁴ (15). As an unconditional adherent, I had been surprised

³(September 30) For another aspect of things, however, see the note of June 1 (three months after the present text), "Ambiguity" (n° 63"), examining the pitfalls of a certain complacency with oneself and others.

⁴(15)

I didn't get the impression that this "allergy" to the Bourbaki style gave rise to any communication difficulties between these mathematicians and myself or other Bourbaki members or sympathizers, as would have been the case if the spirit of the group had been that of a chapel, of an elite within the elite. Above and beyond styles and fashions, there was in all members of the group a keen sense of mathematical substance, wherever it came from. It was only in the sixties that I remember one of my friends referring to mathematicians whose work he wasn't interested in as "pain in the ass". When it came to things about which I otherwise knew virtually nothing, I tended to take such assessments at face value, impressed by such casual assurance - until one day I discovered that such a "pain in the ass" was an original and profound mind, which had not pleased my brilliant friend. It seems to me that among certain Bourbaki members, an attitude of modesty (or at least reserve) towards the work of others, when one ignores that work or understands it imperfectly, has eroded.

7. The double face

p. 50 and a little pained - I thought mathematics made minds agree! Yet I should have remembered that when I first started out, it wasn't always easy or inspiring to swallow a **text** \square **Bourbaki**, even if it was expedient. The canonical text hardly gave an idea of the mood in which it was written, to say the least. It now seems to me that this is precisely the main flaw in the Bourbaki texts - that not even the occasional smile can give any hint that these texts were written by **people**, and people bound by anything other than some oath of unconditional loyalty to ruthless canons of rigor... .

But the question of the slide towards elitism, like that of Bourbaki's writing style, is a digression here. What strikes me here is that the "Bourbakian microcosm" I had chosen as my professional milieu **was a world without conflict**. This seems all the more remarkable given that the protagonists in this milieu each had a strong mathematical personality, and many are considered to be "great mathematicians", each of whom undoubtedly had the weight to form his own microcosm, of which he would have been the center and undisputed leader!⁵ (16) It's the cordial and even affectionate conviviality, over two decades, of these strong personalities in the same microcosm and in the same working group, that strikes me as so remarkable, perhaps unique. This ties in with the impression of "exceptional success" that was already expressed yesterday about Bourbaki.

In the end, it would seem that I was exceptionally fortunate, when I first came into contact with the mathematical world, to stumble upon **the** privileged place, in time and space, where a mathematical milieu of exceptional quality, perhaps unique in its own right, had been forming for some years. This environment became mine, and has remained for me the embodiment of an ideal "mathematical community", which probably did not exist at that time (beyond the environment that for me embodied it) any more than at any other time in the history of mathematics, except perhaps in a few equally restricted groups (such as the one that had formed around Pythagoras in a quite different spirit).

p. 51 My identification with this milieu was very strong, and inseparable from my new identity as a mathematician, born in the late forties. It was the first group, beyond the family group, where I was welcomed with open arms. warmth, and accepted as one of their own. Another link, of a different kind: my own **ap** \square **proach** to mathematics was confirmed in that of the group, and in those of the members of my new environment. It wasn't identical to the "Bourbachic" approach, but it was clear that the two were brothers.

This environment, moreover, must have represented for me that ideal place (or very close to it!), that **conflict-free place** whose quest had undoubtedly led me to mathematics, the science above all others, where any hint of conflict seemed to me to be absent! And although I spoke earlier of my "exceptional good fortune", it was clear to me that this good fortune had its downside. While it enabled me to develop my skills, and to show my worth as a mathematician in the midst of my elders who became my peers, it was also the welcome means of escape from conflict in my own life, and of a long spiritual stagnation.

first of all, when there was still that "mathematical instinct" that makes you sense a rich substance or a solid work, without having to refer to a reputation or a renown. From the echoes that reach me here and there, it seems to me that both modesty and instinct have become rare things today in what used to be my mathematical milieu.

⁵(16)

In fact, many of the Bourbaki members surely had their own microcosm "of their own", more or less extensive, apart from or beyond the Bourbakian microcosm. But perhaps it's no coincidence that, in my own case, such a microcosm only formed around me after I had ceased to be part of Bourbaki, and all my energy had been invested in tasks that were personal to me.

7.8. (23) De Profundis

This "bourbachic" environment has certainly exerted a strong influence on me as a person, and on my vision of the world and my place in it. This is not the place to try and pinpoint this influence, and how it has expressed itself in my life. I'll just say that it doesn't seem to me that my inclinations towards fatuity, and their meritocratizing rationalizations, were in any way stimulated by my contact with Bourbaki and my insertion into the "Bourbach milieu" - at least not in the late forties and fifties. The seeds had long been sown within me, and would have found room to develop in any other milieu. The incident of the "null pupil" that I have 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 individual, an atmosphere of freedom - at least that's how I felt; and it was such as to discourage and attenuate any inclination towards attitudes of domination or fatuity, whether individual or collective.

This medium of exceptional quality is no more. He died, I don't know when, without anyone knowing, I suppose there must have been an insensible degradation in people. I suppose an insensitive degradation must have taken place in people - we've all had to "bottle up", grow stale. We've become important people, listened to, powerful, feared, sought after. The spark perhaps was still there, but the innocence

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lost along the way. Some of us may find it again before we die, like a new birth - but the environment that welcomed me is no more, and it would be pointless for me to expect it to resurrect. Everything is back to normal.

And respect, too, may have been lost along the way. By the time we had pupils, it was perhaps too late for the best to be passed on - there was still a spark, but no longer the innocence, nor the respect, except for "his peers" and "his people".

The wind can pick up and blow and burn - we're sheltered behind thick walls, each of us with "our own".

Everything's back to normal. ...

7.9. (24) Mes adieux, or: les étrangers

This retrospective of my life as a mathematician takes a completely different path than I had anticipated. To tell the truth, I wasn't even thinking of a retrospective, but only of saying in a few lines, or even a page or two, what my relationship to the world I had left was today, and perhaps, conversely, what my former friends' relationship to me was, according to the echoes that reach me from far and wide. I had intended, on the other hand, to take a closer look at the sometimes strange vicissitudes of some of the ideas and notions I had introduced in those years of intense mathematical work - I should say, rather: the new types of objects and structures I had the privilege of glimpsing and drawing out of the night of the totally unknown into the penumbra, and sometimes even into the clearest light of day! This statement now seems to stand out in what has become a meditation on a past, in an effort to better understand and assume a certain, sometimes confusing, present. Decidedly, the planned reflection on a certain "school" of geometry, which was formed at my instigation, and which vanished without (almost) leaving a trace, will have to wait for a more propitious occasion⁶. For the time being, therefore, my concern will be to bring this retrospective on

⁶This "more propitious occasion" appeared sooner than expected, and the reflection in question is the subject of the second part, "The Burial", of Harvest and Sowing.

7. The double face

my life as a mathematician in the world of mathematicians, not to epilogize on a work and its fate.

During the past five days, occupied by tasks other than these reflective notes, one memory came back to me with a certain insistence. It will serve as an epilogue to the De Profundis on which I'm working.

p. 53

had stopped.

It happened towards the end of 1977. A few weeks earlier, I had been summoned to appear before the Montpellier Criminal Court for the offence of having "gratuitously housed and fed a foreigner in an irregular situation" (i.e. a foreigner whose residence papers in France were 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 forbids any French person to provide assistance in any form whatsoever to a foreigner "in an irregular situation". This law, which had no analog even in Hitler's Germany with regard to Jews, had apparently never been applied in its literal sense. By a very strange "coincidence", I had the honor of being taken as the first guinea pig for the first enforcement of this unique paragraph.

For a few days I was stunned, paralyzed, deeply discouraged. Suddenly, I felt like I'd gone back thirty-five years, to a time when life didn't carry much weight, especially for foreigners... . Then I reacted, I shook myself. For a few months, I invested all my energy in trying to mobilize public opinion, first at my university and in Montpellier, and then at national level. It was during this period of intense activity, for a cause that later proved to be lost in advance, that the episode that I could now call **my farewell took place**.

With a view to taking action on a 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 as incredible as the day I was quoted. In my letter, I proposed a joint action to demonstrate our opposition to this scurrilous law, which was tantamount to outlawing hundreds of thousands of foreigners living in France, and singling out millions of other foreigners for public suspicion, like lepers, who would then become suspects, likely to bring the worst trouble to any Frenchman who wasn't on his guard.

□ Astonishingly, completely unexpectedly for me, I received no response from any of these five "personalities. Decidedly, I had things to learn. ...

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It was then that I decided to go to Paris for the Séminaire Bourbaki, where I was sure to meet up with many old friends, in order first of all to mobilize opinion in the mathematical community, with which I was most familiar. This milieu, it seemed to me, would be particularly sensitive to the cause of foreigners, since all my fellow mathematicians, like myself, have to deal on a daily basis with foreign colleagues, pupils and students, most if not all of whom have had difficulties with their residency papers, and have had to face arbitrariness and often contempt in the corridors and offices of police prefectures. 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 explain the situation to the colleagues present.

And so it was that I arrived that day with a bulky packet of leaflets in my suitcase 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 lectures. If I remember correctly, he even made a little leaflet of his own - he was one of the two or three colleagues who heard about the affair,

were moved and contacted me before my trip to Paris, to offer their help⁷ (17). Roger Godement was also one of them, and even produced a leaflet entitled "A Nobel Prize in Prison? It was chic of him, but we were definitely not on the same wavelength: as if the scandal was to attack a "Nobel Prize winner", rather than the first lampoonist who came along!

The first day of the Bourbaki Seminar was indeed crowded, with many people I had known more or less closely, including Bourbaki's old friends and companions; I think most of them were there. Many of my former students too. It must have been ten years since I'd seen all these people, and I was glad to have this opportunity to see them again, even if it meant seeing a lot of them at once! But we'd end up meeting up again in smaller numbers...

The reunion though "wasn't that", it was pretty clear from ^{the} ~~the~~ ^{début} ~~début~~. Many outstretched hands p. 55 and tight-lipped, to be sure, and plenty of "Hey, you there, what wind brings you?" questions, yes - but there was an air of indefinable awkwardness behind the cheerful tones. Was it because they weren't interested in the cause that brought me, when they'd come for a certain tri-annual mathematical ceremony that demanded their full attention? Or, irrespective of what brought me here, was it my very person who inspired this discomfort, rather like the discomfort that a defrocked priest would inspire among a group of well-to-do seminarians? I couldn't say - perhaps it was both. For my part, I couldn't help noticing the transformation that had taken place in certain faces that had once been familiar, even friendly. They had frozen, as it were, or slumped. A mobility I had known there seemed gone, as if it had never been. I found myself standing before strangers, as if nothing had ever linked me to them. Obscurely, I sensed that we didn't live in the same world. I had thought I'd found brothers on this exceptional occasion, and here I was before strangers. Admittedly well-mannered, I don't recall any bitter-sweet comments, nor any leaflets lying around on the floor. In fact, all (or almost all) the leaflets handed out must have been read, curiosity permitting.

That's not to say that the scurrilous law has been jeopardized! I had my five minutes, maybe even ten, to talk about the situation of those who for me were brothers, called "foreigners". The amphitheatre was packed with colleagues, quieter than if I'd been giving a mathematical lecture. Perhaps the conviction to speak to them was already gone. There was no longer, as there once was, a current of sympathy and interest. There must have been some people in a hurry, so I thought I'd cut it short, proposing that we meet again immediately, with colleagues who felt concerned, to discuss in greater detail what could be done... .

When the session was declared adjourned, there was a general stampede for the exits - clearly, everyone was on their way out.

had a train or metro that was about to leave, and was not to be missed at any price! In the space of a minute or two, the Hermite amphitheatre was empty - it was like a miracle! Three of us in ^{the} ~~the~~ ^{cruise} ~~cruise~~ lights. Three of us, including Alain and me. I didn't know the p.

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third, one of those unmentionable foreigners again I bet, in dubious company and illegal to boot! We didn't take the time to dwell on the quite eloquent scene that had just unfolded before us. Perhaps I was the only one who couldn't believe my eyes, and my two friends were kind enough to refrain from commenting on the matter. Clearly, I had just arrived...

The evening ended at Alain's and his ex-wife Jacqueline's home, where we took stock of the situation and went on to discuss

⁷(17)

Above all, it was outside the scientific community that I encountered warm echoes of the action to which I had committed myself, and active help. In addition to the friendly support of Alain Lascoux and Roger Godement, I must mention here above all that of Jean Dieudonné, who came to Montpellier for the Correctionnelle hearing, to add his warm testimony to others in favor of a lost cause.

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to review what could be done; to get to know each other a little better, too. Neither on that day, nor later, did I take the time to situate the episode I had just lived through in relation to a past. It was on that day, however, that I came to understand without words that a certain milieu, a certain world I had known and loved, was no more, that a living warmth I had thought I'd rediscovered had long since dissipated.

That hasn't stopped the echoes that still reach me, year after year, from that world whose warmth has fled, from disconcerting me and touching me painfully. I doubt that this reflection will change anything for the future - except, perhaps, that I'll rebel less at being touched in this way... .

8. Master and students

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8.1. (25) The student and the program

I haven't finished reviewing my relationships with other mathematicians, at a time when I felt part of the same world, the same "mathematical community". Above all, I'd like to examine my relationships with my students, as I experienced them, and with others for whom I was the elder statesman.

Generally speaking, I think I can say without reservation that my relationship with my students has been one of respect. In this respect at least, I believe that what I received from my elders when I was a pupil myself did not deteriorate over the years. As I had a reputation for doing "difficult" maths (admittedly a very subjective notion!), and moreover for being more demanding than other bosses (something already less subjective), the students who came to me were from the outset quite strongly motivated: "they wanted it"! There was just one student who at first was a bit "ollé ollé", it wasn't really clear whether he was going to start - and then yes, it went off without me having to push. ...

□As far as I can remember, I accepted every student who asked to work with me. For

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For two of them, it became clear after a few weeks or months that my style of working didn't suit them. To tell the truth, it seems to me now that both of these situations were blockages, which I hastily interpreted as signs of an inability to work mathematically. Today, I'd be much more cautious about making such predictions. I had no hesitation in sharing my impressions with the two concerned, advising them not to continue in a career which, it seemed to me, was not suited to their dispositions. In fact, I knew that for one of these two students at least, I had made a mistake - this young researcher went on to make a name for himself in difficult subjects at the frontiers of algebraic geometry and number theory. I don't know whether the other student, a young woman, continued or not after her disappointment with me. It's not impossible that my impression of her abilities, expressed too peremptorily, discouraged her, even though she was perhaps just as capable of doing a good job as anyone else. It seems to me that I had given credit and confidence to these students as to others. On the other hand, I missed

discernment to sort out what were surely signs of blockage, rather than ineptitude¹ (18).

From the early sixties onwards, over a period of ten years, eleven students worked with me on their doctoral dissertations² (19). Having chosen a subject to suit them, they each did their work with gusto, and (as I felt) they identified strongly with their chosen subject. There was one exception, however, in the case of a student who had chosen, perhaps without any real conviction, a subject that "had to be done", but which also had its ungrateful aspects, as it involved a technical fine-tuning, sometimes arduous, even arid, of ideas that had already been acquired, when there were hardly any surprises or suspense left

¹(18)

I believe that this lack of discernment was not due to any negligence on my part on those two occasions, but rather to a lack of maturity, an ignorance. It was only some ten years later that I began to pay attention to blocking mechanisms, whether in my own person, in those close to me or in students, and to measure the immense role they play in everyone's life, and 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 expressed my impressions clearly, whether well-founded or not. When, in one case, I saw work done without seriousness, naming these things for what they are seems to me to be 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 of either learning from it (which is perhaps what happened the first time), or letting himself be discouraged, and perhaps then changing profession (which isn't necessarily a bad thing either!).

²(19) **Jesus and the twelve apostles**

From 1970 to the present day, another student, Yves Ladegaillerie, has prepared and passed a thesis with me. The students of the first period are P. Berthelot, M. Demazure, J. Giraud. Mme M. Hakim, Mme Hoang Xuan Sinh. L. Illusie, P. Jouanolou. M. Raynaud, Mme M. Raynaud, N. Saavedra, J.L. Verdier. (Six of them completed their thesis work after 1970, at a time when my mathematical availability was most limited). Among these students, Michel Raynaud takes a special place, having found for himself the essential questions and notions that are the subject of his thesis work, which he moreover developed entirely independently; my role as "thesis director" properly speaking was therefore limited to reading the finished thesis, constituting the jury and sitting on it.

When I proposed a subject, I was careful to limit myself to those to which I had a sufficiently strong relationship to feel in a position, if need be, to support the student's work. A notable exception was Mme Michèle Raynaud's work on local and global Lefschetz theorems for the fundamental group, formulated in terms of 1-fields on suitable scalar sites. This question seemed (and indeed proved) difficult to me, and I had no idea of how to prove the conjectures I was proposing (which, incidentally, could hardly be doubted). This work continued in the early '70s, and Mme Raynaud (as had previously been the case with her husband) developed a delicate and original method without any assistance from me or anyone else. This excellent work also opens up the question of extending Ms. Raynaud's results to the case of n -fields, which seems to me to represent the natural outcome, in the context of schemes, of theorems of the "weak Lefschetz theorem" type. The formulation of the relevant conjecture here (which can hardly be doubted either) does, however, make essential use of the notion of n -fields, the pursuit of which is supposed to be the main object of the present work [*This is actually volume 3 of *Réflexions Mathématiques*, not the present volume 1 *Récoltes et Semailles* - see *Introduction*, p.(v).], as its name "A la Poursuite des Champs" indicates. We'll come back to this in due course,*

Another rather special case is that of Mme Sinh, whom I had first met in Hanoi in December 1967, during a month-long lecture-seminar I gave at the evacuated Hanoi University. The following year, I offered her the subject of her thesis. She worked under the particularly difficult conditions of wartime, her contact with me being 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 complete her thesis in Paris (before a jury chaired by Cartan, and including Schwartz, Deny, Zisman and myself).

I should also mention Pierre Deligne and Carlos Contou-Carrère, both of whom were somewhat of a pupil, the former around 1965-68, the latter around 1974-76. Both obviously had (and still have) uncommon means, which they used in very different ways and with very different fortunes too. Before coming to Bures, Deligne had been a pupil of Tits (in Belgium) - I doubt he was a pupil of anyone in mathematics, in the usual sense of the word. Contou-Carrère had been a pupil of Santalo (in Argentina), and for a while of Thom (more or less). Both had the stature of mathematicians by the time contact was established, except that Contou-Carrère lacked method and craft.

My mathematical role with Deligne was limited to informing him, on the spur of the moment, of the little I knew about algebraic geometry, which he learned as if he'd always known it, and, along the way, to raising questions that were usually answered on the spot or in the days that followed. These are the

in perspective³ (20). Carried away by the necessities of a vast program for which I needed arms, I must have lacked psychological discernment in proposing this subject, which was surely not suited to this student's particular personality. He, for his part, probably didn't realize what he was getting into! In any case, neither he nor I could see in time that things had got off on the wrong foot, and that it was better to start afresh.

□ Visibly he worked without real conviction, and without parting with an air that was always a little sad, maus- p. 58
sade. I think I'd already reached the point where I didn't pay too much attention to these things, which (I should have remembered) are the night and day of all research work, and not just research! My role then was limited to being annoyed when the work seemed to be dragging on, and breathing a sigh of relief when it picked up again, and when the planned program was finally "completed".

It was only years after my awakening in 1970, having corresponded with this former pupil (now a teacher, like everyone else in these clement times!), that the idea came to me that something had definitely gone wrong in this case, that perhaps it wasn't a total success. Today, it feels like a failure, despite the "completed program" (by no means botched!), the diploma and the job. And I bear a large part of the responsibility, for having put the needs of a program before those of a person - a person who had entrusted herself to me with confidence. The "respect" that I claimed to have shown my students ("without any reservations") remained superficial here, divorced from what is the true soul of respect: loving attention to the person's needs, at least insofar as their satisfaction depended on me. The need, here, for joy in work, without which it loses its meaning and becomes a constraint.

In the course of this reflection, I've had occasion to speak of a "world without love", and I've been looking for the seeds of that world in myself, which I reject. Here is a major one - and I can't say today how it has arisen in others. This superficial respect, devoid of attention and true love, is also the "respect" I gave my children. With them, I've had the privilege of seeing this seed grow and proliferate. And I've come to understand that there's no point in begrudging the harvest... ..

8.2. (26) Rigor and rigor

With the exception of this one pupil, who was certainly no less "gifted" than the others, I can say that relations between my pupils and myself were cordial, often even affectionate. By necessity, all

Deligne's earliest works that I know of. Those after 1970 (for him as well as for my "official pupils") are known to me only through very scattered and distant echoes [This is in *fact* volume 3 of *Réflexions Mathématiques*, and not the present volume 1 *Récoltes et Semailles* - see *Introduction*, p.(v)].

My role with Contou-Carrère, as he himself says at the beginning of his thesis, was limited to introducing him to the language of schematics. In any case, I've only been remotely involved in the work he's been preparing as a doctoral thesis in recent years, on a highly topical subject that falls outside my remit. Following a number of misadventures in the wide world, Contou-Carrère was recently led, in extremis and (it now seems to me) unwillingly, to call on my services to act as thesis director and jury. (This exposed him to the risk of becoming one of Grothendieck's "post-1970" students, in a conjecture where this can have serious drawbacks... .). I carried out this task to the best of my ability, and this will probably be the last time I do so (at the level of a state doctorate thesis). I am all the happier, in this rather special circumstance, for the friendly assistance of Jean Giraud, who also took a month or two out of his time to do a thorough reading of the voluminous manuscript, of which he made a detailed and warm report.

³(20)

It reminds me of the subject Monique Hakim had taken up, which wasn't much more engaging to tell the truth - I wonder how she managed to keep her spirits up! If she was struggling at times, it was certainly not to the point of making her sad or sullen, and the work between us was done in a cordial and relaxed atmosphere.

8. Teacher and

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learned to be patient with my two main faults as a "boss": my impossible handwriting (although I think everyone eventually learned to decipher it) and, more seriously (and which I didn't realize until much later), my fundamental difficulty in following someone else's thinking, without first translating it into my own images, and rethinking it in my own style. I was much more inclined to communicate to my pupils a certain vision of things that I had imbibed strongly, rather than encouraging them to develop a personal vision, perhaps quite different from my own. This difficulty in relating to my pupils hasn't disappeared yet, but it seems to me that its effects have been attenuated, because I'm aware of this propensity within myself. Perhaps my temperament, innate or acquired, predisposes me more to solitary work, which was mine for the first fifteen years of my mathematical activity (from 1945 to around 1960), than to the role of "master" in contact with pupils whose mathematical vocation and personality are not fully formed⁴ (21). It's also true, however, that I've loved teaching ever since I was a child, and that from the 1960s to the present day, the students I've had have played an important role in my life. In other words, my teaching activity, my role as a teacher, has played and continues to play a major role in my life⁵ (22).

During this first period of my teaching activity, there was no apparent conflict between any of my students and myself, which would have been expressed even by a temporary "coldness" in our relations. Only once did I find myself obliged to tell a pupil that he wasn't serious about his work and that I wasn't interested in continuing with him if it went on like that. Of course, he knew just as well as I did what he was talking about, he pulled himself together and the incident was closed without a cloud being cast. On another occasion, back in the early seventies, when most of my energy was devoted to the activities of the "Survivre et Vivre" group, a student to whom I had shown (as is my custom) the thesis report I had just written on his work, became angry, judging that certain considerations in the report called into question the quality of his work (which was in no way my intention). This time I rectified the situation without any difficulty. It didn't seem to me, then, that this brief incident could cast a shadow over 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 mentioned), a good working relationship without more, without a

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that would have passed between us. I don't think, however, that it was an unconscious lack of benevolence on my part that would have made me include in my report the considerations he judged to be disadvantageous to him, adding "that he wasn't going to let the thing pass" as a fellow student of his had done, who had already done his thesis with me. With this other student, of a sensitive and affectionate nature, I was bound by a relationship

⁴(21)

Perhaps it would be more accurate to say that, for my temperament, I still lack the necessary **maturity** to fully assume a teaching role. 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 "feminine" (or "yin") predominance.

(Added later.) Even more than maturity, I see that it's a certain **generosity** that I've lacked in my teaching life to date - a generosity that expresses itself in a more delicate way than availability of time and energy, and which is more essential. This lack didn't manifest itself visibly (through an accumulation of failed situations, let's say) in my first period of teaching, no doubt mainly because it was compensated for by a strong motivation in the students who chose to come and work with me. In the second period, on the other hand, from 1970 to the present day, it seems to me that this lack of motivation is at least one of the reasons, and in any case the one that involves me most directly, for the overall failure that I observe in my teaching at research level (from the DEA level upwards). On this subject, see "Esquisse d'un programme", par.8, and par.9 "Bilan d'une activité enseignante", where the sense of frustration that this activity has left me with over the last seven or eight years is apparent [*Compare also note (23iv), added later*].

⁵(22)

Not for much longer, perhaps, as I have decided to apply for admission to the Centre National de la Recherche Scientifique, thus putting an end to a teaching career in academia that has become increasingly problematic in recent years.

particularly friendly; if I had included in my report on his thesis the same kind of consideration that had so displeased his fellow student, it was surely not for lack of benevolence! On the other hand, for both of them, as for all my students, I wouldn't have given the go-ahead for a defense if I hadn't been fully satisfied with the work they presented. In fact, none of my students from that period had any difficulty in finding a suitable job quickly after their thesis.

Until 1970: I had virtually unlimited availability to my students⁶ (22'). When the time was ripe, and whenever it would be useful, I would spend whole days with one or other of them, if need be, working on questions that hadn't been finalized, or reviewing together the successive stages of their work. As I experienced these work sessions, it doesn't seem to me that I ever played the role of "director" making decisions, but that each time it was a joint research project, where discussions took place on an equal footing, until both were completely satisfied. The student's energy was considerable, though of course not on a par with that of myself, who had more experience and sometimes a more acute sense of smell.

The thing, however, that seems to me to be most essential to the quality of all research, whether intellectual or otherwise, is not at all a question of experience. It's **the requirement of oneself**. It's not a matter of scrupulous conformity to any standards, rigorous or otherwise. It consists of extreme **attention to something**

delicate thing inside ourselves, which escapes all norms and measures. This delicate thing is the absence or presence of an understanding of the thing examined. More precisely, the attention with which I veuxp
To speak is to pay attention to the **quality of understanding** present at every moment, from the cacophony of a heterogeneous pile of notions and statements (hypothetical or known), to the total satisfaction, the completed harmony of a perfect understanding. The depth of a search, whether its outcome is fragmentary or total understanding, lies in the quality of this attention. Such attention does not appear as the result of a precept to be followed, of a deliberate intention to "goof off", to be attentive - it arises spontaneously, it seems to me, from the passion to know, it is one of the signs that distinguish the drive to know from its egotistical counterfeits. This attentiveness is also sometimes called "**rigor**". It is an inner rigor, independent of the canons of rigor that may prevail at a given moment in a (let's say) given discipline. If in this book I allow myself to take liberties with canons of rigor (which I have taught and which have their *raison d'être* and their usefulness), I don't believe that this more essential rigor is any less in it than in my past publications, in canonical style. And if, despite everything, I've been able to pass on to my students something of greater value than language and know-how, it's undoubtedly this demand, this attention, this rigor - if not in the relationship with others and with oneself (although at this level it was as lacking in me as in anyone else), at least in the ~~mathematical~~ work - that I've been able to pass on to them.⁷

⁶(22')

Even after 1970, when my interest in maths became sporadic and marginal in my life, I don't think there was an occasion when I recused myself when a student called 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 the periods when I was only interested in maths on the days when I went to university. So the kind of availability I had for my pre-1970 students, and the extreme demand for work that was a principal sign of it, would have made no sense to most of my later students, who did maths without conviction, as if by a continual effort they'd had to make on themselves. ...

⁷(23) **The Child and the Master**

The term "transmit" here doesn't 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 the very most awakened or encouraged, while it is ignored or discouraged from an early age, by the family environment as well as by school and 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 don't think it was passed on to me by my parents, and even less by masters, at school or among my mathematician elders. It just

(23). It's a modest achievement, but perhaps better than nothing.

8.3. (27) la bavure - or twenty years later

Except perhaps in the case of the two students I've mentioned, with whom a working relationship was finally not established, I don't recall any of the other students who came to me asking to work with me, coming with "stage fright" or fear. No doubt they already knew something or other about me, having attended my seminar at the IHES for at least some time. If there was any awkwardness at the start of our relationship, it eventually dissipated, leaving no trace, in the course of the work. I should, however, make two exceptions. One concerns a student who never really got to grips with his work, and who remained monosyllabic even during our work together. Perhaps

so he came at a time when I was becoming less available, and there were no afternoon and day-long sessions of work on parts with him. No, indeed I don't remember

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I don't think we ever had such sessions; I think we used to meet up for an hour or two to see how he was getting on. He must have had the worst time with me!

The other student, on the other hand, worked with me back when I still had complete disponibility for my students. Our relationship was cordial from the start. He's even one of the few students with whom I've established a friendly relationship, the ones I'd sometimes see at their place just as they'd come to mine, a sort of family-to-family relationship. It's 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 was already unaware of much of what was going on at home, under my own roof, I 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 I knew, most if not all relationships, even friendly and affectionate ones, remained at that superficial level where we know very little about each other, except what is perceived at the informal level. This is surely one of the reasons why conflict between people was so rare in this environment, whereas it's clear to me that division existed within most of my colleagues and friends, and within their families, just as much as it did in my own home and everywhere else.

I don't believe that my relationship with this student differed from my relationship with others, nor did I feel at the time that, conversely, his relationship with me differed in any noticeable way from that of other students, particularly those with whom friendly ties were forged. It's only recently that I've come to realize that this must have been a stronger relationship than for most of my other students. The visible manifestations of an unspoken conflict came as an unexpected revelation, almost twenty years after he had been my pupil. Only then did I make the connection with a long-forgotten "little" fact. For a long time, perhaps even for the entire period (from a few

seems to be one of the attributes of **innocence**, and therefore one of the things we are born with. Very early on, this innocence "sees a lot of green and a lot of black", which means that it is obliged to plunge more or less deeply, and that often there is hardly a trace of it left in the rest of life. In my case, for reasons I haven't yet thought of investigating, a certain innocence has survived at the relatively innocuous level of intellectual curiosity, whereas everywhere else it has plunged deep, unseen and unheard of, just like everyone else. Perhaps the secret, or rather the mystery, of "teaching" in the full sense of the word, lies in reconnecting with this seemingly vanished innocence. But there's no question of rediscovering this contact in the pupil, if it isn't already present or rediscovered in the person of the teacher himself. And what is "transmitted" by the teacher to the pupil is by no means this rigor or innocence (innate in both of them), but a respect, a tacit reevaluation of this thing commonly rejected.

years) when we worked together on a more or less regular basis, this student had retained a certain "stage fright". This would manifest itself at each meeting, in unmistakable signs. These signs disappeared fairly quickly afterwards, as we worked together. I was, of course, embarrassed by these signs of discomfort, and I sensed that he was more so. We both pretended to ignore the matter, as if it was nothing. Surely the idea of talking about it wouldn't have occurred to either of us, nor would it have occurred to either of us to pay any undue attention to a strange, obviously interesting situation! For him, as for me, this "stage fright" must have felt like a simple "burr", which had no reason to exist. The "burr" reminded us regularly, but each time, it had the good taste of disappearing, leaving us free to get on with the serious business of maths - and at the same time to forget "what didn't belong". I don't remember stopping once to wonder about the meaning of the blunder, and I'm sure the same was true of my pupil and friend. No doubt nothing in what we had both known around us since our early childhood could suggest in him or in me the idea of any other attitude towards a troublesome thing than that of **removing it as far as possible, so** that it ceased to be troublesome. In this case, it was perfectly possible and even easy, and we were perfectly in agreement that we'd seen nothing, felt nothing and heard nothing.

Through the many echoes and cross-references that have come back to me over the last two or three years, I've come to realize that what was dismissed as irrelevant has not ceased to be, and to manifest itself. What sometimes came back to me doesn't "belong" either - and yet "it is", and now can't be dismissed out of hand.

...

8.4. (28) The unfinished harvest

Until the first "awakening" in 1970, my relationship with my students, like my relationship with my own work, was a source of satisfaction and joy, one of the tangible, irrefutable foundations of a sense of harmony in my life, which continued to give it meaning, even as elusive destruction raged in my family life. At that time, I saw no apparent element of conflict in my family life.

these relationships, none of which, at any time, even fleetingly, was the cause of frustration or pain.

It is a thing that may seem paradoxical, that the conflict in the relationship to such and such of my students has only become

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apparent that after this famous awakening, after a turning point that gave my life an openness it hadn't known before, and my person a little beginning of flexibility perhaps - qualities that, one might think, should be of a nature to resolve or avoid conflict, and not to provoke or exacerbate it.

On closer inspection, however, I can see that the paradox is only apparent, and that it disappears, whichever way you look at it. First of all, for a conflict to have a chance of being resolved, it must first have manifested itself. The stage of manifested conflict represents a maturing compared to that of hidden or ignored conflict, whose manifestations do exist, and are all the more "effective" for the fact that the conflict expressed by them remains ignored. So: for a conflict to manifest itself in a recognizable way, a **distance** must first have been reduced or disappeared. The changes that have taken place in my life over the last fifteen years, notably in the course of successive "awakenings", have all been changes, it seems to me, of a nature to reduce a distance, to erase an isolation. A conflict that has difficulty expressing itself to a prestigious, admired boss, feels more at ease with someone who has been stripped of a position of power (voluntarily, in this case), who has been exiled from a certain milieu holding authority and prestige, who is perceived less and less as an incarnation or privileged representative of some entity (such as mathematics), and more and more as an individual.

like any other: a person who is not only susceptible to harm, but who is also less and less inclined to hide wounds or sorrows. And thirdly and most importantly: my evolution since the first awakening, especially at that time and in the years that followed, was such as to raise (or perhaps awaken) questions, concern and "questioning" in the well-ordered world of my former pupils. I had ample opportunity to realize that this was the case not only for them, but also among my friends and companions in the mathematical world of yesteryear, and sometimes even among scientific colleagues who knew me only by hearsay.

p. 65 It has to be said, too, that resolving a conflict of any depth is one of the rarest things in the world. The most often, notwithstanding all the surface truces and reconciliations, the growing procession of our conflicts follows us without \square guère leaving us for a whole lifetime, only to finally let go between the sullen hands of undertakers. Occasionally, I have seen a conflict unravel somewhat, and sometimes even resolved with knowledge - but so far, no such thing has happened in the course of my relationship with one of my students, or with one of my old friends in the mathematical world. And I also know that it's by no means certain that such a thing will ever happen, even if I were to live another hundred years.

It's remarkable that the very moment of my break with a certain past, by which I mean the episode of my departure from the IHES (from the institution that represented something like the "matrix" of the mathematical microcosm that had formed around me) - that this decisive episode was at the same time the first occasion on which one of my students expressed deep antagonism towards me. It was surely this circumstance that made this episode particularly distressing, particularly painful, like a birth or childbirth that had taken place under particularly difficult conditions. Of course, I couldn't then see this episode, the meaning of which escaped me, in the light in which I have since learned to see it. This painful surprise remained with me for a long time to come. And yet, in the summer of that same year, that bitter departure felt like a liberation - like a door that had suddenly opened wide (all I had to do was push it!) onto an unsuspected world, beckoning me to discover it. And each new awakening since then has also been a new liberation: the discovery of a subjection, an inner fetter, and the rediscovery of the presence of an immense unknown, hidden behind the familiar appearance of what was supposed to be "known". But throughout these fifteen years, and right up to the present day, this stubborn, discreet and unwavering antagonism has followed me, as the one great and lasting source of frustration I have known in my life as a mathematician⁸ (23'). Perhaps I could say that it was the price I paid for that first liberation, and for those that followed. But I'm well aware that liberation and inner maturation have nothing to do with a "price to pay", that they're not a question of "profits" and "losses". Or to put it another way: when the harvest is completed, when it's finished, there's no "profit" to be made.

has no loss - the very thing that seemed "loss" has become "profit". And it is becoming clear that I have not yet been able to bring this harvest to its term \square me, which remains, even as I write these lines, unfinished.

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⁸(23')

For the past seven or eight years, however, there has been another chronic "source of frustration" in my life as a mathematician, but one that has expressed itself much more discreetly over the years. It eventually became apparent as a result of the repetition and obstinate accumulation of the same type of "frustrating" situation in my teaching activity, and finally exploded into a sort of "fed-up", causing me to practically put an end to all so-called "research direction" activities. I touch on this question once or twice in the course of my reflection, and finally examine it at least a little at the end. At the very least, I describe this frustration, and examine the role it played in my "return to maths" (cf. par. 50. "Weight of a past").

8.5. (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, was also very different from the students before. Only two of them went on to work with me on a state doctorate thesis. The rest worked on DEA or post-graduate doctoral theses. I should also include a good number of students who have taken to certain introductory research "courses", which have given them the opportunity to ask themselves often unexpected mathematical questions, and sometimes to come up with original ways of solving them. I found the most active participation in certain "option courses" for first-year students. For students who have already spent a few years in the university environment, however, a certain freshness, a capacity for interest and personal vision are already more or less extinguished. Many of the students in the elective courses clearly had the makings of an excellent mathematician. Given the current economic climate, I was reluctant to encourage any of them to go down this path, which could have attracted them and where they could have excelled.

With the students who took one of my "courses" to prepare for a master's degree, the relationship didn't usually last beyond the end of the year. On each occasion, I had the impression that they quickly became cordial and relaxed, on the whole. Except in the case of one student afflicted with invasive "stage fright".⁹

⁹(23") Fear of playing

This student had worked with me on a DEA "work placement" for a whole year, and remained "contracted" in his working relationship with me right up to the end. It was a frankly friendly relationship, shot through with a mutual sympathy that could not be doubted. Yet there was this "stage fright"; this fear, the real cause of which was surely not fear of me, even though it looked like it. I might not even have noticed it, had this student not told me about it himself, no doubt to "explain" more or less the reason for an almost complete block in his work during the year.

As was the case with other students who, like him, were initially hooked on a certain geometrical substance, the blockage manifested itself as soon as it was a question of doing "work on parts", i.e. putting statements in black and white, or just grasping the meaning and significance of those I was providing and proposing to admit as the foundations of a language, as "rules of the game". School reflexes almost always push the student, faced with a situation where he's supposed to be "doing research", to adopt the implicit "rules of the game", transmitted by the teacher, as a "given" that's both vague and imperative, and which it's certainly not a question of trying to make explicit, let alone understand. The concrete form these implicit rules take are "recipes" for semantics or arithmetic, along the lines of, say, a mole book (or any other common textbook). What's more, the pupil expects the teacher to perform a task of the form "demonstrate that...". (Incidentally, I don't believe that the attitudes of most professional mathematicians, and of other scientists too, are essentially different - except that the "master" is replaced by the "consensus", which fixes the rules of the game of the moment and regards it as an immutable given. This consensus also fixes the "problems" to be solved, between which everyone feels free to choose as they see fit, even allowing themselves to modify them in the course of their work, or even invent new ones. . .). I've noticed that my entirely different attitude to the mathematical substance I'm trying to fathom, and therefore also to the student, almost certainly triggers disarray, one of the signs of which is anxiety. Like all anxiety, this will tend to take on a face, to project itself onto an external "reason", plausible or not. One of the most common faces of anguish is fear.

Such difficulties hardly arose in the first period of my teaching activity, except perhaps in the two cases where a "teacher-student" relationship didn't continue beyond a few weeks, and perhaps (I can't say) in the case of the "sad pupil", who perhaps felt "riveted" to a subject that didn't inspire him at all, even though he had every opportunity to change it. In the case of the student (whom I also mentioned) who remained afflicted by stage fright for a long time, it's clear that the reason lay elsewhere. He was by no means blocked in his work, but on the contrary perfectly at ease with the theme he had chosen, on which he did a great deal of groundwork. In fact, most of my students during this period were former students of the Ecole Normale, and their contact with Henri Cartan had already shown them the example of another "approach" to mathematics. At the opposite end of the spectrum (so to speak), in my second period as a teacher, at the University of Montpellier, it was among first-year students that the anguish I've mentioned least interfered with reflective work. For many of these students, astonishment at a different approach didn't provoke anguish or closure, but rather openness and a willingness to do interesting things for once! From my observations, the effect of a few years in college on a student's creative disposition is radical and devastating. It's a strange thing that, in this respect, the effect of the long years of high school seems relatively innocuous. Perhaps this is because

(23"), it was the same with students who were officially expected to prepare a research paper under my guidance, at one level or another. One difference (among many!) with my previous students was that our relationship wasn't so much confined to joint mathematical work. Often the exchange between the student and me involved our persons in less superficial ways¹⁰ (23v). It's not surprising, then, that in this second period of my teaching activity, the conflicting elements in the relationship with certain students appeared more clearly and directly, even vehemently. Among my former

p. 67 first period, there are two in whom attitudes of systematic and unequivocal antagonism subsequently appeared (which I have had occasion to mention in passing), yet remained at the level of the informal, and perhaps even the unconscious. In the second, longer period, there were three students in whom I was confronted with antagonism. In two of them, it manifested itself acutely.

In the case of one of these pupils, antagonism arose overnight in what had been a most friendly relationship, long years after this friend had ceased to be my pupil. I suspect that the cause of the conflict was not so much my unspeakable conduct and personality, as a long-suppressed dissatisfaction at not having found the reception for his work (which had been excellent) that he would have been entitled to expect. This was the downside of the dubious privilege of having had me as his boss "after 1970", and he must have resented it, without really recognizing it even in his own heart.

With the other student, an acute antagonism had already emerged after a year and a half's work, in an atmosphere that had seemed very cordial. This was the first and only time that a relational difficulty between a pupil and myself had arisen at a time when he was still a pupil. It made it impossible for us to continue working together, despite the auspicious start and the auspicious enthusiasm for a magnificent theme. I had the feeling that there was an insidious lack of confidence in this young researcher's ability to do a good job (an ability which, for me, was beyond doubt), and that the manifestation of antagonism was a sort of "headlong rush" to get ahead of a dreaded failure, and blame it on an odious boss¹¹ (23").

the university years are at an age when the creativity innate in us **must**, at the end of the day, be expressed through personal work, otherwise we'll be shipwrecked forever, at least in terms of creative work of an intellectual nature. It must have been a healthy instinct that during my student years (also at the University of Montpellier) I practically never set foot in class, devoting almost all my energy to personal mathematical reflection.

¹⁰(23v)

A particularly striking sign of this difference was the "stranger episode", which I've already mentioned (section 24). While I received expressions of sympathy from many people who were complete strangers to me, I don't recall any of my pre-1970 students thinking of expressing such sympathy, let alone offering to help me in the action I had embarked upon. On the other hand, I can't think of a single one of my students or former students from the second period who didn't express their sympathy and solidarity with me, and several actively joined the campaign I was running at local level. Beyond this restricted circle, the 1945 ordinance affair also created a certain amount of emotion among many students at the Faculty who knew me by name at most, and a good number of them came to the Palais de Justice on the day of my summons, to show their solidarity. This last circumstance suggests, moreover, that the difference I observed between the attitudes of my students "before" and "after" 1970 may express less the difference in **relations** between them and me, than a difference in **mentalities**. Clearly, my "before" pupils had become important people, and it takes a lot for important people to consent to be moved... . But the episode of my departure from the IHES in 1970 and my involvement in militant action seems to show that there's more to it than that. It was a time when none of them was yet such an important figure, and yet I don't remember any of them showing the slightest interest in the activity I was getting involved in. Rather, I think it must have made them uncomfortable, all of them without exception. This again points to a difference in mentality, but one that can't be blamed solely on differences in social status.

¹¹(23") **The two brothers**

This student's antagonism 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, which I could decide at my whim... . Of course, events only served to confirm this vision, since it wasn't long before I had to put an end to my responsibilities (which had become painful) to

One aspect common to all these appearances of conflict between students and myself, in the nearly twenty-five years I've been teaching mathematics, is a strong **ambivalence**. In all these cases, without exception, the antagonism manifests itself after the fact, often insidiously, in a relationship of sympathy that can be left in no doubt. I can even say that in all these cases, as in many others where a frankly antagonistic component has not manifested itself, my person has exerted and still exerts a strong attraction. It is surely the very strength of this attraction that also feeds the strength of the antagonism.

and ensures its continuity. It is still so, surely, in cases where antagonism takes the form of a ^{violence} antipathy, an outraged rejection; as also in such another case, at the opposite extreme, where under the pavilion⁶⁸ of friendly respect is expressed (when the occasion is right) with an affectation of casual, delicately measured disdain... ..

Such situations of ambivalence, to tell the truth, are not peculiar to my relationship with some of my students or ex-students. In fact, they have abounded throughout my adult life, since at least the age of thirty (i.e., since my mother died). This has been true both in my love life and in my relationships with men, and more specifically, with men who are much younger than I am. I've come to understand that something in me, whether innate or acquired, seems to predispose me to act as a father figure. I seem to have the ideal build and the right vibe to make the perfect adoptive father! It has to be said that the role of Father fits me like a glove - as if it had been

this student. This put him in a tricky situation, in these times when it's 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 antagonism took a similar form. I felt like the tyrannical "mandarin", who could not tolerate contradiction from those (students or lower-ranking colleagues) he considered his subordinates.

Such a "class attitude" never manifested itself, if at all, during the relationship with my students of the first period. The obvious reason was that, in the pre-1970 context, there was no doubt that the student, once he had passed his thesis, would have a position as a lecturer, and would therefore enjoy a social status identical to mine, that of "university professor". Loquacious figures: the eleven students who began working with me before 1970 were given *lectureships* as soon as their work was completed, whereas none of the twenty or so students who worked more or less under my direction had access to such a position. It's true that only two of them were motivated enough to do a state doctorate thesis (an excellent one for both of them, by the way).

It's hardly surprising, then, that in this second period, certain ambivalences (whose deeper origins remained hidden) took the form of class antagonism, of *mistrust* (presented and felt as "visceral") towards the "boss". For one of those who had more or less been a pupil, friendly relations continued for around ten years without any apparent antagonistic episode, and yet marked by this same ambiguity, expressed in an attitude of *mistrust*, held "in reserve" behind overt sympathy. To tell the truth, I was never fooled by this commanding "distrust", which appeared to me above all as a reason that this friend saw fit to give himself for not venturing outside the well-defined domain he had chosen as his own, in his professional life as in his life in general - something he was free to do, however, without anyone (except, at most, himself!) calling him to account. ...

In fact, these three cases are the only ones in all my teaching experience where a certain ambivalence in the relationship between a student (or someone who is more or less a student) and myself has been expressed by a "class attitude". Such an attitude appears particularly ambiguous when it manifests itself between colleagues within an academic "corps" where they both enjoy exorbitant privileges compared to the situation of ordinary mortals, privileges which make differences in rank (and salary) appear relatively insignificant. In fact, I've noticed that these attitudes disappear as if by magic (and with good reason!), as soon as the person concerned sees himself promoted to the position of which only the day before he was complaining to others.

Indeed, I detect a similar ambiguity in most, if not all, of the conflict situations I've witnessed within the mathematical world (and often outside it too). Those who are "cast", whether or not their rank corresponds to their expectations (justified or not), enjoy quite unheard-of privileges, which no other profession or career can offer. Those who don't fit in aspire to the same security and privileges (which doesn't necessarily prevent them from taking an interest in maths itself, and sometimes from doing great things). These days, when the competition for a place is fierce, and the unhoused are often treated like stragglers, I've more than once felt the connivance between the one who enjoys humiliating and the one who is humiliated - and who swallows and crushes. The real object of his bitterness and animosity is **not** the one who has made use of power, but is none other than **himself**, who has crushed himself and invested the other with this power which he uses at pleasure. The one who takes pleasure in humiliating is also the one who takes his revenge and compensates (without ever erasing it. . .) for a long-lasting humiliation that has long since been buried and forgotten. And he who acquiesces in his own humiliation is his brother and emulator, who secretly envies it and in bitterness buries both the humiliation, and the humble message about himself that it brings him.

mine by birth. I won't try to count the number of times I've taken on such a role vis-à-vis another person, in perfect tacit agreement on both sides. More often than not, this distribution of father-son or father-daughter roles remained unspoken, even unconscious, but it also happened to be formulated more or less clearly. In some cases, too, I acted as a father without even entering into the game, I think, in ignorance of what was going on, both consciously and unconsciously.

I first became aware of my role as adoptive father in 1972, at the time of "Survivre et Vivre", when I was suddenly confronted with an attitude of violent rejection on the part of a young friend. (Interestingly, he was a maths student on the verge of dropping out!) Something in my behaviour towards third parties had disappointed him. I think I'd have had no difficulty in recognizing that his disappointment was well-founded, that I'd been ungenerous in this instance - but the violence of the reaction literally blew me away. It was like a sudden outburst of vehement hatred, which subsided almost immediately, when it became clear that he hadn't really managed to throw me off. (It was close, but I kept that to myself...). I don't know how I got the intuition when he was projecting onto my

person, duly idealized, of unresolved conflicts with his father. This sudden intuition, now forgotten, didn't prevent me from penning the role of father for years to come, always with the

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same conviction, without the slightest suspicion. Of course, I was always as painfully astonished, not believing my eyes or the rest of it, when I was later confronted with signs of conflict, insidious or violent.

It was only after six or seven months of intense, solitary work on my parents' lives, which enabled me to see them in an unsuspected light, that I understood the illusory nature of this role of adoptive parent, which would replace (for the better, that's a given!) a real parent who does exist, and who would be declared (if only by tacit agreement) "failing". It's helping someone else to avoid the conflict where it exists, in his relationship with his father, let's say, and projecting 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've been vigilant about myself, so as not to allow myself to indulge in my unfortunate paternal vocation with my eyes closed. This hasn't prevented the false situation from recurring (as in my relationship with that student with whom I had to stop working) - but now, I believe, without any connivance on my part.

If I set aside the case of the pupil frustrated in these legitimate expectations, there's no doubt in my mind that in all the other cases where I've been confronted with antagonism in a pupil or ex-pupil, it's been the reproduction of the same archetypal conflict with the father: the Father both admired and feared, loved and hated - the Man to be confronted, defeated, supplanted, perhaps humiliated . . . but also the One we secretly wish we were, stripping Him of a strength to make it our own - another Self, feared, hated and shunned. . .

8.6. (30) The Enemy Father (2)

It wasn't the great turning point of 1970 that created antagonisms between some ex-students and me, against the backdrop of an idyllic, cloudless past. It only made visible antagonisms that could hardly be expressed within the more conventional framework of a typical boss-student (or ex-boss-ex-student) relationship. I suspect that such conflicts are not uncommon in the scientific world, but that they are often expressed in a more roundabout and less recognizable way than in relationships in

□ that I've been involved in.

In retrospect, I don't feel that in my relationships with my students, I've been so inclined to take on a paternal role - in fact, I can't think of a single memory that goes beyond that.

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in this sense more or less. As far as **I'm** concerned, it seems to me that almost all the energy I invested in a relationship with a student was the same energy I also invested in mathematics, and in the realization of a vast program. In the first period, I can think of only one case where I had an interest in a student, in the nature of an affinity or sympathy, which had a strength comparable (if not equal) to that of mathematical interest. But even then, I don't feel that I've taken on a paternal role towards him. As for any ascendancy I may have exercised over him or other students, at one level or another, that's the sort of thing I paid no attention to in my relationship with my pupils. (Even today, I tend not to pay attention to it, either with the students who have worked with me in recent years, or even with other people.) Of course, in all these cases, the relationship between the pupil and myself was by no means "symmetrical", in the sense that for at least the duration of the teacher-pupil relationship (and probably even beyond, more often than not), the importance a pupil had in my life was not comparable to that which I had to take on in his, nor the psychic forces that the relationship brought into play in my person and in his. Except in the five or six cases where these forces manifested themselves in clearly recognized signs of antagonism, I realize that the nature of the relationships to me of my various pupils and then ex-pupils, over more than twenty years of teaching activity, remain a total mystery to me! In fact, it's not really my job to probe these mysteries, but rather that of each of them in his or her own right. But as long as you're interested in your own person, there may be hotter things to look at than the ins and outs of your relationship with your ex-boss... . In any case, even though I showed no inclination towards my pupils to take on a paternal role, it can't have been uncommon for me to have acted as a sort of adopted father for them, given my particular psychic "profile", which I mentioned earlier, and given the dynamics inherent in a situation where I could not fail to act as an elder, to say the least.

□ In any case, in several of the cases I've mentioned, this particular coloring of the relationship between a
 There's no doubt in my mind that I'm a student. Outside my professional life, there have been many other cases where, with or without my connivance, I have acted as an adopted father to younger men and women, attracted by me and linked to me by mutual sympathy, but by no means by kinship. As for my own children, the paternal fibre in me towards them has been strong, and from an early age they have had an important place in my life. In a strange irony, however, none of my five children accepted the fact that I was their father. In the lives of the four of them that I've come to know closely, especially in recent years, this division in their relationship to me reflects a deep division within themselves; a refusal in particular of everything in them that makes them like me, their father... . But this is not the place to explore the roots of this division, which go back to a childhood torn apart, to my own childhood and that of my parents, as well as to my mother's childhood and that of her parents. Nor is this the place to measure its effects, in their own lives, or in those of their children... .

p. 71

8.7. (31) The power to discourage

To conclude this summary tour of my relationships in the mathematical world 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" in the strict sense of the word, without my playing the role of "boss" vis-à-vis them. These are young researchers whom I met for a year or two in my seminar at IHES, or on the occasion of such courses or seminars at Harvard or elsewhere, or also sometimes, on the occasion of a "seminar" at the University of Paris.

correspondence, for example when I'd received a piece of work from a young author for which he or she was looking for feedback, and surely also encouragement.

Dealing with novice researchers is part of a role that is less apparent than that of "boss" of such students, but just as important, as I have since come to realize. At the time, I didn't realize, as I have for the last six or seven years, that this role, for a mathematician in the limelight, represents a major challenge.

p. 72 considerable **power**. It is first of all the power **to encourage**, to stimulate, which exists as much in the case of visibly brilliant ^{travail} (but perhaps served by clumsiness of presentation or a It exists even in the case of work that represents only a very modest contribution, or even negligible or nil by the standards of a senior in full possession of powerful means, proven experience of the subject, and extensive information. The power to encourage is there, as long as the work submitted to us has been written with seriousness - something generally discernible from the very 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 against Galois, and Gauss against Jacobi - it's not just that it exists and that eminent and feared men use it! If history has recorded these two cases, it's because the men who had to pay the price had sufficient faith and self-confidence to go their own way, despite the unsympathetic authority of those who were then calling the shots in the mathematical world. Jacobi found a journal to publish his ideas, and Galois the sheets of his last letter, acting as a "diary".

Today, it's certainly more difficult for an unknown or little-known mathematician to make a name for himself than it was in the last century. And the power of the prominent mathematician is not only psychological, but practical too. He has the power to accept or reject a work, i.e. to give or refuse his support for a publication. Rightly or wrongly, it seems to me that "in my day", in the fifties and sixties, refusal was not without appeal - if the work presented "worthy" results, it had a chance of finding the support of another eminence. Today, this is certainly no longer the case, as it has become difficult to find even a single influential mathematician who will agree to review (with whatever willingness he or she may have) a work in his or her field, unless the author has already acquired a reputation, or is recommended to him or her by a well-known colleague.

p. 73 Over the past few years, I've seen some brilliant and influential mathematicians make use of the of their power to discourage and refuse, both with regard to such solid work that obviously had to be done' ^{and} with regard to such large-scale works clearly denoting the power and originality of their authors. On several occasions, the person who used his discretionary power in this way happened to be one of my former students. This was probably the most bitter experience of my life as a mathematician.

But I'm straying from my point, which was to examine the way in which, in the days when I lent myself with conviction to the role of "mathematician in the limelight", I wielded the power to encourage and discourage that I spoke of. I should add that, at the more modest level where my scientific activity continued after 1970, as a teacher among others at a provincial university, this power did not cease to exist, either vis-à-vis my students or pupils, or (rarely, it's true) vis-à-vis occasional correspondents. But for my present purposes, it's the first period of my life as a mathematician that's important.

As far as my relationship with my students is concerned, from the first one I had to this very day, I think I can say without restriction that I've done everything in my power to encourage them.

in the work they had chosen¹² (23iv). It must be rare, even today, for it to be otherwise in the relationship between "boss" and pupil, and especially so in the case of a boss who has the means to train brilliant pupils, and with their help clear vast tracts of land ready for ploughing. Hardly believable, yet true, is the extreme case of the prestigious boss taking pleasure in extinguishing in brilliantly gifted pupils the mathematical passion that had animated him at a younger age.

But I'm digressing again! It's my relationship with the young researchers who weren't my students that needs to be examined. In such relationships, the egotistical forces in the person of the man in the spotlight would be less likely to push him in the direction of encouragement, while the successes of the young stranger approaching him would add little or nothing to his own glory. On the contrary, I believe that the play of egotistical forces alone, in the absence of genuine benevolence, would almost invariably tend to make the young stranger's successes less attractive to his own glory.

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 that general law, which can be constructed in all sectors of society: that egotistical desire ^{dep. 74} to prove one's own importance, and the secret pleasure that comes with satisfying it are generally stronger and more appreciated, when the power at one's disposal finds occasion to cause one's fellow man discomfort, or even humiliation, rather than the other way round. This law is particularly brutal in certain exceptional contexts, such as war, concentration camps, prisons or psychiatric asylums, or even in the all-purpose hospitals of a country like ours... . But even in the most everyday contexts, each of us has had occasion to be confronted with attitudes and behavior that attest to this law. The correctives to these attitudes are, firstly, **cultural** correctives, stemming from a consensus, in a given environment, on what is considered "normal" or "acceptable" behavior; secondly, they are forces of a non-egotistical nature, such as sympathy towards a particular person, or sometimes, a spontaneous attitude of benevolence independent even of the person to whom it is addressed. Such benevolence is undoubtedly rare in any environment. As for the cultural corrective in mathematics, 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've visited.

¹²(23iv) **Teaching failure (1)**

Since these lines were written, I've had the opportunity to speak with two of my ex-students from after 1970, in an attempt to probe with them the reason for the failure of my teaching at research level, at the University of Montpellier. They told me that my tendency to underestimate the difficulty of assimilating techniques familiar to me, but not to them, had had a discouraging effect on them, as they constantly felt that I had fallen short of my expectations of them. What's more (and this seems even more far-reaching to me), they sometimes felt frustrated when I "sold the worm" by giving them a shaped statement I had up my sleeves, instead of letting them discover it for themselves, at a time when they were already very close to it. After that, all they had to do was the "exercise" (which they weren't otherwise keen on) of demonstrating the statement in question. Herein lies the "lack of generosity" in me that I had noted in an earlier note (note 21), without elaborating further. It is disappointments such as these, above all, that represent my personal contribution to the disappearance of interest in research in both of us, after what was nonetheless an excellent start.

I realize that I was no more generous before 1970 than after. If I didn't have the same difficulties then, it's probably because the kind of students who came to me in those days were motivated enough to find even a "long exercise" appealing, as an opportunity to learn the trade and a host of other things along the way; and also, for a starter statement I was "selling the fuse" on, to come up with a host of others of their own that went far beyond the first. When I moved to a new teaching location, I made the necessary adjustment in the choice of topics for reflection that I proposed to my new students, by choosing mathematical objects that could be grasped by immediate intuition, independently of any technical baggage. But this essential adjustment was in itself insufficient, due to differences in **disposition** (in my new pupils compared to those of yesteryear), even more important, than a single difference in **baggage**. This ties in with the observation made earlier (beginning of par.25) about a certain **inadequacy** in me for the role of "master", which came out much more strongly in my second period as a teacher than in the first.

known.

Decidedly, I persist in straying from my point, which was not a discourse on the century, but a meditation on myself and my relationship with the more or less novice researchers who were not my students. I don't believe that the "law" I alluded to found expression in these relationships. For reasons that needn't be examined here, it would seem that egotic forces, just as strong in me as in anyone else, have not taken this path in my life to manifest themselves at the expense of others (apart from a few cases dating back to my childhood). I think I can even say, having had the opportunity to examine the matter, that the basic tone of my disposition towards others is one of benevolence, a desire to help when I can help, to relieve when I can relieve, to encourage when I am in a position to encourage. Even in a relationship as deeply divided as that with this "indefatigable friend" of mine

I've had to talk about, never has the fatuity in me led me astray to the point where I would have thought (even if by unconscious intent) of harming him. (I would have had the possibility of *fai□re*, and "with the best conscience in the world" alright. of course). And I believe that, in most cases, this general benevolence (even if only a little on the surface) also marked my relations in the mathematical world, including with beginner mathematicians who, although not among my students, might have needed my support or encouragement.

I believe this was the case without exception, at least during the fifties and into the early sixties. It seems to me that, in those days at least, this benevolence was not limited to visibly brilliant youngsters like Heisuke Hironaka or Mike Artin (even though they were not yet renowned for their abilities). But it may well have faded to a greater or lesser extent during the sixties, under the influence of egotistical forces. I would be particularly grateful for any testimony on this subject.

My memory only recalls a specific case, which I'm going to talk about, and beyond this case, this famous "fog" that doesn't condense into any other specific case or fact, but rather gives me a certain inner attitude. I used to feel a certain irritation when it happened that another mathematician "stepped on my toes" without pretending to ask me anything, as if he was at home the young white boy! It must have been mostly cases of young people, not too up to speed, who thought they'd come across something I'd known for years, and even longer, in some very special cases. I don't think it happened very often, but maybe two, three or four times, I can't say. As I've just said, I can only recall one case in point, perhaps because the situation occurred with the same young mathematician on several occasions, in one form or another. I can say that in every respect this young researcher, whose home university was abroad, was perfectly correct in sending the work he had just done to me, who was supposed to be the person most in the loop. Each time, I reacted very coolly, for the reason I said. I can't even tell for sure if I was telling him straight out that what he was doing had been known to me for ages, and that for that reason it bothered me that he was publishing it without at least giving me a little bow in the introduction. Of course, if he had

was my pupil, this authorial fatuity would not have come into play so much, on the one hand because of a sympathetic relationship that had already been established with the pupil, but also because it went *□de soi* anyway that the pupil's work also contained the boss's ideas, unless otherwise stated! I think the situation must have happened twice, maybe even three times, with this same researcher, and each time I had an equally cool, equally discouraging attitude. I never agreed, if I remember correctly, to recommend a work by this researcher for publication in such-and-such a journal, nor to sit on a thesis jury (I seem to recall the question having arisen). It's almost as if I'd decided to choose him as my pet. The most beautiful,

is that his work in each case was perfectly valid - I believe it was carefully written, and I have no reason to suppose that he didn't come up with the ideas he was developing himself, which at the time were not yet widely known, and were (more or less) "well known" only to a handful of people in the know, such as Serre, Cartier, myself and one or two others. What's incomprehensible to me is that this young colleague (he ended up, of course, with a well-deserved thesis and job) never tired of addressing me, who "beat him cold" with every blow, and that he apparently never resented me for it. Still, I remember the surprise he once expressed at my reticence - he obviously didn't understand what was going on. He'd have had a hard time if he'd waited for me to explain! He had a beautiful head, a bit like a classic Greek, very youthful - rather soft, peaceful features, evoking an inner calm... . Now that I'm trying for the first time to put my finger on the impression of his person and physiognomy, I suddenly realize that he really did look a lot like that "indefatigable friend" I'd spoken about; they could have been brothers, this friend of my age in smiling tones, and this researcher, twenty years younger, in rather serious, but by no means sad, tones. It's not impossible that this resemblance came into play, that I projected onto one a disdain that had found no occasion to express itself with the other, disarmed as he was by the signs of such a faithful friendship! And indeed, I had to have developed a really thick shell, not to be disarmed by the obvious good faith and desire to do the right thing in this young man, who was certainly endearing, and who never tired of coming back to me without my deigning to give him so much as a smile!

8.8. (32) The ethics of the mathematician

The case I reported yesterday, now that I've finally ^{taken} ^{the} trouble to write it down in black and white, p. 77 seems to me of considerable significance, greater in some respects than the other three cases (no doubt typical too) reported earlier, where forces of fatuity deeply disturbed in me a natural attitude of benevolence and respect. This time, using a position of real power (then that I, like everyone else, pretended to ignore this power), I used it to discourage a willing researcher, and refuse a work that deserved to be published. That's what we call **abuse of power**. It's no less blatant for not falling under an article of the penal code. Fortunately, the situation at the time was less difficult than it is today, so that this researcher was able, without too much difficulty I believe, to get his work published with the support of some colleagues more benevolent than myself, and his career as a mathematician was not seriously disrupted, let alone broken, by my abusive behavior. I'm happy about this in retrospect, but I don't want to make it an "extenuating circumstance". It's possible that in tougher times, I would have been more careful - but that's just a guess, and has little to do here. All the same, I think I can say that there was no secret malice in me, no desire to do harm caused by the irritation I mentioned. 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 going on inside me, or even the impact my reaction could have on the other person's life. I didn't realize how much power I had, and the thought of any responsibility that went with that power (even if only the power to encourage or discourage) never occurred to me during this relationship. It was a typical case of **irresponsible behavior**, the kind you find on every street corner, in the scientific world as elsewhere.

It's possible that the only case of his kind that I can remember is an extreme one, among a few others like it. What triggers an attitude without benevolence is the irritation of a vanity, impatient of

to see "the first comer" arrogating to himself the right to walk through guarded hunting grounds and take some small game that belongs only to the masters of these places... . This irritation has its own rationalizations, which

p. 78 have a nobler allure, one suspects. It's not my modest self that's at stake but no, but the love of art and mathematics, this young man who doesn't even have the excuse to be great the clumsy kind rather.

he's going to ruin everything, woe betide us, if only he could do things better than I can, but the beautiful prescriptions I'd planned all went out the window, you've got to be a little shameless, frankly... . ! The meritocratic leitmotiv is always present: only the very best (like me) have the right to work for me, or those who put themselves under the protection of one of those! (As for the less common case where it's actually another great chef who steps on my toes, that's a different kettle of fish - one day at a time!) In the case in point, there was (I'm in no doubt about this) another force moving in the same direction, entirely unconscious, which had already played a major role in my relationship with the indefatigable friend of my early days: an automatism of rejection towards a certain type of person, not corresponding to the canons of "virility" I'd taken over from my mother. But this circumstance, which has its own significance and interest for an understanding of myself, is relatively irrelevant for my present purpose: that of finding in myself, in attitudes and behaviours that were mine when I was still part of a certain milieu, the typical signs of a profound degradation that I see there today.

If this case, which I have just examined, seems to me of greater significance than the others in which I failed to show kindness and respect, it is because it is the one in which a certain **elementary ethic** is violated in the mathematician's profession¹³ (24). In the milieu where I was welcomed in my early days, the Bourbaki milieu and those close to Bourbaki, this ethic I'm talking about was generally implicit, but it was nevertheless present, alive, the object (it seems to me) of an intangible consensus. The only person who expressed it to me in no uncertain terms, as far as I can remember, was Dieudonné, probably one of the first times I was his guest in Nancy. He may have returned on other occasions. He obviously felt it was important, and I must have sensed the importance he attached to it, to have remembered it even today, thirty-five years later. Simply because of the moral authority of the group of my elders, and Dieudonné, who obviously expressed a group consensus at the time, I had to tacitly adopt this ethic as my own, without ever having given it a moment's thought, or understood what was behind it.

p. 79 was important. To tell you the truth, it didn't even occur to me that it might be useful for me to give it some thought.

□une reflection, convinced as I had been for a long time that my parents and myself represented, a perfect embodiment (or very nearly so) of an ethical, responsible and foolproof attitude¹⁴ (25).

¹³(24)

The ethics I'm talking about apply just as much to any other milieu formed around a research activity, and where the possibility of making one's results known, and taking credit for them, is a matter of "life or death" for the social status of any member, or even of "survival" as a member of this milieu, with all the consequences this implies for him and his family.

¹⁴(25) **Ethical consensus - and control of information**

Apart from the conversation with Dieudonné, I can't recall a single conversation in my life as a mathematician in which the ethics of the profession or the "rules of the game" were discussed. (I exclude here the discussions about the collaboration of scientists with the military, which took place in the early 70s around the "Survivre et Vivre" movement. They didn't really concern the relationships between mathematicians. Many of my friends in Survivre et Vivre, including Chevalley and Guedj, felt that the emphasis I placed at that time, especially in the early days, on this issue to which I was particularly sensitive, distracted me from more essential everyday realities, of precisely the kind I am examining in the present reflection). These things were never discussed between a student and myself. The tacit consensus, I believe, was limited to this one rule, not to present as one's own any ideas of others of which one might have been aware. This consensus, it seems to me, has existed since antiquity, and has never been contested in any scientific milieu. But in the absence of this other complementary rule, which guarantees every researcher the possibility of making his ideas and results known, the

Dieudonné didn't give me a long speech - it wasn't his style any more than it was that of any of his friends in Bourbaki. He must have mentioned it in passing, and as something that was taken for granted. He was simply insisting on a simple rule, seemingly unimportant, which is this: **anyone who finds a result worthy of interest must have the right and the opportunity to publish 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 didn't take the trouble to put it down in black and white and publish it, so as to make it available to (hm!) the "mathematical community", any other person (innuendo: including the famous "first-timer"!) who finds the result by his or her own means (innuendo: whatever his or her means, points of view and insights, and whether or not they seem "narrow" to people supposedly more in the know than he or she is... . . .) must have the possibility of publishing it, according to his own means and insights. I seem to remember Dieudonné adding that if this rule was not respected, it opened the door to the worst abuses - it's possible that it was on this occasion and through his mouth that I learned of the historic case of Gauss refusing Jacobi's work, on 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 other Bourbaki members) as well as in myself. Respect for this rule was a guarantee of **probity**. I'm happy to be able to say, from everything that has come down to me to date, that this essential probity has remained intact in every member of the original Bourbaki group¹⁵ (26). I note that this was not the case for other mathematicians who were part of the Bourbaki group or milieu. It has not remained intact in my own person.

The ethics Dieudonné spoke to me about in down-to-earth terms are dead as ethics.

of a certain milieu. Or rather, this milieu \square I lui-même died at the same time as that probity which made it the soul. This probity has been preserved in certain isolated individuals, and it has reappeared or will reappear in others where it had deteriorated. Its appearance or disappearance in each of us is part of the crucial episodes of our spiritual adventure. But the stage on which this adventure takes place is profoundly transformed. A milieu that had welcomed me, that I had made my own, of which I was secretly proud, is no more. What made it worthwhile died within me, or at least was invaded and supplanted by forces of a different nature, long before the tacit ethics that governed it were openly disavowed in customs and professions of faith. If I've ever been surprised or offended, it's been out of wilful ignorance. What came back to me from this milieu that was once mine had a message to bring me about myself, which I've been happy to avoid until now.

p. 80

first rule remains a dead letter. In today's scientific world, men in positions of prestige and power have discretionary control over scientific information. In the milieu I knew, this control is no longer tempered by a consensus like the one Dieudonné spoke of, which perhaps never existed outside the restricted group whose spokesman he was. The scientific que in a position of power receives practically all the information it deems useful to receive (and often even more), and has the power, for much of this information, to prevent its publication while retaining the benefit of the information and rejecting it as "uninteresting", "more or less well known", "trivial", etc. I return to this situation in note (27).

¹⁵(26)

Bourbaki's "founding members" are Henri Cartan, Claude Chevalley, Jean Delsarte, Jean Dieudonné, André Weil. They are all still 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.

On re-reading the text, I was tempted to delete this passage, in which I may give the impression of issuing certificates of "probity" (or non-probity) that the interested parties have no use for, and that it is not my responsibility to issue. The reservations this passage may arouse are surely justified. I've kept it, however, out of concern for the authenticity of the testimony, and because it does convey my feelings, however misplaced they may be.

9. Harvest

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9.1. (33) The note - or the new ethics

Of course, a rule of deontology only takes on its meaning through an inner attitude, which is its soul. It cannot create the attitude of respect and fairness it seeks to express; at most, it can contribute to the permanence of such an attitude, in an environment where the rule enjoys general consensus. In the absence of an inner attitude, even if the rule is professed by the lips, it loses all meaning and value. No amount of exegesis, no matter how scrupulous or meticulous, can change that.

One of my friends and companions of yesteryear kindly explained to me recently that these days, alas, with the inordinate influx of mathematical production, "we" are absolutely obliged, whether we like it or not, to make a severe selection from the papers that are written and submitted for publication, to publish just a small part of them. He said this with an air of sincere regret, as if he himself were a bit of a victim of this inescapable fatality - a bit like the air he also had to say that he himself was one of the "six or seven people in France" who decide which articles will be published, and which not. Having become less loquacious with age, I confined myself to listening in silence. There was a lot to say on the subject, but I knew it would be wasted effort. One or two months later

I have learned, moreover, that this colleague refused a few years ago to recommend the publication of a certain note to the CRs' ^{whose} author as well as the theme (which I had suggested to him seven or eightp . 81 years) are close to my heart. The author had spent two years of his life developing this theme, which is admittedly not fashionable (although it still seems so topical to me). I think he did an excellent job (presented as a post-graduate thesis). I wasn't the "boss" of this young researcher, who happens to be brilliantly gifted (I don't know whether he'll continue to apply his gifts in mathematics, given the reception. . .), and he did his job.), and he did his work without any contact with me. But it's also true that there could be no doubt as to the origin of the theme developed; the poor guy was in a bad way, and he certainly didn't suspect a thing! This colleague put his foot down, at least, and I wouldn't have expected anything less from him: "I'm really sorry, but you understand... .". Two

years of work by a highly motivated novice researcher, against a three-page CR note - how much would it have cost the public purse? The absurdity of this enormous disproportion between one and the other is obvious. Surely this absurdity disappears, if we take the trouble to examine the underlying motivations. Only this colleague and former friend is in a position to fathom his own motivations, just as I am in a position to fathom mine. But without having to go too far, I'm well aware that it's not the inordinate influx of mathematical production you know, nor the public purse (or the patience of an imaginary "unknown reader" of the CRs) that it would have been a question of sparing...

This same draft note to the CRs had already had the honor of being submitted to another of the "six or seven people in France... .", who sent it back to the author's "boss", because this mathematics "didn't amuse him" (textual!). (The boss, disgusted but cautious, himself in a rather precarious position, preferred both times to crush rather than displease... .) Having had the opportunity to discuss the matter with this colleague and ex-student, I learned that he had taken the trouble to read the submitted note carefully and reflect on it (it must have brought back many memories for him. . .), and that he had found that some of the statements could have been presented in a more user-friendly way. Yet he didn't deign to waste his precious time submitting his comments to the person concerned: fifteen minutes from the illustrious man, against two years' work from an unknown young researcher! He was "amused" enough by the maths to seize the opportunity to reconnect with the world.

p. 82 situation studied in the note (which could not fail to arouse in him, as in myself, a rich web of diverse geometric associations), to assimilate the description given, then, without difficulty given his baggage and his means, to detect clumsiness or shortcomings. He hasn't wasted his time: his knowledge of a certain mathematical situation has been clarified and enriched, thanks to two years of conscientious work by a researcher taking his first steps; work that the Master would certainly have been able to do (in broad outline and without demonstrations) in a few days. Having acquired this knowledge, we remember who we are - the case is judged, two years of work by Monsieur Personne is fit for the dustbin... .

Some people don't feel a thing when that wind blows - but even today, it still takes my breath away. This was surely one of the desired effects in this case (given the exquisite form of the refusal), but certainly not the only one. In the same interview, this friend of yesteryear confided in me, with an air of modest pride, that he only agreed to submit a note to the CRs when "the results stated astonished him, or he didn't know how to demonstrate them"¹ (27). This is undoubtedly one of the reasons why he rarely publishes. If he applied to himself

¹(27) "Youth snobbery", or the defenders of purity

Ronnie Brown shared with me a reflection by J.H.C. Whitehead (of whom he was a pupil), speaking of the "snobbery of the young, who believe: that a theorem is trivial because its proof is trivial". Many of my old friends would do well to ponder these words. Today, this "snobbery" is by no means limited to young people, and I know more than one prestigious mathematician who routinely practices it. I'm particularly sensitive to it, because the best work I've done in mathematics (and elsewhere too. . .), the notions and structures I've introduced that seem to me to be the most fruitful, and the essential properties I've been able to extract from them through patient and persistent work, all fall under the label of "trivial". (None of these things would have stood much chance of being accepted for a CR grade these days, were the author not already a celebrity!) My lifelong ambition as a mathematician, or rather my passion and joy, has been constantly to **find the obvious things**, and this is my sole ambition also in the present work (including this introductory chapter. . .). The decisive thing is often already to see the **question** that had not been seen (whatever the answer may be, and whether it has already been found or not) or to come up with a statement (even if it is conjectural) that sums up and contains a situation that had not been seen or understood; if it is demonstrated, it doesn't matter whether the demonstration is trivial or not, which is entirely incidental, or even whether a hasty and provisional demonstration proves to be false. The snobbery of which Whitehead speaks is that of the jaded wine-lover who deigns to appreciate a wine only after he has ascertained that it has cost a great deal of money. More than once in recent years, taken back by my old passion, I've offered the best I had, only to see it rejected by that sufficiency. I've felt a pain that's still alive, a joy that's been disappointed - but that doesn't mean I'm homeless, and fortunately for me, I wasn't trying to fit in an article of my own.

The snobbery of which Whitehead speaks is an abuse of power and a dishonesty, not only an insensitivity or 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 free rein to assimilate and use, while blocking their publication on the pretext that they are "obvious" or

He knows everything, and it must be as difficult to surprise him as it is to find something demonstrable that he can't demonstrate. (This has only happened to me two or three times in the space of twenty years, and not even in the last ten or fifteen!) He's clearly proud of his "quality" criteria, which make him the champion of the highest standards in mathematics. I've seen his unfailing self-indulgence, and more than once his unbridled contempt for others, behind the appearances of smiling, good-natured modesty. I've also seen that he finds great satisfaction in it.

This colleague's case is the most extreme I've come across among representatives of the "new ethics". It is no less typical. Here again, both in the incident I have reported and in the profession of faith that 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 surely also many of his colleagues of less prestigious status (who will be content not to approach him to present a note to the CRs) no longer see it.

To see, you have to look, at the very least. When one takes the trouble to look at the motivations (and one's own first and foremost),[□] then the absurdities appear in full light, and they cease on p . 83 at the same time as being absurd, by delivering their humble and obvious meaning.

If in recent years I have often found it so distressing to be confronted with certain attitudes and, above all, certain behaviours, it's surely because I could discern in them, obscurely, a caricature taken to the extreme, to the point of grotesqueness or odiousness, of attitudes and behaviours that had once been mine and that were brought back to me by some of my former students or friends. More than once, I've been triggered by the old reflex to denounce, to fight "evil" that has been clearly pointed out - but if I've given in to it, here and there, it's been with divided conviction. Deep down, I know that to fight is to continue skating on the surface of things, to evade the issue. My role is not to denounce, or even to "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's only insofar as I know how to be faithful to this vocation, how to be in tune with myself. It's time to remind myself of this, to cut short those old mechanisms in me, which here would like to push me to plead a cause (of a certain dead ethic, let's say), or to convince (of the supposedly "absurd" character of this ethic which has replaced it, perhaps), rather than to **probe** to discover and know, or to **describe** as a means to probe. In writing the preceding two or three pages, with no more precise aim than to say a few words about the current attitudes that have replaced those of yesterday, I have felt continually on my guard towards myself, in the mood of one who would be prepared at any moment to cross out with a broad stroke everything he has just written and throw it in the garbage can! However, I'm going to keep what I've written, which isn't false but nevertheless creates a false situation, because I'm involving others more than I'm involving myself. I felt deep down that I wasn't learning anything by writing, and that's surely what created this unease in me. Decidedly, it's time to return to a more substantial form of reflection, one that instructs me rather than pretending to instruct or convince others² (28).

"trivial", and therefore "uninteresting". I'm 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. Yet from a practical point of view, the situation is the same for the researcher who pays the price, and the inner attitude that makes it possible doesn't seem much different to me either. It's simply more comfortable, since it's accompanied by the feeling of an infinite superiority over others, and the good conscience and intimate satisfaction of the person who poses as the intransigent defender of the intangible purity of mathematics.

²(28)

In writing the preceding pages, I was initially divided between a desire to "get it off my chest", and a concern to keep to myself.

9.2. (34) Silt and source

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It seems to me that, for the most part, I've come full circle in my relationships with other mathematicians of all ages and ranks, back when I was part of their world, the world of mathematicians; and in At the same time, and above all, because of the part I have played, through my own attitudes and behavior, in a certain spirit that I see there today, and which is certainly not new. In the course of this reflection - or journey, to put it more accurately - I came across four situations that struck me as typical of certain attitudes and ambiguities in myself, where spontaneous dispositions of benevolence and respect towards others were disrupted, if not totally swept away, by egotistical forces, and above all (in three of these cases at least) by **fatuity**. This fatuity was based above all on the supposed superiority conferred on me by a certain cerebral power, and the inordinate investment I made in my mathematical activity. It found confirmation and support in a general consensus that valued, almost without reservation, this cerebral power and this disproportionate investment.

It's the last of the situations examined, that of the "young misfit who stepped on my toes", which seems to me the most important of the four for my present purpose. The first three are typical of me, or of certain aspects of me, at a certain time (in a certain context too, it's true) - but, as I've had occasion to say over and over again, I don't consider them in any way typical of the milieu to which I belonged. Nor do I think they are typical of the current mathematical milieu in France, let's say - it's likely that the kind of chronic bewilderment that characterized my relationship with "l'ami infatigable", for example, is as uncommon nowadays as it must have been then. My attitude and behavior in the case of the "young misfit", on the other hand, is typical of what happens every day in the mathematical world, wherever you look. It's the attitude of benevolence and respect shown by the influential mathematician towards the young stranger that becomes the rare exception, when the said stranger is not his pupil (and yet. . .), or the pupil of a colleague of comparable status and recommended by him. This is undoubtedly what was coming back to me in the aftermath of my "awakening" in 1970, which had loosened mute tongues - but the first-hand accounts I heard at the time remained remote for me,

because they didn't directly concern me or my dearest friends. I was affected more than superficially from the moment (around 1976) when the echoes which I

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In some cases, the lack of benevolence, or even an ostentatious attitude of contempt, was reinforced, at the very least, if not aroused, by the mere fact that a young researcher was a friend of mine, or even an ex-student who had become important, and even more so when those who were the target of malice were people I knew well, students on more than one occasion (post-1970 students, needless to say!), whose fate therefore touched me. In some cases, moreover, there was no doubt that the lack of benevolence, or even an attitude of ostentatious contempt, was reinforced at the very least, if not aroused, by the mere fact that such a young researcher was my pupil, or that he was taking the risk (without necessarily being my pupil) of doing what my friends of yesteryear and other colleagues also readily called "Grothendieckeries". . .

The "young misfit" wrote to me again in the early '70s, asking me very courteously (although he was under no obligation to ask me anything at all!) if I didn't mind him publishing a demonstration he'd found for a theorem he'd been told I'd authored, and which had never been published. I remember that I replied in the same bad-tempered mood as before, without saying yes or no I think, and implying, without knowing his demonstration (that he was

discretion. So I'd been keeping to the point, which was surely the main reason for my discomfort, my feeling that "I wasn't learning anything". Since the lines noting this malaise were written, I've twice rewritten those pages that had left me feeling so discontented inside, getting more clearly involved and getting to the bottom of things. Along the way, I have indeed "learned something", and I also believe that I have managed to put my finger on something important that goes beyond the case in point and beyond myself.

I was of course ready to communicate it to myself, but I didn't care about it, busy as I was with my militant duties!), that it certainly wouldn't add anything to mine (although it would have helped, at the very least, if it had been written down in black and white and made available to the mathematical public, along with the statement itself!) This just goes to show the extent to which this famous "awakening" was still superficial, without any impact on certain behaviours rooted in fatuity and "meritocratic" attitudes, which I was surely denouncing at the same time in heartfelt articles in *Survivre et Vivre*, in public debates, etc.

This is a very concrete answer to a question I had left open earlier. I might as well admit this humble truth, that such attitudes of fatuity are by no means overcome "once and for all" in my person, and I doubt they ever will be if not at my death. If there has been a transformation, it is not through the disappearance of vanity, but through the appearance (or reappearance) of curiosity about myself and the true nature of certain attitudes, behaviours etc. ... in myself. It's a

through this curiosity that I have become somewhat sensitive to the manifestations of vanity within myself. This profoundly modifies a certain inner dynamic, and thereby modifies the effects of "vanity"; that is of this force that often pushes me to conceal or counterfeit my healthy and fine perception of reality, in order to aggrandize myself and put myself above others while pretending the opposite.

Perhaps such a reader will feel baffled, as I once did, by the apparent contradiction between the insidious and tenacious presence of **vanity** in my life as a mathematician (which he may also have glimpsed at times in his own), and what I call my **love**, or **passion**, for mathematics (which perhaps also echoes in his own experience of mathematics, or of some other person or thing). If he is baffled indeed, he has within him everything he needs to get back in touch (as I once did) with the reality of things themselves, which he can know first-hand, rather than spinning around 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 which water is not mud, all you have to do is go up to the spring, look and drink. To know the mud that isn't water, all you have to do is go up to the bank, dried by the sun and the wind, and detach a ball of grainy clay in your hand. Ambition and vanity can more or less regulate the proportion of one's life devoted to a particular passion, like mathematical passion, and can make it all-consuming, if the returns satisfy them. But the most devouring ambition is powerless on its own to discover or know the least of things - quite the contrary! In the moment of work, when little by little an understanding begins, takes shape, deepens; when in a confusion little by little an order appears, or when what seemed familiar suddenly takes on unusual, then disturbing aspects, until finally a contradiction bursts forth and upsets a vision of things that seemed unchanging - in such work, there is no trace of ambition, or vanity. What then leads the dance is something that comes from much further away than the "I" and its hunger for constant expansion (be it of "knowledge" and "knowing") - from much further away, surely, than our person or even our species.

This is the source, which is within each one of us.

9.3. (35) Mes passions

□ Three great passions have dominated my adult life, alongside other forces of a different nature. I ended up p. 87 recognize in these passions three expressions of the same deep-seated drive; three paths taken by the drive for knowledge in me, among the infinite number of paths open to it in our infinite world.

The first to manifest itself in my life was my passion for mathematics. At the age of seventeen, just out of high school, I let go of a simple inclination and turned it into a passion, which directed the course of my life for the next twenty-five years. I "knew" mathematics long before I knew the first woman (apart from the one I knew from birth), and today in my middle age, I see that it is still not consumed. She doesn't rule my life any more than I pretend to. Sometimes it slumbers, sometimes to the point where I think it's extinguished, only to reappear unannounced, as fiery as ever. It no longer devours my life as it once did, when I gave it my life to devour. She continues to leave a deep imprint on my life, like the imprint in a lover of the woman he loves.

The second passion in my life was the quest for a woman. This passion often presented itself to me in the guise of the quest for a companion. I wasn't able to distinguish one from the other until the latter came to an end, when I knew that what I was pursuing was nowhere to be found, or that I was carrying it within myself. My passion for women didn't really unfold until after my mother's death (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 more children were born. My attachment to my children was originally an indissoluble part of my attachment to my mother, a part of the power emanating from the woman who drew me to her. It's one of the fruits of this passion for love.

I didn't experience the presence of these two passions within me as a conflict, either in the early days or later on. I must have obscurely sensed the profound identity of the two, which became clear to me much later, after the appearance in my life of the third. Yet the effects of both passions on my life were not the same.

p. 88 could only be very different. The love of mathematics drew me into a certain world, that of mathematical objects, which surely has its own "reality" of its own, but which is not the world in which life unfolds of men. The intimate knowledge of mathematical things taught me nothing about myself, let alone about others - the impulse of discovery towards mathematics could only distance me from myself and from others. There may sometimes be communion between two or more in this same impulse, but this is communion on a superficial level, which in fact distances each of us from ourselves and from others. This is why my passion for mathematics has not been a maturing force in my life, and I doubt that such a passion can foster maturation in anyone³ (29). If I gave this passion such a disproportionate place in my life for a long time, it was surely also precisely because it enabled me to escape the knowledge of conflict and the knowledge of myself.

The sex drive, on the other hand, whether we like it or not, launches us straight into the encounter with the other, and straight into the knot of conflict in ourselves as well as in the other! The quest for "companionship" in my life was the quest for conflict-free bliss - not the drive for knowledge, the drive for sex, as I liked to believe, but an endless flight from the knowledge of 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 anxiety that accompanies it like its inseparable shadow... .) Fortunately, no matter how much we run away from conflict, sex quickly brings us back to it!

One day I gave up trying to deny the teaching that conflict had stubbornly brought me, through the women I loved or had loved, and through the children born of these loves. When I finally began to

³(29) **Fear of playing & The two brothers**

I'm talking here about an intense, long-term investment in mathematics, or in some other wholly intellectual activity. On the other hand, the unfolding of such a passion - which can be a way of reacquainting ourselves with a forgotten force within us, and an opportunity to measure ourselves against a reluctant substance and, in the process, renew and enrich our sense of identity with something truly personal to us - such an unfolding may well be an important stage in an inner journey, in a maturing.

listening and learning, and for years afterwards, it turned out that everything I learned, I learned from the women I had loved or loved⁴ (30). Until 1976, at the age of forty-eight, it was the quest for women that was the only great maturing force in my life. If this maturation only took place in the years that followed, i.e. over the last seven years, it's because I protected myself from it (as I had learned to do from my parents and the people around me) by every possible means.

available to me. The most effective of these means was my investment in my mathematical passion.

The day the third great passion appeared in my life - a certain night in October 1976 p. 89

- the great fear of learning has vanished. It's also the fear of simple reality, of humble truths about myself first and foremost, or about people I care about. Strangely enough, I had never perceived this fear in myself before that night, at the age of forty-eight. I discovered it the very night this new passion, this new manifestation of the passion to know, appeared. It took the place, so to speak, of fear, finally recognized. For years, I had seen this fear clearly in others, but by some strange blindness, I couldn't see it in myself. The fear of seeing prevented me from seeing this very fear of seeing! I was strongly attached, like everyone else, to a certain image of myself, which for the most part hadn't changed since my childhood. The night I'm talking about is also the one when, for the first time, that old image collapsed. Other images like it followed, holding on for a few days or months, or 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's curiosity, there's no room for fear. When I'm curious about myself, there's no more fear of what I'm going to find than when I want to know the final word of a mathematical situation: there's a joyful expectation, impatient at times and yet obstinate, ready to welcome whatever comes its way, foreseen or unforeseen - a passionate attention on the lookout for the unequivocal signs that make it possible to recognize the true in the initial confusion of the false, the half-true and the maybe.

In curiosity about oneself, there's love, untroubled by any fear that what we're looking at might not be what we'd like to see. And to tell the truth, love for myself had silently blossomed in the months leading up to this night, which is also the night when this love took on an active, enterprising form, ruthlessly shaking up costumes and sets! As I said, other costumes and sets soon reappeared as if by magic, to be jostled in their turn, without invective or gnashing of teeth... .

The way this new passion has manifested itself in my life over the last seven years has led me to appear to seem like the moving up-and-down of waves following one another, like the breaths of a ^{vas}te and peaceful
 res

is is not the place to try to trace its sinuous, shifting line, or perhaps that, in counterpoint, of the manifestations of mathematical passion. I've given up trying to regulate the course of one or the other - it's rather this double movement of one and the other that today regulates the course of my life - or better said, **is** its course.
 Th .90

In the months that had already preceded the appearance of the new passion - months of gestation and plenitude - the woman's quest began to change its face. It began to separate itself from the anxiety with which it had been imbued, like a "breath" that had freed itself from the oppression that had weighed it down, and regained its amplitude and rhythm. Or like a fire that had been smouldering, half-stifled for lack of an escape, and which, under a breath of fresh air, would suddenly spread out in crackling, agile flames.

⁴(30)

In recent years, my children have taken over the task of teaching a sometimes reluctant pupil about the mysteries of human existence. ...

and lively!

The fire burned to satiation. A hunger that seemed unquenchable was satisfied. For the past two or three years, it seems that this quest has been consumed without a trace of ashes, leaving the field open to the song and counter-song of two passions. One, the passion of my youth, served for thirty years to separate me from a disowned childhood. The other, the passion of my middle age, led me to rediscover both the child and my childhood.

9.4. (36) Desire and meditation

The night I mentioned, when a new passion took the place of an old fear that had vanished forever, was also the night I discovered meditation. It was the night of my first "meditation", which came about under the pressure of a pressing, urgent need, after I had been overwhelmed by waves of anguish in the preceding days. Like all anguish, perhaps, this was a "take-off anguish", insistently signalling the take-off between a humble and obvious reality about myself, and an image of myself that was forty years old and never questioned by me. Surely there must have been a great thirst for knowledge, alongside considerable escapist forces, and a desire to escape anguish, to be at peace as before. So there was intense work, which continued for a few hours until it came to an end, without me yet knowing the meaning of what was happening, let alone where I was going. In the course of

this work, the red herrings have been recognized one after the other; or to put it better, it's this work that has made

p. 91

□ appear one by one these red herrings, each under the guise of an intimate conviction that I was finally taking the

I took the trouble to write it down in black and white, as if to get a better grasp of it, whereas until then it had remained in a blur. I was quite happy to write it down, without the slightest suspicion, it must surely have seduced me - in the mood of someone who doubts nothing, and for whom the mere fact of having written down an informal conviction in black and white was the irrefutable sign of its authenticity, the proof that it was well-founded. If it hadn't been for my indiscreet, not to say indecent, desire to know, I would have stopped every time at this "happy ending", and it was with this happy ending that the stage ended. And then, woe is me! I'd get the whim, God knows how and why, to take a closer look at what I'd just written to my complete satisfaction: it was there in black and white, all I had to do was reread it! And as I reread it carefully, naively, I sensed that something was a little off, that it wasn't quite so clear! Then, taking the trouble to look a little more closely, it became clear that it wasn't that at all, that it was all bogus, in other words, that I'd just been led astray! Each time, this partial discovery came as a famous surprise: "Wow, that's a good one", a joyful surprise that rekindled my thinking with a surge of new energy. We're going to get to the bottom of this, and I'm sure it's going to come out no later than now, so let's keep the momentum going! We'll take stock, take stock... and here we go again, with all the trappings of "the end of the story", we just have to believe it must be it this time, we'll write it down anyway, out of good conscience, and it's a pleasure even to write down such judicious and well-felt things, you'd really have to be wrong-headed not to agree, such obvious good faith, you can't do better than that, it's perfect as it is!

This was the new end of the stage, the new happy ending, on which I would have paused contentedly, if it hadn't been for the naughty little boy who once again got into mischief and, incorrigible as ever, decided to stick his nose into this last "fin mot" and happy ending. There was no stopping him, and here we go again!

And so, for four hours, the stages followed one □to another, like an onion whose I would have peeled off layer after layer (that's the image that came to me at the end of that night), to get to the **heart of the matter** - to the simple, obvious truth, a truth that was staring me in the face, and yet which I had managed for days and weeks (and my whole life, in fact) to conceal 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 instant that I had touched the crux of anguish. The anguish of the last five days was well and truly resolved, dissolved, transformed into the knowledge that had just formed within me. The anguish had not only disappeared from my sight, as it had throughout the meditation, and several times during the previous five days too; 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 obvious, 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 silly little sentence of three or four words. This formulation had been the final step in the work that had just been carried out, which remained ephemeral, reversible as long as this final step had not been taken. Throughout this work, the careful, even meticulous formulation of the thoughts that formed, the ideas that presented themselves, had been an essential part of this work, each new departure of which was a reflection on the stage I had just gone through, which was known to me through the written testimony I had just given (with no possibility of retracting 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 even more precious than the humble truth of the last few days. This thing was the power in me, for as little as I□s interested, to know. the final word on what's going on inside me, on any situation of division or conflict - and thus the ability to resolve entirely, by my own means, any conflict inside me of which I may have become aware. The resolution is not the result of some **grace**, as I had tended to believe in previous years, but of intense, obstinate and meticulous **work**, making use of my ordinary faculties. If there is such a thing as "grace", it is not in the sudden and definitive disappearance of a conflict within us, or in the appearance of an understanding of the conflict that would come to us ready-made (like the chickens in the land of Cocagne!) - but it is in the presence or appearance of this desire to know⁵ (31). It was this desire that had guided me to the heart of the conflict in the space of a few hours - just as the desire to love leads us unfailingly to find the path that leads to the innermost depths of the woman we love.

Whether we're talking about self-discovery or mathematics, in the absence of desire, all so-called "work" is nothing but a mockery, leading nowhere. At its best, it keeps the person who indulges in it "beating around the bush" endlessly - the contents of the bush are reserved for those who are hungry enough to eat! As with all

⁵(31)

I'm thinking here of the "yang" form of the desire to know - that which probes, discovers, names what appears... . It is having been **named** that makes the knowledge that appears irreversible, ineffaceable (even if it is subsequently buried, forgotten, ceases to be active. . .). The "yin", "feminine" form of the desire for knowledge is in an openness, a receptivity, in a silent welcoming of knowledge appearing in deeper layers of our being, where thought has no access. The appearance of such openness, and of a sudden knowledge that for a time erases all traces of conflict, comes as a grace once again, touching deeply even though its visible effect may be ephemeral. I suspect, however, that this wordless knowledge that comes to us in this way, at certain rare moments in our lives, is just as ineffaceable, and its action continues even beyond the memory we may have of it.

When it comes to the desire to know myself, my knowledge of myself and the situations I'm involved in remains inert. When it comes to the desire for self-knowledge, then my knowledge of myself and the situations in which I'm involved remains inert, and I act not with full knowledge of the facts, but at the whim of simple inveterate mechanisms, with all the consequences that implies - a bit like a car being driven by a computer, not by a person. But whether it's meditation or mathematics, I wouldn't dream of pretending to "work" when there's no desire, when there's no hunger. That's why I've never meditated for even a few hours, or done maths for even a few hours⁶ (32), without learning something; and more often than not (not to say always) something **unforeseen** and unpredictable. This has nothing to do with faculties that I have that others don't, but only comes from the fact that I don't pretend to work without really wanting to. (It's the strength of this "desire" that alone also creates the **requirement** I've talked about elsewhere, which means that in work we're not satisfied with a little more, but with a lot more.

p. 94 is satisfied only after having gone to the end of an understanding, however humble). Where discovery is concerned, work without desire is nonsense **and □ simagre**, just as much as making love without desire. To say true, I haven't experienced the temptation to waste my energy pretending to do something I have no desire to do, when there are so many exciting things to do, if only to sleep (and dream. . .) when it's time to sleep.

It was on this very night, I believe, that I understood that the **desire** to know and the **power** to know and discover are one and the same thing. If we trust it and follow it, it is desire that leads us to the heart of the things we wish to know. And it's desire that makes us find, without even having to look for it, the most efficient method of knowing these things, and the one that suits us best. In the case of mathematics, it would seem that writing has always been an indispensable means, regardless of who is "doing math": doing math is above all **writing**⁷ (33). The same is undoubtedly true of any work of discovery in which the intellect plays a major role. But surely this is not necessarily the case with "meditation", by which I mean the work of self-discovery. In my case, however, and up to now, writing has been an effective and indispensable means of meditation. As in mathematical work, it is the material support that fixes the

⁶(32) **A hundred irons in the fire, or: nothing is worth drying!**

When I was still doing Functional Analysis, i.e. up until 1954, I would sometimes persist endlessly on a question that I couldn't solve, even though I had no more ideas and was content to go round in circles with old ideas that obviously didn't "bite" any more. This was the case, in any case, for a whole year, notably for the "approximation problem" in topological vector spaces, which would only be solved some twenty years later by methods of a totally different order, which could only have escaped me at this point. I was driven then, not by desire, but by stubbornness, and by an ignorance of what was going on inside me. It was a painful year - the only time in my life when doing math had become painful for me! It took that experience to make me realize that there's no point in "skipping" - that once a piece of work has reached a standstill, and as soon as you've realized it, you have to move on to something else - even if it means coming back to the question at hand at a more propitious moment. This moment almost always comes quickly - the question matures, without me even pretending to touch it, simply by virtue of having worked enthusiastically on questions that may seem to have nothing to do with this one. I'm convinced that if I persisted, I wouldn't get anywhere even in ten years! It was from 1954 onwards that I got into the habit in maths of always having many irons in the fire at the same time. I only work on one of them at a time, but by a kind of miracle that constantly renews itself, the work I do on one also benefits all the others, which are waiting for their time. The same has been true, without any deliberate intention on my part, from my first contact with meditation - the number of burning questions to be examined has increased day by day, as reflection has continued. ...

⁷(33) **"Youth snobbery", or the defenders of purity**

This does not mean that moments when paper (or the blackboard, which is a variant of it!) is absent are not important in mathematical work. This is especially true in the "sensitive moments" when a new intuition has just appeared, when it's a question of "getting to know" it in a more global, more intuitive way than by "working on parts", which this informal stage of reflection prepares. In my case, this kind of reflection takes place mostly in bed or out for a walk, and it seems to me that it accounts for a relatively modest proportion of total work time. The same observations apply to meditation work as I've practised it up to now.

It gives us a tangible record of the work we've just done, to which we can refer at any time. Writing also gives us a tangible trace of the work we've just done, to which we can refer at any time. In long-term meditation, it's often useful to be able to refer back to written traces that bear witness to a particular moment of meditation in the days before, or even years before.

Thought, and its meticulous formulation, therefore play an important role in meditation as I've practiced it up to now. It is not, however, limited to the work of thought alone. Thought alone is powerless to grasp life. It is effective above all in detecting contradictions, often enormous to the point of grotesqueness, in our vision of ourselves and our relationships with others; but it is often not enough to grasp the meaning of these contradictions. For those driven by the desire to know, thought is an often useful and effective, even indispensable, tool, as long as we remain aware of its limitations, which are quite obvious in meditation (and more hidden in mathematical work). It is important that thought knows how to fade away and disappear on tiptoe at sensitive moments when something else appears - perhaps in the form of a sudden, profound emotion, while the hand perhaps continues to run over the paper to give it a clumsy, stammering expression at the same time. ...

9.5. (37) Wonder

This retrospective on the discovery of meditation came here entirely unexpectedly, almost out of the blue - it wasn't at all what I set out to examine when I began. I wanted to talk about **wonder**. This night, so rich in so many things, was also rich in wonder at these things. Already in the course of the work, there was a kind of incredulous wonder at each new red herring uncovered, like a crude costume sewn from coarse white thread that I had been willing - it was scarcely believable! to take for real the most seriously in the world! Many times since then, in the years that followed, I've rediscovered the same sense of wonder as on that first night of meditation, at the enormity of the facts I was discovering, and the crudeness of the subterfuges that had made me ignore them until then. It was through its burlesque sides that I began to discover the unsuspected world I carry within me, a world that over the days, months and years has revealed itself to be prodigiously rich. On that first night, however, I had more to marvel at than vaudeville episodes. It was the night when, for the first time, I reconnected with a forgotten power that lay dormant within me, the nature of which still escaped me, except that it is a power, and which is at my disposal at any moment.

And the preceding months had already been rich in a mute wonder of something I'd been carrying inside me, probably for as long as I could remember, with which I'd only just made contact again. I felt this thing not as a power, but rather as a secret sweetness, as a beauty that was both peaceful and unsettling. Later, in the exultation of discovering my long-ignored power, I forgot those months of silent gestation, to which only a few scattered poems bore witness - love poems, that is to say, poems of love. perhaps would have detonated most often in the midst of my meditation notes. ...

It was only years later that I remembered those ^{times} d'émervillement en la beauté p. 96 of the world and the one I felt resting inside me. I knew then that this gentleness and beauty I had felt within me, and this power I discovered shortly afterwards that profoundly changed my life, were two inseparable aspects of one and the same thing.

And now I can also see that the gentle, collected, silent aspect of this multiple thing that is creati-

vity in us, spontaneously expresses itself in wonder. And it's also in the wonder of an indi- target beauty revealed by the beloved, that man knows the beloved woman and she knows him. When wonder in the thing explored or in the being loved is absent, our embrace with the world is mutilated of the best that is in it - it is mutilated of what makes it a blessing for oneself and for the world. The embrace that is not wonder is a powerless embrace, a mere reproduction of a gesture of possession. It is powerless to engender anything other than yet more reproductions, bigger or fatter or thicker perhaps, who cares, never a renewal⁸ (34). It's when we're children and ready to marvel at the beauty of things in the world and in ourselves, that we're also ready to renew ourselves, and ready as supple, docile instruments in the hands of the Worker, so that by His hands and through us, beings and things may perhaps be renewed.

I well remember that, in the informal group of friends who, for me, represented the mathematical milieu in the late forties and beyond - a milieu that was sometimes noisy and self-assured, and where a somewhat peremptory tone was not uncommon (but without any hint of smugness) - there was always room for wonder. The one in whom wonder was most visible was God-given. Whether he was giving a talk, or simply listening, when the crucial moment came and a sudden breakaway opened up, Dieudonné would be seen beaming and ecstatic. It was pure, infectious, irresistible wonder - where all traces of "me" had disappeared. As I recall him now, I realize that this wonder itself was a power, that it exerted an immediate action all around him, like a radiance of which he was the source. If I've ever seen a mathematician use a powerful and elementary "power of encouragement", it's him! I've never thought about it before, but I remember now that it was also in this way that he had already welcomed

⁸(34) **The powerless embrace**

The word "embrace" is by no means a mere metaphor for me, and the common language here reflects a profound identity. It could be said, not without reason, that it's not true then that 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. Of course, the child born of such an embrace cannot fail to bear the mark of this embrace, which will be part of the "package" he or she receives and must assume; but this does not prevent a new being from being conceived and born. that there has been **creation**, a sign of **power**. And it's also true that it happens that a mathematician I've seen, filled with sufficiency, finds and proves beautiful theorems, signs of an embrace that has not lacked force! But it's also true that if a mathematician's life is suffocated by his sufficiency (as was to some extent the case in my own life, at one time), the fruits of his embraces with mathematics are a blessing to him and to no-one else. And the same can be said of the father and mother of a child born of rape. When I speak of an "embrace without force", I mean above all the powerlessness to engender **renewal** in the person who believes he is creating, when in fact he is only creating a **product**, something external to him, with no deep resonance within himself; a product which, far from liberating him, creating harmony within him, binds him more closely to the fatuity within him of which he is a prisoner, which ceaselessly pushes him to produce and reproduce. This is a form of impotence at a deep level, behind the appearance of "creativity" which is basically just unbridled **productivity**.

I've also had ample opportunity to realize that **complacency**, the inability to marvel, is in the nature of a true blindness, a blockage of natural sensitivity and flair; a blockage that, if not total and permanent, is at least manifest in certain situations. It's a state in which a prestigious mathematician sometimes reveals himself, in the very things in which he excels, to be as stupid as the most stubborn of schoolchildren! On other occasions, he will perform prodigious feats of technical virtuosity. I doubt, however, that he is yet in a position to discover the simple and obvious things that have the power to renew a discipline or a science. They are far too far below him for him to deign to see them! To see what no one deigns to see, he needs an innocence that he has lost, or banished. . . It's no coincidence, surely, with the prodigious increase in mathematical production over the last twenty years, and the bewildering profusion of new results that overwhelm the mathematician who simply wants to "keep up to date", that (as far as I can judge from the echoes that reach me here and there) there has hardly been any real **renewal**, any far-reaching transformation (and not just by accumulation) of any of the major themes of thought with which I have been even remotely 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 and such mathematicians of such and such a "level". A million mathematician-days is powerless to give birth to something as childlike as the zero, which has renewed our perception of number. Only innocence has this power, a visible sign of which is wonder. ...

my very first results in Nancy'—resolving questions he had posed with Schwartz (on spaces (F) and (LF)). The results were modest, nothing great or extraordinary, and nothing to marvel at. Since then, I've seen things of a completely different scale dismissed by the unapologetic disdain of colleagues who think they're great mathematicians. Dieudonné was in no way encumbered by such pretensions, justified or not. There was nothing of the sort that prevented him from being delighted even by the little things.

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There is a **generosity** in this capacity for delight, which is a benefit for those who are willing to let it blossom within themselves, as well as for those around them. This benefit is exercised without the intention of pleasing anyone. It's as simple as the fragrance of a flower, or the warmth of the sun.

Of all the mathematicians I've known, it was in Dieudonné that this "gift" appeared to me in the most dazzling, communicative and perhaps even active way, I can't say⁹ (35). But in none of the mathematician friends I've enjoyed making friends with was this gift absent. It found occasion to manifest itself, perhaps in a more restrained way, at any time. It manifested itself every time I came to one of them to share something I'd just found and which had enchanted me.

If I've experienced frustration and sorrow in my life as a mathematician, it's above all in not finding, in some of those I've loved, that generosity I'd known in them, that sensitivity to the beauty of things, "small" or "great"; as if what had made the life of their being quiver had died out without a trace, smothered by the smugness of someone for whom the world is no longer beautiful enough for him to deign to rejoice in it.

Of course, there has also been that other pain, of seeing one of my friends of yesteryear treat another of my friends of today with condescension or contempt. But this pain is inflicted by the same closure, deep down. He who is open to the beauty of a thing, however humble, when he has felt that beauty, cannot help but also feel a respect for the one who conceived 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 in us,

cannot be condescension or disdain— for a woman, in a moment when we feel her beauty, and the power within her, the sign of which is this beauty.

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9.6. (38) Return impulse and renewal

The rapture that radiated from time to time in Dieudonné's person must have touched something deep and strong within me, so that the memory comes back to me now with such intensity, such freshness, as if I'd just witnessed it again just now. (Although it's been almost fifteen years since I've had the opportunity to meet Dieudonné, except once or twice on the spur of the moment). Of course, I didn't pay any particular attention to it on a conscious level - it was just a slightly touching, at times almost comical, peculiarity of my colleague's expansive personality. What was important to me, however, was to have found in him the perfect collaborator, a dream collaborator I might say, to lay down in black and white, with meticulous care, loving care, what was to serve as the foundation for the vast perspectives I saw opening up before me. It is only at this moment when I evoke both of them that

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This "gift" is nobody's privilege; we're all born with it. When it seems absent in me, it's because I've driven it out myself, and it's up to me to welcome it back. In me or in such-and-such a person, this "gift" expresses itself in a different way than in another, less communicative, less irresistible perhaps, but it's no less present, and I couldn't say if it's less active.

the link suddenly appears to me: what made Dieudonné the ideal servant for a great task, whether within Bourbaki or in our collaboration on another great foundation project, was his **generosity**, the absence of any trace of vanity, in his work and in the choice of his major investments. I have constantly seen him take a back seat to the tasks he has made himself the servant of, lavishing his inexhaustible energy on them without seeking any return. There's no doubt that, without looking for anything in return, he found in his work and in the very generosity he put into it a fulfillment and blossoming that all those who knew him must have felt.

The rapture of discovery that I have so often felt radiating from her person, is immediately associated in me with a similar rapture, which I happened to witness in a very young child. Two memories rush through my mind - both of which take me back to my very young daughter. In the first picture, she must be a few months old, just starting to crawl. She must have dragged herself from the patch of grass where she'd been sitting to a gravel path. She discovered the little gravels in silent ecstasy - and in action, grabbing them with her hands and putting them in her mouth!

p. 99 In the other picture she must have been a year or two old, someone had just thrown pellets into a goldfish bowl. □ The fish swam towards them, mouths wide and mouths wide. open, to swallow the tiny yellow crumbs suspended in the air as they slowly sank into the water. The little girl had never realized before that fish eat the way we do. It was like a sudden dazzle, expressed in a cry of pure delight: "Look, Mommy, **they're eating!** There was indeed much to marvel at - she had just discovered, in a sudden flash, a great mystery: that of our kinship with all other living beings. ...

There's a communicative force in the delight of a little child that eludes words, a force that radiates from him and acts on us, even though we do our best, more often than not, to evade it. In moments of inner silence, we feel this force present in the child at all times. Only at certain moments is its action stronger than at others. It's in newborn babies, in the first days and months of life, that this kind of "force field" around the child is most powerful. More often than not, it remains sensitive throughout childhood, unravelling over the years until adolescence, when there often seems to be no trace left. Yet it can be found radiating around people of all ages, at privileged moments for some, or for others as a kind of breath or halo that surrounds them at all hours. I had the great good fortune to know such a person in my childhood, a man who has now passed away..,

I'm also thinking of that other force, or power, that we sometimes feel radiating from a woman, especially at times when she's fulfilled in her body, in communion with it. The word that often comes to mind is "beauty", which evokes one aspect of it. It's a beauty that has nothing to do with canons of beauty or so-called "perfection"; it's not the privilege of youth or maturity. Rather, it's the sign of a profound accord within the person. And yet, it manifests itself in this radiance, a sign of power. It's a force that draws us back to the center from which it emanates - or rather, it calls forth within us a profound impulse to **return** to the body of Mother Woman from which we emerged, at the dawn of

our lives. Its action is sometimes irresistibly powerful, overwhelming when it emanates from the woman aimée. But for those who don't deliberately close themselves off to it, elle is perceptible in every woman who allows her inner self to blossom.

that beauty, that deep harmony.

p. 100 The force that radiates from the child is closely related to the force that emanates from the woman who loves herself within her body. The one is constantly born of the other, just as the child is constantly born of the Mother. But the nature of the force of childhood is not one of attraction, nor is it one of repulsion. Humble action

that this force exerts on those who do not shrink from it, is an action of **renewal**.

9.7. (39) Belle de nuit, belle de jour (or: the stables of Augias)

The memory of wonder in one of my children dates back to the very late fifties and early sixties. If I don't have a similar recollection for other children who were born later, it may be that my own capacity for wonder had dulled, that I had become too distant to commune in the delight of one of my children, or to witness it at all.

I've never yet thought of tracking the vicissitudes of this ability in my life, from childhood to the present day. Surely there would be a common thread here, a "detector" of great sensitivity. If I've never thought of following this thread, it's surely because this ability is of such a humble nature, almost insignificant in appearance, that it would hardly have occurred to me to pay any particular attention to it, absorbed as I was in discovering and probing what I used to call "the great forces" in my life (which continue to manifest themselves even today). And yet, this ability to look so humble provides a sign, of all signs, of the presence or absence of the rarest and most precious "force" within us... .

Throughout my adult life, I was never entirely cut off from this force. However arid my life may have become, I found in love the wonder of the child, the rapture of discovery. Through many deserts, the passion of love remained the living, vigorous link with something I'd left behind, an umbilical cord that silently continued to nourish me with warm, generous blood. And for a long time, too, wonder in the woman I loved was inseparable from wonder in the new beings she gave birth to - those brand-new, infinitely delicate, intensely alive beings who and inherited its power.

□ But my purpose here is above all to follow the vicissitudes of this "force of innocence" through my life as a mathematician, when I was part of the "world of mathematicians", from 1948 to 1970. Surely, wonder has never permeated my mathematical passion to the extent that it does the passion of love. Strangely enough, if I try to recall a particular moment of rapture or wonder in my mathematical work, I can't find any! My approach to mathematics, ever since the age of seventeen when I first became deeply involved in it, has been to set myself big **tasks**. Right from the start, they were always tasks of "tidying up", of cleaning up. I saw an apparent chaos, a confusion of heterogeneous things and sometimes imponderable mists, which obviously had to have a common essence and conceal an order, a hidden harmony that had to be brought out through patient, meticulous and often lengthy work. It was often mop and broom work, for the big jobs that already absorbed a considerable amount of energy, before coming to the finishing touches with a feather duster, which I was less passionate about, but which also had their charm and, in any case, an obvious usefulness. There was an intense satisfaction in the day-to-day work, in seeing little by little the order we had guessed at emerge, which always turned out to be more delicate, with a richer texture than what had been glimpsed and guessed at. The work was constantly rich in unforeseen episodes, most often arising from the examination of what might have seemed an infinitesimal detail that had been neglected until then. Often, the fine-tuning of such a "detail" threw unexpected light on work done years before. Sometimes, too, it led to new intuitions, the deepening of which became the object of another "big task".

So, in my mathematical work (apart from the "difficult year" around 1954 that I've already mentioned), there was constant suspense, and my attention was constantly held in suspense. Fidelity to my "tasks", moreover, prevented me from escaping too far, and I gnawed at my brakes in an impatience to get on with my work.

I'd come to the end of them all, and set off into the unknown, the real unknown - even though the scale of these tasks had already become such that even with the help of the good people who'd eventually come to the rescue, the rest of my days wouldn't have been enough to see them through!

p. 102 My main guide in my work was the constant search for a perfect coherence, a complete harmony that I guessed behind the □ turbulent surface of things, and that I patiently strove to draw out. never tired of it. It was surely an old-fashioned sense of "beauty" that was my flair and my only compass. My greatest joy was not so much to contemplate it when it appeared in full light, as to see it gradually emerge from the cloak of shadow and mist in which it was constantly hiding. Of course, I didn't stop until I'd succeeded in bringing it into the clearest light of day. Sometimes, then, I experienced the fullness of contemplation, when all audible sounds contribute to a single, vast harmony. But even more often, what was brought into the light of day immediately became the motivation and the means for a new plunge into the mists, in pursuit of a new incarnation of the One who remained forever mysterious, unknown - constantly calling out to me, to know Her again... .

Dieudonné's pleasure and delight, it seems to me, was above all in seeing the beauty of things manifested in full light, and my joy was above all in pursuing it in the obscure recesses of mists and night. This is perhaps the profound difference between Dieudonné's and my approach to mathematics. The sense of the beauty of things, for a long time at least, must have been no less strong in me than in Dieudonné, although it may have dulled during the sixties, under the action of a fatuity. But it would seem that my perception of beauty, which manifested itself in Dieudonné's sense of wonder, took on different forms in me: less contemplative, more enterprising, less manifest in the emotion I felt and expressed. If this is the case, then my aim is to follow the vicissitudes of my openness to the beauty of mathematical things, rather than the mysterious "gift of wonder".

9.8. (40) Mathematics sport

It's quite clear that openness to the beauty of mathematical things never entirely disappeared in me, even in the sixties until 1970, when fatuity gradually took a growing place in my relationship to mathematics and to other mathematicians. Without a modicum of openness to the beauty of things, I would have been incapable of "functioning" as a mathematician, even at my best.

p. 103 modest - and I doubt that anyone can do any useful work in mathematics, if this sense of beauty doesn't remain alive in them, even a little. It is not so much, it seems to me, a pretended "brain power" which 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 most profound, the most fruitful work is also that which attests to the most delicate sensitivity for apprehending the hidden beauty of things¹⁰ (36).

If that's the case, then I must believe that this sensitivity must have stayed with me right to the end, at times all the way through to the end.

¹⁰(36)

Such a delicate sensitivity to beauty seems to me intimately linked to something I've had occasion to refer to as "exigency" (with regard to oneself) or "rigor" (in the full sense of the word), 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 that thing.

at least, since it was at the end of the sixties¹¹ that I began to catch a glimpse of the most hidden and mysterious mathematical thing I had ever discovered - the thing I called "motif". It is also the thing that has held the greatest fascination for me in my life as a mathematician (apart from certain reflections in recent years, which are intimately linked to the reality of patterns). There's no doubt that if my life hadn't suddenly taken an entirely unexpected course, taking me far away from the serene world of mathematical things, I'd have ended up following the call of this powerful fascination, leaving behind the "tasks" that had until then held me captive!

Perhaps I can say that, in the solitude of my work room, my sense of beauty remained unchanged until my first "awakening" in 1970, unaffected by the fatuity that so often marked my relations with my fellow creatures? A certain "flair" must even have been refined over the years, through daily, intimate contact with mathematical things. The intimate knowledge we can have of things, which sometimes enables us to apprehend beyond what we know in the moment and penetrate further into knowledge - this knowledge or maturity, and this "flair" which is its most visible sign, is closely related to openness to the beauty and truth of things. It fosters and stimulates such openness, and is the sum and fruit of all the moments of openness, all the "moments of truth" that have gone before.

What remains for me to examine, then, is the extent to which a spontaneous sensitivity to beauty has been disturbed to a greater or lesser degree, at times when it had had the opportunity to manifest itself in my relationship with this or that colleague.

□ That which memory delivers to me on this subject is not condensed into a tangible, precise fact, which I could here

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The memory here again is limited to a kind of fog. Here again, memory is limited to a kind of fog, which nevertheless gives me an overall impression that I must try to pin down. It's the impression left on me by a certain **inner attitude**, which must have become like second nature, and which manifested itself every time I received mathematical information about something that was more or less "up my alley". To tell the truth, in some relatively innocuous way, this attitude must have always been mine, it's part of a certain temperament, and I've had occasion to touch on it in passing. It's about this reflex, of first agreeing to take cognizance 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 what is known the statement becomes transparent, obvious. This often leads me to reformulate the statement in a more or less profound way, in the sense of greater generality or greater precision, often both at the same time. It's only when I can't "fit" the statement in terms of **my** experience and images, that I'm ready (almost unwillingly at times!) to listen to (or read. . .) the ins and outs that sometimes give "the" reason for the thing, or at least a demonstration, understood or not.

This is a peculiarity of my approach to mathematics, which, it seems to me, set me apart from all the other Bourbaki members when I was part of the group, and made it virtually impossible for me to fit into a group effort like them. This peculiarity must also have been a handicap in my teaching activity, a handicap that must have been felt by all my students until today, when (with the help of age) it has softened somewhat.

This trait in me is surely already indicative of a lack of openness. It implies only a partial openness, ready to welcome only what "comes to the point", or at least very reticent in welcoming everything else. In the choice of my mathematical investments, and the time I'm willing to devote to

¹¹(August 8) Once I've checked, it's clear that I started thinking about motifs at the beginning, not at the end, of the sixties.

this or that unexpected information, this deliberate intention of "partial closure" is today stronger than ever. It is even a necessity, if I am to be able to follow the call of what fascinates me \square le most, without yet giving "my life to devour" to lady mathematics!

However, the "fog" gives me more than just this particularity, which I came to realize a few years ago (better late than never!). At a certain point, this reflex became like a **point of honor**; it would be the devil if I didn't manage to "get" this statement (assuming it wasn't already quite familiar to me) in less time than it takes to say it! If it were an illustrious stranger who was the author of the statement, there'd be the added nuance that **I** (who'm supposed to be in the know, after all!) wouldn't already have all that up my sleeves! And very often I did have it, and more - my attitude then would have tended to go along the lines of: "Well, you can go and get dressed - you'll come back when you've done a bit better!"

That was precisely my attitude in the case of the "young white boy who was stepping on my toes". I couldn't even swear that in what he was doing, there weren't interesting details that weren't covered by what I'd done in my "secret notes" - which is incidental¹² by the way. Finally, this episode also sheds light on the question I'm examining here: that of a profound disturbance in this openness to the beauty of mathematical things. It was as if, from the moment I had "done" such and such a thing, its beauty had disappeared for me, and all that remained was a vanity that claimed credit and profit. (Though I didn't deign to take the time to publish it - admittedly, there would have been too much of that.) It was a typical attitude of possession, analogous to that of a man who, having known a woman, no longer feels her beauty and runs after a hundred others without suffering for all that that another knows her. It was an attitude I disapproved of in love life, believing myself to be far above such vanity, while being careful not to notice the obvious fact that this was indeed my attitude towards mathematics!

I have a feeling that these crude competitive dispositions, "sporting" dispositions if you like, which I've just put my finger on in my person, must have started to become common in "my" mathematical milieu, around the time they were common in me. I'd be hard pressed to situate in time the moment of their appearance, or the one when they became like an intimate part of the air we breathed in this ^{mi} \square lieu, or the one my students breathed in contact with my person. The only thing I can say is that it must have taken place in the sixties, perhaps as early as the early sixties, or the late fifties. (If so, all my students were entitled to it - take it or leave it!) To place it, I'd need other specific cases, which at the moment escape my memory entirely.

This humble reality was, of course, in complete contrast to the noble image I had of my relationship with mathematics, and with young researchers in general. The crude subterfuge I used to fool myself was meritocratic in inspiration: for this image, all I retained was the relationship with my students (who contributed to my prestige, of which they were the noblest jewels!), and to 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 didn't take long - you either have "flair" or you don't!). As for the youngsters who didn't happen to be among my pupils, or among those of a friend of mine, nor to be young geniuses, I didn't care what my relationship with them was. **They didn't matter.**

I think that this reality was more often than not softened, tempered, when I found myself in a relationship with a person.

¹²(August 8) It has since dawned on me that this thing is not so "incidental" as all that, that it constitutes the dividing line between "sporting attitude" and the beginnings of dishonesty, a line which I may have crossed... ..

I had a personal relationship with the young researcher, either because I met him at my seminar, or because he wrote to me. It may be that the case of the "young white boy" is, from this point of view, something of an exception. It seems to me that, in the case of the researchers I've just mentioned, I must have considered them as having put themselves "under my protection", and this must have awakened in me a more benevolent attitude. In this case too, my desire to put myself forward could find an outlet, by giving my comments to the person concerned and making suggestions for taking up his work in a broader perspective perhaps, or by getting to the bottom of things. In such a case, there's a good chance that the young researcher, who for a limited time took on the role of pupil, would also find something to enjoy, and that he would have fond memories of his relationship with me. (Any feedback on this subject would be most welcome).

I was thinking here mainly of the case of younger researchers, when the "sporting" attitude was by no means p . 107 limited to my relationship with them, needless to say. But it's certainly in my relationship with young researchers that the impact, both psychological and practical, of a mathematician in the limelight tends to be strongest, with the most far-reaching consequences for their future professional lives.

9.9. (41) Krishnamurti, or liberation as hindrance

I stopped last night with a feeling of relief, of great satisfaction, the contentment of someone who hasn't 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. And yet I hadn't actually done anything, I'd just watched an episode I'd already "known", that of the famous "white boy who . . ." from a slightly different angle. An angle showing **my relationship to mathematics itself**, in certain circumstances, not just my relationship to mathematicians. That's all it took for a cherished myth to go up in smoke.

To tell the truth, this isn't the first time I've looked at my relationship with mathematics. Two and a half years ago, I had already devoted a few weeks or months to it. At that time, I had realized (among other things) the importance of egotistical, self-aggrandizing forces in my past investment in maths. But last night I had just put my finger on an aspect that had escaped me at the time. Now that I'm coming back to it, I realize that this aspect, the aspect of **the jealous attitude** in my relationship to maths, is in line with the "simple" discovery that came at the end of the first night when I "meditated" (meditating without knowing it, like Monsieur Jourdain writing prose. . .). It's quite possible that this had something to do with the joyful exultation that followed. Even if it wasn't consciously perceived, it was a bit like the reconfirmation, in a new light, of something I'd discovered earlier - and the pleasure then is the same as in mathematics, when without having looked for it you come across, by an entirely different means, something you know, that you've found perhaps years before. Each time, it's accompanied by a feeling of intimate satisfaction, as the harmony of things is revealed once again, and our knowledge of them is more or less renewed.

De plus, I think I've really "done the trick" this time! I'd had a feeling for days that he p . 108 there was still something to bring to light, though I couldn't say exactly what. I didn't try to force it, I felt I just had to let it happen, letting the thread I was following unfold freely, through landscapes that were both familiar and unexpected. Unexpected, because until now I'd never bothered to look at them. At a walking pace, I approached the remaining "hot spot". And I think it's the last one, in the journey I've just made, which is coming to an end.

And as soon as I reached this point, I had the impression of someone arriving at a belvedere, from where he can see the whole world unfold.

landscape he has just traversed, of which at any given moment he could still only perceive a portion. And now there's this perception of expanse and space, which is a liberation.

If I try to put into words what the landscape in front of me delivers to 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 the harvest and message of what I sowed, back when I was part of the world of mathematicians.

Of course, I've said this to myself over and over again over the years, and even in the notes I've just written. I've said it to myself, somewhat by analogy with other harvests that have come to me insistently, that I've long rejected and that I've ended up welcoming and making my own. From the very first one I accepted, even before I knew anything about meditation, I understood that every harvest had to have a meaning, and that to balk at it was only to evade a meaning and put off the deadline for a denouement. This knowledge has been precious to me, for it has often kept me from self-pity, and from the righteous indignation that is often a disguised form of it. This knowledge is in me like a half-maturity, which by no means yet puts an end to the inveterate reflex of refusing harvests when they seem bitter. When I say to myself "there's no point in begrudging", the harvest is not welcomed for all that. I don't pity myself or perhaps feel indignant, and yet I "balk"! Until the dish is eaten, it is not welcomed - and not to eat is to begrudge.

p. 109 To host and eat is a **job**: a certain energy \square "works", a job is done in broad daylight or in the shade, something is transformed... . Whereas reluctance is a waste of energy that is dispersed - to "begrudge"! And you can't do without the work of eating, digesting and assimilating. The mere fact of going through events, of "doing" or "acquiring" an experience, has nothing in common with work. It's simply possible **material** for a job that you're free to do, or not to do. In the thirty-six years since I first encountered the world of mathematicians, I've made use of the freedom I have by **avoiding** work, while the material, the substance to be eaten and digested, has increased year by year. The feeling of joyful liberation I've been experiencing since yesterday is surely a sign that the work I've been putting off in favor of other work or tasks has finally been done. It's about time indeed!

It's still too early to be sure that this is indeed the case, that there isn't some stubbornly obscure corner that has escaped my attention, to which I'll have to return. But it's also true that this feeling of liberation doesn't deceive - every time I've felt it in my life, I've been able to see afterwards that it was indeed a sign of **liberation**; of something lasting, acquired, the fruit of an understanding, a knowledge that has become a part of myself. I am free, if I please, to ignore this knowledge, to bury it where and how I please. But it is not in my power or anyone else's to destroy it, any more than you can destroy the ripeness of a fruit, make it return to a state of greenness that is no longer its own.

It's a great relief to have it confirmed, once again, that I'm 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 thing! Lacking the innocence and mobility of a child who sees as he breathes, it often takes work to see the obvious - and now I've finally **seen** it: I'm not "better" than certain colleagues or ex-students who, just a few days ago, were "taking my breath away"! Judge the weight I've been relieved of! Perhaps it's gratifying in a way to think oneself better than others.

But it's also very tiring. It's an extraordinary waste of energy even - as it is every time you have to maintain a fiction. It \square rarely occurs to us, but it already takes energy, just to maintain the fiction against all odds, while the evidence at every step proclaims in my carefully plugged ears that it's all fake, so look stupid! Maybe it's a job sometimes to see,

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but when it's done, it's done. It saves me, once and for all, having to walk around plugging my eyes and ears all the time - that's got to be done too! and having to suffer an intolerable outrage every time something falls on me that I've inadvertently put there.

Fed up with the ride! Once you've seen the merry-go-round, you're already off it. You've paid, okay, I've got the right to go for life on it, and even the duty to do so, as everyone will tell me: right, duty - it's up to the customer. It's very tiring too, all these rights that are duties and all these duties that are rights, which stick to me when I think I'm better than the others. It's normal after all, when you're better, you cash in discreetly (that's "rights") and you "pay", you do your duty for the honor of the human spirit and mathematics - it's very beautiful, it's true, honor, spirit, mathematics, who could say it better, bravo! bis! It's all very beautiful, but it's also very tiring, and ends up giving you a stiff neck. I've had my torticollis and now that's enough - I leave room for others to stand stiffly.

It's also normal (since I was talking about students) for the student to surpass the teacher. I was offended by it, I had energy to waste! No more of that!

What a relief!

10. L'Enfant s'amuse

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10.1. (42) The child

In fact, there must be corners where the broom hasn't been. Never mind, they'll come to my attention, and I'll always have time to take care of them. But as for my famous "mathematician past", the big clean-up is done, no doubt about it.

Now that I've seen once again that I'm no better than the others, I shouldn't I don't want to fall back into the same old trap of thinking I'm **better than I am!** To think I'm better **now**, off the merry-go-round and all, than I was fifteen years ago, or fifteen years ago, or fifteen years ago. days. I learned something chose during those fifteen years, that's for sure, and during the fortnight too and even p. 111 since yesterday. When I learn something I mature, I'm not quite the same. I'm not "better" when I've learned something, than when the thing to be learned was still in front of me. A riper fruit is not "better" than a less ripe or green one. A season is not "better" than the one before it. The taste of the ripest fruit may be more pleasant, or less pleasant, depending on taste. I feel better about myself from one year to the next, so I guess the changes in me are "to my liking" - but they're not to the liking of all my friends and family. Every time I go back to doing maths, I get compliments from all sides, like: "What an idea he had to do something else! Everything's back in order, it's about time! It's worrying to see someone change... .

I learn, I mature, I change - so much so that sometimes I find it hard to recognize myself in the person I was and am rediscovering, through a memory or the unexpected testimony of others. I change, and there's also something that remains "the same". It's always been there, probably since birth, and maybe even before. I seem to have come to recognize it quite well in recent years. I call it "the child". By this thing, I'm no better at this moment than at any other time in my life; he was there, even if it would often have been difficult to guess his presence. By this thing too, I'm no better than anyone else, and no one else is better than me. In certain moments or in certain people, the child is more present. And that's a very good thing. It doesn't mean that someone is "better" than someone else, or than themselves at another moment.

Often, when I'm doing math, or making love, or meditating, it's the child who's playing. He's not always the only one "playing". But when he's not there, there's no math, no love, no meditation. You don't have to pretend - and I've rarely pretended.

It's not just the child, that's for sure. There's the "me", the "boss" or the "big boss", call him what you will. Surely the boss is indispensable to the running of the company. If there's a boss, it must be have something to do with it. He looks after the housekeeping, and like all bosses, he has an annoying tendency to become intrusive. He takes himself terribly seriously and wants at all costs to be better than the boss on the other side.

face. Invasive or not, he's just the boss, not the worker. He organizes, he orders, and he cashes in, that's for sure! - He takes profits as his due, and suffers losses as an outrage. But he creates nothing. Only the worker has the power to create, and the worker is none other than the child.

It's rare to find a company where boss and worker get along. More often than not, the worker is nowhere to be seen, locked away in God-knows-where. It's the boss who has pretended to take his place in the workshop, with the results we can only guess at. And often, when the worker is actually there, the boss wages war on him, either violently or through skirmishes - not much comes out of the workshop! Sometimes, too, there's a wary tolerance in the boss towards the worker, and he lets him get on with it, grumbling, without taking his eyes off him. It's like a constantly renewed truce in a war that has never ceased. And the worker is able to get some work done, thanks to the truce.

It's not at all certain that, by virtue of the meditation I've just made, my possessive attitude towards mathematics has magically disappeared! At the very least, I'd have to take a much closer look at the manifestations of possessiveness, one of which I've just touched on by name. This is not the place for this "introduction", which has become an "introductory chapter", which in turn is already getting long! One thing did click last night, however, and I'd like to come back to it now, something I'd noted with some surprise two or three years ago.

I was working on a mathematical question, I don't know what it was, and at some point (through some circumstance) it occurred to me that the question I was looking at had perhaps already been looked at, that it might well be dealt with in black and white in some book that it was up to me to consult in the library. The mere mention of this possibility had an astonishing effect: from one moment to the next, the desire had disappeared. Suddenly, the question I'd perhaps spent weeks thinking about, and was prepared to spend weeks more, had lost all interest for me! It wasn't spite, it was a sudden and total lack of interest. If I'd had the book in my hands, I wouldn't have bothered to open it.

In fact, the eventuality was not confirmed, and so the desire reappeared and I continued on my way. as if nothing had happened. Still, I was taken aback. Of course, if I'd really **needed** what I was doing to do **something else**, there wouldn't have been such a dramatic drop in interest. I've often redone familiar things, knowing or suspecting that they were familiar, without giving them the slightest thought. At the time, I was on a path where it was more economical, and much more interesting, to do things my way, as they presented themselves to me, than to go digging through books or articles. I would do it "in the stride" towards something else, towards which the desire would carry me. And of course, I was "in the know" enough to know that what was at the end was not to be found in any book or article.

This reminds me that mathematical work, even if done in solitude for years on end, is **not** a purely personal, individual endeavor, as meditation is - at least not for me. 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 have never heard of it. Reading a book or an article has never attracted me; I've avoided it whenever I could. What it can tell me is never the unknown, and I've never heard of it myself.

the interest I take in her doesn't have the quality of desire. It's an "interest" of circumstance, an interest in a **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 doesn't seem to me that the event I reported was the sign of a jealous, possessive disposition, the sign of a vanity that had been disappointed. There was no spite or disappointment in me, simply the sudden disappearance of a desire that, just the moment before, had been intense. This was at a time when I had absolutely no thought of publishing anything, nor of ever wanting to publish again. This desire was not an expression of vanity, of the craving to accumulate knowledge, titles and credits - it was a real desire, the desire of a child passionate about play. And suddenly - nothing! Understand who can, I don't. ... Sorry!

10.2. (43) The troublemaker boss - or the pressure cooker

□ I feel I have finally completed this retrospective of my life as a mathematician. Of course, I haven't not exhausted my subject - volumes would be needed, assuming such a subject could be "exhausted". That wasn't my point. My point was to get to the bottom of whether or not I'd been part and parcel of the appearance of a certain "air" that I now feel in puffs, and if so, in what way. Now I know for sure, and it feels good. It could be fascinating to go further, to go deeper into what has only been glimpsed or touched upon. There are so many exciting things to look at, to do, to discover! As far as my past as a mathematician is concerned, it seems to me that what I **needed** to look at, to take on that past, has been seen.

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Undoubtedly, as I went deeper into this meditation, I would learn many interesting things about my present. One thing that this work has made me feel almost every step of the way is the extent to which I have remained attached to this past, the importance it has had to this day in my self-image, and also in my relationship with others; especially in my relationship with those I have, in a certain sense, left behind. My relationship with this past has undoubtedly been transformed in the course of this work, in the sense of a detachment, or a greater lightness. Time will tell. But it's likely that an attachment will remain, as long as my mathematical passion is not burnt out and quenched - as long as I "do maths". And I don't care to guess or predict whether it will die out before I do... .

For more than ten years, I had believed this passion to be extinct. It would be truer to say that I had **decreed** it extinct. That was the day I stopped doing maths for a while, and rediscovered the world! For three or four years, I was absorbed in an activity so intense that my old passion couldn't have found the slightest gap to slip through to manifest itself. These were years of intense learning, at a certain level that remained rather superficial. In the years that followed, mathematical passion manifested itself in sudden, totally unexpected bursts. These would last a few weeks or months, and I would stubbornly ignore their clear meaning. I'd decided once and for all that my craving for maths, which was decidedly good for nothing, was now a thing of the past, period! But the "good-for-nothing" didn't hear it that way - and I remained deaf.

□ Which may seem paradoxical, it was after the discovery of meditation (in 1976), with the entry of a new passion in my life, that the reappearances of the old one were particularly strong, almost violent - as if each time a lid popped off under too much pressure. It was only five years later, under the pressure of events, to put it mildly, that I took the trouble to examine what was going on. It was the longest meditation I've ever done on a seemingly well-defined issue: it took me six months of intense, stubborn work to get around a kind of iceberg,

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the visible summit of which had finally become embarrassing enough to force me, almost unwillingly, to go and have a look. I was faced with a situation of **conflict**, which appeared to be the conflict of two forces or desires: the desire to meditate, and the desire to do maths.

In the course of 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 hilt, a child's desire. The child has nothing to do with the disdain or modest pride of the big boss! The child's desires follow one another, as the hours and days go by, like the movements of a dance arising from one another. Such is their nature. They are no more opposed than the stanzas of a song, or the successive movements of a cantata or fugue. It's the bad conductor who declares one movement "good" and another "bad", creating conflict where there is harmony.

After this meditation, the boss has calmed down and is less inclined to stick his nose where it doesn't belong. The work this time was long, whereas I thought it would be done in a few days. Once the work is done, the "result" seems obvious, and can be summed up in a few words¹ (37). But if someone had said these words to me before or during the work, it probably wouldn't have done me any good. If the work took so long, it's because the resistance was strong and deep-rooted. The boss got a kick out of it, and he never batted an eyelid, because it was all done in an atmosphere where there was no way he'd get angry. One thing's for sure, it was a busy six months, and I couldn't have done without it; any more than a woman can do without the nine months of pregnancy to finally give birth to something as "obvious" as a toddler.

10.3. (44) The steam is reversed.

p. 116 □ It's been a year and a half since I meditated, apart from a few hours in December, to clear up an urgent question. And it's been a year since I invested most of my energy doing maths. This "wave" came like the others, math waves or meditation waves: they come without announcing their arrival. Or if they do, I never hear them! The boss has a slight preference for meditation, it seems: each time the meditation-wave is already followed by a maths-wave, whereas I thought it would last forever; and the maths-wave, which (it seemed to me) was a matter of a few days or weeks at most, lingers on and extends over months and maybe even, who knows, years. But the boss has come to understand that it's not he who makes these rhythms, and that he has nothing to gain by trying to regulate them.

But perhaps there has finally been a shift in the boss's "little preference", since it's been almost a year since it was agreed and decided, that I'd be away for at least a few years "doing maths again", officially so to speak: I've even applied for a position at the CNRS! More importantly, and entirely unexpected a year ago, I'm back to publishing. Even after the 1981 meditation I mentioned earlier, when the urge to do maths ceased to be treated as a poor relation, the idea would never have occurred to me that I might start publishing maths again. At a pinch, a book about meditation, or dreams and the Dreamer - and even then, I was far too busy with what I was doing to publish anything about math.

¹(37)

I hardly need to add, I think, that this long-term work has brought out, day by day, much more than the "result" I've just delivered in lapidary form. It's no different for a work of meditation than it is for a mathematical work motivated by a particular question that we set out to examine. Very often, the twists and turns along the way (which may or may not lead to a more or less complete clarification of the initial question) are more interesting than the initial question or the "final result".

feel like writing a book about it! And for what?!

It was a rather important decision, one that would affect the course of my life for years to come, and one that was taken somewhat on the spur of the moment, I'm not even sure when and how. One day, when there began to be a good deal of typed notes (I'll say! until then

I had confined myself to handwriting my mathematical cogitations...² (38), on homotopic fields and models, etc. ... it turned out to be a done deal: we're publishing this! And while we're at it, we might as well pull out all the stops and start a little series of mathematical reflections, the name of which was a no-brainer - all we had to do was capitalize it: "Réflexions Mathématiques" (Mathematical Reflections)! That's more or less what I'm getting back in this :

the famous "fog" that so often takes the place of a memory. I'm sure it's a very abbreviated memory

□ occurrence. The remarkable thing, in any case, is that this thing was done without even a pause to **look at** where I was going, what was pushing me, what was carrying me... . That's what I'd like to do again, on the momentum of this unexpected meditation, so that I can feel it's really finished.

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The question that immediately springs to mind: is this "remarkable thing" I've just noticed a sign of the (so-called?) "discretion" of the boss, who wouldn't dream of interfering (even with an indiscreet glance . . .) in such a beautiful spontaneous movement that has no need of him etc. . . ; or is it a sign, on the contrary, that he's taken sides outright, and that the so-called "little preference" is pushing him all the way in the maths direction?

It was enough to put the question in black and white for the answer to appear! It's not the kid, who's in for a longer game than most, perhaps, who's decided that he's going to continue for X number of years without a hitch, and wisely fill in as many pages as it takes to make a reasonable number of volumes in a beautiful series with capital letters! The boss has planned and organized everything, and all the kid has to do is get on with it. Maybe the kid won't ask for anything better - there's no way of knowing in advance - but that's an incidental question. The kid's desires depend, to a certain extent at least, on the **circumstances**, which depend above all on the boss.

The boss has clearly made up his mind. In fact, he's just shown a certain flexibility, since a meditation has been going on under his benevolent eye for over a month now. It's also true that his benevolence is by no means disinterested, since the tangible product of the meditation, the notes I'm currently writing, will be the most beautiful cornerstone of the tower he already sees himself building, with the stones gracefully cut by the apparently willing child-worker. Decidedly, it's a little early to be complimenting him on his "suppleness"! A few hours of meditation three months ago, and all in all a year from now! and a half, that's pretty thin!

Yet I don't have the impression that there was, during all this time □ a desire for meditation that would have been p. 118 repressed, frustrated. In the few hours in December, I took stock and saw what I had to see; that was enough to transform a situation, which hadn't been clear. I resumed the thread of the interrupted mathematical work, without having to cut short anything else. It doesn't seem to me that a conflict has reappeared, I mean, the one that had been resolved over two years ago and which would have reappeared this time in reverse form. It's in the boss's nature to have preferences, and that's his right - it would be silly for him to pretend not to (although sillier things happen than that. . .). It's not a sign of conflict, even though it's often the cause of it. As things stand, there really doesn't seem to be any need to

²(38)

These notes were in fact a continuation of the long letter to... . which became the first chapter. They were t y p e d so as to be legible for this old friend, and for two or three others (Ronnie Brown in particular) whom I thought might be interested. This letter, by the way, was never answered, nor was it read by the addressee, who almost a year later (when I asked him if he'd received it) expressed sincere astonishment that I'd even thought for a moment that he could read it, given the kind of mathematics that was to be expected of me. ...

blame for lack of flexibility!

With that out of the way, it remains for me to try and pinpoint the boss's "motivations" for this turnaround, which took place as discreetly as possible but which, on closer inspection, is quite spectacular.

10.4. (45) Le Guru-pas-Guru - or the three-legged horse

This brings me back to a meditation I'd been doing from July to December 1981, after a four-month period of mathematical frenzy. This somewhat insane period (very fruitful, by the way, from a mathematical point of view³ (39)) had ended, overnight, following a dream. It was a dream that described, in a parable of irresistible wildness, 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 meaning⁴ (40). Once that was done, I knew what I had to do. I didn't return to this dream in my work for the next six months, but I was doing nothing more than penetrating its meaning and fully assimilating its message. The day after the dream, the message was understood on 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 involved, which appeared to me to be antagonistic.

So much has happened in my life since that meditation, that it seems to me to be in the very distant past. If I try to formul^{er} what I took away from what it taught me about motiva-

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In the twelve years since the "first awakening" (in 1970), the boss had bet on what was obviously "the wrong horse": **between mathematics and meditation** (which he liked to pit one against the other), **he had opted for meditation.**

That's one way of putting it, since the thing and the name "meditation" had only entered my life in October 1976, five years earlier. But in the beloved image of myself that had been given a fresh coat of paint in 1970, meditation had come at just the right moment, six years later, to enhance a certain attitude or pose, long spotted but never examined until that 1981 meditation. I called it my "master's syndrome", and some have (rightly) called it my "Guru pose". If I adopted the former designation rather than the latter, it was undoubtedly because it fostered a confusion about the nature of the thing, in which I liked to maintain myself. From my earliest childhood, I'd always had a spontaneous pleasure in teaching, which was in no way opposed to the spontaneous pleasure in learning, and which had nothing to do with my own personal interests.

³(39)

This was the period, among others, of the "Long Walk through Galois theory", discussed in "Esquisse d'un Programme" (par. 3: "Corps de nombres associés à un dessin d'enfant").

⁴(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 in on me the day before. Some of the materials used by the Dreamer, to bring this strikingly realistic dream out of apparent nothingness, were obviously borrowed from that short episode of the visit of a dear friend I hadn't seen for nearly ten years. So, on the first day of work and against my previous 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 the dream, not me! It was a way of evading the message of the dream, which (I should have known from my past experience) concerned no one but me. I finally realized this in the night following this first, superficial phase of the work, which I resumed the next day in the same letter. Since that memorable letter, I have received no further sign of life from this friend, one of the closest I have ever had.

This work was the only meditation that took the form of a letter (and in English to boot), so I no longer have a written record of it. I was particularly struck by this episode, one of many that show how any sign of work that goes beyond a certain façade, and brings to light simple facts that we generally make a point of ignoring - how any such work inspires unease and fear in others. I'll come back to this later (see par. 47, "The solitary adventure").

nothing of a pose. It was this strength above all that was at play in my relationship with my students; this relationship was superficial, but it was strong and good-natured, by which I mean: without pose. It was after what I called my "awakening" in 1970, when a world that had been familiar to me was receding to the point of almost disappearing, and with it the students and the opportunities I had "to teach", to share things I knew and which for me had meaning and value - that "the boss" took his revenge as best he could: instead of teaching maths, which was just a good way to earn a living, but otherwise unworthy of my new greatness, I saw myself teaching a certain "wisdom" by life and example. I was careful, of course, not to say anything of the sort to myself or others, and when I received echoes in this direction, I surely had to recuse myself, pained by so much incomprehension on the part of such friends or relatives. No matter how many times I explained it to them, they still didn't get it - sorry pupils if ever there was one!

I had read a book or two by Krishnamurti that had made a strong impression on me, and my head had assimilated in a jiffy a certain message and certain values⁵ (41). That was all it took to believe that everything was

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⁵(41) **Krishnamurti, or liberation turned 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 finally substitute it, as it should be, for reality. The reason I was so struck by Krishnamurti's first book (even though I'd only had the chance to read a few chapters) was that what he was saying totally overturned a number of things I'd always taken for granted, and which I immediately realized were **commonplaces** that had always been part of the air I'd breathed. At the same time, this reading drew my attention, for the first time, to far-reaching facts, especially that of flight from reality, as one of the most powerful and universal conditioning of the mind. This gave me an essential key to understanding situations that until then had been incomprehensible and therefore (without my realizing it until I discovered meditation five or six years later) generating anguish. I could immediately see the reality of this escape all around me. This eased some of my anxieties, without changing anything essential, because I could only see this reality in others, while taking it for granted that it didn't exist in myself, that I was the exception that confirmed the rule (and without asking myself any further questions about this truly remarkable exception). In fact, I was in no way curious about myself or others. This "key" can only **open in the hands of the person motivated by the desire to penetrate**. In my hands, it had become an exorcism and a pose.

It was at the beginning of 1974 that, for the first time, I realized that the destruction in my life, which was following me step by step, couldn't have come from others **alone**, that there was something **within me** that was attracting it, feeding it, perpetuating it. It was a moment of humility and openness, conducive to renewal. But the renewal remained peripheral and ephemeral, for lack of in-depth **work**. This "something inside me" was still vague. I could see that it was a lack of love, but the very idea of working to identify more closely where and how there had been a lack of love in me, how it had manifested itself, what its concrete effects had been, etc. . . - (On the contrary, K. likes to insist on the vanity of all work, which he automatically equates with the ego's "craving to become"). So, with borrowed "wisdom" as my compass, I saw nothing to do but wait patiently for "love" to descend upon me like a grace from the Holy Spirit.

And yet, the humble truth I had just learned at the end of a wave had triggered the rise of a powerful wave of new energy, comparable to the one that was to carry me through my first foray into meditation two and a half years later. This energy did not remain entirely unused. A few months later, when I was immobilized by a providential accident, it led to a (written) reflection in which, for the first time in my life, I examined the worldview that had been the unspoken basis of my relationship with others, and which came to me from my parents and especially my mother. I realized very clearly that this vision had gone bankrupt, that it was incapable of accounting for the reality of relationships between people, and of fostering personal fulfillment and relationships with others. This reflection remains marked by the "Krishnamurti style", and also by the Krishnamurtian taboo on any real **work** towards understanding. It did, however, make tangible and irreversible a knowledge born a few months earlier, which at first remained vague and elusive. No book or other person in the world could have given me this knowledge.

To have the quality of a meditation, what this reflection lacked above all was a look at myself and my **vision of myself**, and not just my vision of the world, a system of axioms where I wasn't really "in the flesh". It also lacked a look at myself in **the moment**, at the very moment of reflection (which fell short of a real work); a look that would have led me to detect not only a borrowed style, but also a certain complacency in the literary aspect of these notes, a lack of spontaneity and authenticity. Insufficient though it was, and relatively limited in its immediate effects on my relationships with others, this reflection nonetheless seemed to me to be a step - probably a necessary one, given the starting point - towards the more profound renewal that was to take place two years later. It was then that I discovered meditation - and discovered that first unsuspected fact: **that there were things to discover about myself** - things that almost completely determined the course of my life and the nature of my relationships with others. . .

(while pretending otherwise, of course). I didn't need to read any more, I was able to improvise the purest Krishnamurti in speech and writing, in a speech of flawless coherence. But no matter how beautiful and flawless the discourse, at no point did it seem to be of any use to me or anyone else. It went on for years without me even pretending to take any notice. With the discovery of meditation, the jargon fell away from me overnight, without a trace. I knew then the difference between talk and knowledge.

The big boss immediately rectified the situation: Krishnamurti out, meditation in! Discreetly, needless to say, he now had to play the game with a completely different touch. Times had changed, with this kid now running between his legs, and a bit sharp-eyed at times. I guess the kid was busy elsewhere. In any case, it was only five years later, when a certain pot had exploded and the kid had run to see what was going on, that the great chef's scheme was revealed.

It wasn't so long ago after all, just over two years ago, that the Guru-without-an-air was finally stale - one more disguise down the drain! The poor boss was about to be stripped naked. Or to put it another way: the "Meditation" horse, which had taken the place of the horse with no name (which was definitely not to be called "Krishnamurtian"!) was making really derisory returns, especially when compared with the coquettish returns of the "Mathematics" horse in the days when the boss was still betting on him. If he maintained the wrong bet for so long, it was out of sheer inertia - he'd already changed his bet once, which isn't all that common, and it took the full impact of an impacting event⁶ (42). Bosses don't really like to change bets - and in this case, it was a sort of going back to the previous bet.

It was in 1973, when I retired to the countryside, that the returns from the new horse began to be really meagre compared to the old one. The unexpected appearance of meditation three years later gave them a bit of a boost. There was even the episode of a vertiginous peak from March to July.

⁶(42) The salutary snatch

"The "percussive" event in question was the discovery, at the end of 1969, that the institution I felt part of was partially financed by funds from the Ministry of the Armed Forces, 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 had the effect of: my departure from the IHES (Institut des Hautes Etudes Scientifiques), and one thing leading to another, a radical change of environment and investments.

During the heroic years of the IHES, Dieudonné and I were the only members, and the only ones to give it credibility and an audience in the scientific world: Dieudonné through the publication of "Publications Mathématiques" (the first volume of which appeared in 1959, the year after Léon Motchane founded the IHES), and I through the "Séminaires de Géométrie Algébrique". In those early years, the IHES' existence was very precarious, with an uncertain financing (thanks to the generosity of a few companies acting as patrons) and with its only premises a room lent (with visible bad humor) by the Fondation Thiers in Paris for the days of my seminar [*A recent brochure published by the IHES on the occasion of the twenty-fifth anniversary of its foundation (of which Nico Kuiper was kind enough to send me a copy) says nothing about these difficult beginnings, perhaps unworthy of the solemnity of the occasion, celebrated with great pomp last year.*]. I felt a bit like a "scientific" co-founder, with Dieudonné, of my home institution, and I intended to live out my days there! I had ended up identifying strongly with IHES, and my departure (as a consequence of my colleagues' indifference) was experienced as a kind of uprooting from another "home", before proving to be a liberation.

Looking back, I realize that there must already have been a need for renewal within me, I just can't say how long ago. It's surely no mere coincidence that the year before I left IHES, there was a sudden shift in my investment of energy, leaving behind the tasks that had been burning in my hands the day before, and the questions that fascinated me most, to throw myself (under the influence of a biologist friend, Mircea Dumitrescu) into biology. I was embarking on this with a view to making a long-term investment in the IHES (which was in keeping with the multidisciplinary vocation of this institution). Surely this was no more than an outlet for the need for a much more profound renewal, which could not have been achieved in the "scientific incubator" atmosphere of the IHES, and which took place during that "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 and my ex-colleagues at IHES were finally grateful to me!

1979, which I won't go into here, where once again I pre-¹²¹nais the figure of an apostle, this time an apostle of a sa-

gesse immémoriale et nouvelle à la fois, chantée dans un ouvrage poétique de ma composition et que je me abstenu finalement de confier aux mains d'un éditeur⁷ (43). But two years later, with the Guru definitively out of action, it was as if the Meditation horse had broken a leg (as far as returns to the boss were concerned) - there was no way, fingering or no fingering, to play the Gurus!

After that, it wasn't long - the three-legged horse down the hatch, along with the Apostle-Poet, The Guru-not-Guru and Krishnamurti-who-dare-not-say-his-name. And long live Mathematics!

We look forward to what happens next. ...

⁷"The poetic work of my composition" contains much that I know first-hand, and which today appears to me to be just as important in my life, and "in life" in general, as when it was written, with the intention of publishing it. If I refrained from doing so, it was mainly because I later realized that the form was afflicted by a deliberate intention to "make poetic", so that its overly constructed overall conception, and many passages, lack spontaneity, to the point at times of painful stiffness or swelling. This form, ampoule at times, was a reflection of my dispositions, where it was decidedly often the "boss" who led the dance - heavily, it goes without saying... .

11. Lonely adventure

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11.1. (46) The forbidden fruit

I had to stop writing for two days. After careful rereading, it seems to me that the above scenario is indeed, roughly speaking, a description of reality, a description that I'd now have to delve into a little more. In particular, I'd have to take a closer look at the respective merits of the two "horses" meditation and mathematics; and also try to understand which events or conjunctures ended up triggering the "swing" in the boss's wager, against the forces of inertia that would rather push him to keep a losing wager indefinitely.

Perhaps we should also sound out the kid's preferences. It's an established fact that he wants to change games from time to time, and the boss apparently has a modicum of flexibility so as not to force him to always play this and never that. Over the last few years, he's learned to take the kid into account, to work with him, without waiting for pots to explode. It's not complete harmony, but it's no longer war, more a kind of entente cordiale, which occasional tensions tend to soften, not harden.

When he's not too hard up against it, the kid is by nature quite flexible in his preferences. (Unlike the boss, who eventually learned a modicum of flexibility only unwillingly and in his old age... .) But just because the kid's flexible doesn't mean he doesn't have a preference of his own, which he'll be happy to accept.

is attracted more strongly to one thing than to another.

It's often hard to see clearly, to distinguish between the kid's desires and preferences or even what the boss has decided once and for all. When I used to say to myself: meditation is better, more important, more serious and all that than mathematics, for such and such reasons (the most pertinent, no doubt), it was the boss who gave himself good reasons afterwards to convince himself that the bet he was making was indeed "the right one". The kid doesn't say that one thing is "better" or "more important" than another. He's not one for speeches. When he feels like doing something, he just goes ahead and does it if no one is in his way, without questioning whether it's "important" or "better". His desires vary from one thing to another and from one moment to the next. To detect his preferences, it's no use listening to the boss's explanatory speeches, when he claims to speak for the kid when he can only speak for himself. It's only by observing the kid at play that we can identify his preferences.

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can perhaps detect his predilections. And even then, it's not so obvious: when he plays this with gusto, it doesn't always mean that he wouldn't play something else with delight, if the boss didn't give him a helping hand.

Clearly, what attracts him above all else is **the unknown** - to pursue into the nebulous recesses of the night and bring into the open that which is unknown to him and to everyone else. And I have the impression that when I added "and everyone else", I was referring to the child's desire, not the boss's vanity, who wants to impress the gallery and himself. It's also a well-known fact that what the kid brings back every time from the shadows of inexhaustible attics and cellars are "obvious", childlike things. The more obvious they seem, the happier he is. If they're not, it's because he hasn't done his job to the end, that he's stopped halfway between darkness and daylight.

In maths, "obvious" things are also things that sooner or later someone **has to** stumble upon. They're not "inventions" that you can do or not do. They're things that have always been there, that everyone comes into contact with without paying any attention to them, even if it means taking a long detour around them, or going over them.

p. 123 stumbling every time. After a year or a thousand, infallibly, someone ends up paying attention to the thing, digging around it, digging it up, looking at it from all sides, cleaning it up, and finally giving it a name. This

kind of work, my work of choice, another could do it every time, and what's more, another could do it every time.

was bound to do so at some point¹ (44).

It's a completely different story when it comes to self-discovery, in the non-collective game of "meditation". What I discover, no other person in the world, today or at any other time, can discover for me. It's up to me alone to discover it, which also means: to **assume it**. This unknown is not destined to be known, almost by force of circumstance, whether or not I take the trouble to be interested in it. If it waits in silence for the moment when it will be known, and if sometimes, when the time is ripe, I hear it calling, it is only I, the child in me, who is called to know it. He's not a stranger on borrowed time. Of course, I'm free to follow his call, or to evade it, to say "tomorrow" or "someday". But the call is addressed to me and to no one else, and no one but me can hear it, no one else can follow it.

Every time I've followed this call, **something has changed in the "company"**, more or less. The effect has been immediate, and immediately felt as a blessing - sometimes, as a sudden release, an immense relief, from a weight I was carrying without even realizing it, and whose reality is manifested by this relief, this liberation. On a smaller scale, such experiences are common in any work of discovery, and I've had occasion to talk about them. What distinguishes the work of self-discovery (whether it takes place in the open or remains underground) from any other work of discovery, however, is precisely that it really changes something in the "business" itself. It's not a quantitative change, an increase in output, or a difference in the size or even quality of the products leaving the workshop. It's a change in the **relationship between boss and worker-child**. Perhaps there's even a change in the boss himself, if that means anything other than his relationship with the worker-child. For example, he may look less at production - but this is also an aspect of his relationship with the worker, through the emergence of a concern or respect that had previously been foreign to him. In every case in which I meditated, the change was in the

p. 124 □ The new regulations are intended to **clarify** and **calm** relations between management and labor. Except in certain cases

where meditation remained superficial, "circumstantial" meditations under the sole pressure of an immediate and limited need, clarification has lasted until today, and so has appeasement.

¹Needless to say, I'm disregarding the hypothesis - by no means improbable, to say the least - of the unexpected eruption of an atomic war or some other such joyous event, likely to put an abrupt end, once and for all, to the collective game called "Mathematics", and to much else besides... .

This gives the work of self-discovery a different **meaning** from any other work of discovery, even though many essential aspects are the same. There is a dimension to self-knowledge, and to the work of self-discovery, that sets it apart from all other knowledge and work. Perhaps this is the "**forbidden fruit**" of the Tree of Knowledge. Perhaps the fascination that meditation has exerted on me, or rather that of the mysteries it has revealed to me, is the fascination of the forbidden fruit. I've crossed a threshold where fear has disappeared. The only obstacle to knowledge is inertia, sometimes considerable, but finite and by no means insurmountable. I felt this inertia at almost every step, insidious and omnipresent. It exasperated me at times, but never discouraged me. (No more so than in mathematical work, where it is also the main obstacle, but of incomparably lesser weight). This inertia becomes one of the essential ingredients of the game; one of the protagonists, to put it better, in this delicate and by no means symmetrical game which has two - or three, to put it better: on the one hand, the child who dashes forward, and the boss (made of inertia) who puts the brakes on everything he can (while pretending not to be there), and on the other, the glimpsed form of the beautiful unknown, rich in mystery, at once near and far, who both evades and calls... .

11.2. (47) L'aventure solitaire

This fascination with "meditation" has been of considerable power for me - as powerful as the attraction of "woman", whose place it seems to have taken. The fact that I've just written "has been" doesn't mean that this fascination has been extinguished. In the year that I've been involved in mathematics, it has faded into the background. Experience tells me that this situation can be reversed overnight, just as this situation is itself the effect of an entirely unforeseen reversal. In fact, during each of the four long periods of meditation I went through (one of which was extended over almost a year and a half), it was a matter of course for me that I was going to keep going until I drew my last breath, to probe as far as I could into the mysteries of life and those of human existence. When the notes piled up in impressive stacks to the point of threatening to overwhelm my workroom, I even ended up having a piece of furniture made to measure to accommodate them, with plenty of room (thanks to a quick calculation of arithmetic progression) to accommodate those that would soon be added over the years; I had allowed for a margin of around fifteen years if I remember correctly (which was already starting to happen!). In this case, the boss had done things right, and for stewardship it was a fine piece of stewardship! That, and a large-scale tidying-up of all personal papers closely or remotely linked to meditation work, was in fact his last task undertaken and (almost) successfully completed, just before the switch of preferences and bets. It makes you wonder whether he didn't have an ulterior motive, and whether he didn't already see tomes of "Mathematical Reflections" filling the empty shelves supposedly intended for the "Notes" to come.

It's true that the passion for meditation and self-discovery is vast enough to fill my life for the rest of my days. It's also true that the mathematical passion is not consumed, but perhaps that hunger will be sated in the years to come. Something in me wishes it would, and feels mathematics to be a hindrance to a solitary adventure that only I can pursue. And it seems to me that this "something" inside me is **not** the boss, nor one of the boss's desires (which, by nature, is divided). It seems to me that mathematical passion still bears the mark of the boss, and in any case, that following it makes my life move in a closed circle; in the circle of an **ease**, and in a movement that is that of **inertia**, certainly not of renewal.

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I've been wondering about the meaning of this stubborn persistence of mathematical passion in my life. When I follow it, it doesn't really fill my life. It gives me joy, and it gives me satisfaction, but it doesn't in itself give me true fulfillment. Like any purely intellectual activity, intense, long-term mathematical activity has a rather **mind-numbing** effect. I see this in others, and especially in myself, every time I do it again.

This activity is so fragmentary, it involves only such a tiny part of our faculties of intuition, of sensitivity, that these become dulled to the force of not being used. For a long time, I didn't realize this.

p. 126 It's only since I've been meditating, it seems to me, that I've become aware of this thing. It's only since I've been meditating, it seems, that I've become aware of this thing. If you pay attention, it's obvious - **maths in large doses thickens**. Even after the meditation of two and a half years ago, where mathematical passion was recognized as a passion indeed, as an important thing in my life - when I give myself to this passion now, there's still a reserve, a reluctance, it's not a total gift. I know that a so-called "total gift" would in fact be a kind of abdication, it would be following an inertia, it would be a flight, not a gift.

There is no such reserve in me for meditation. When I give myself to it, I give myself totally, there is no trace of division in this giving. I know that in giving myself, I am in complete accord with myself and with the world - I am true to my nature, "I am the Tao". This gift is beneficial to myself and to all. It opens me up to myself and to others, by lovingly untying what remains knotted within me.

Meditation opens me up to others; it has the power to untie my relationship with them, even though the other remains tied up. But it's very rare that I have the opportunity to communicate with others in any way whatsoever about the work of meditation, about this or that thing that this work has made me aware of. This is not because it's "too personal". To take an imperfect image, I can only communicate about maths that interests me at a given moment, with a mathematician who has the essential background, and who at the same time is willing to take an interest in it too. It happens that for years I'm fascinated by such and such mathematics, without meeting (or even trying to meet) another mathematician with whom to communicate about it. But I know that if I looked for them, I'd find them, and that even if I didn't, it would simply be a matter of luck or circumstance; that the things I'm interested in can't fail to interest someone, or even a few people, whether ten years or a hundred, it doesn't really matter. This is what gives meaning to my work, even if it's done in solitude. If it

were there no other mathematicians in the world, and that there should be no more, I don't think doing maths would still make sense to me - and I suspect it's no different for any other mathematician,

p. 127 or any other "researcher" whatsoever. This ties in with my earlier observation that, for me, the "mathematical unknown" is what nobody knows yet - it's something that doesn't depend on me alone, but on a collective reality. **Mathematics is a collective adventure**, going on for millennia.

In the case of meditation, in order to communicate about it, the question of "baggage" doesn't arise; not at the point I'm at, at least, and I doubt it ever will. The only question is that of an interest in the other, which responds to the interest in me. So it's a question of curiosity about what's really going on in oneself and in others, beyond the de rigueur facades, which don't hide much as long as you're really interested in seeing what they cover. But I've learned that the moments when such interest appears in a person, the "moments of truth", are rare and fleeting. It's 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 would like nothing better than to have "interesting discussions". They have this

The baggage they carry with them, more or less heavy or light, what we call a "culture". It's part of the image they have of themselves, and reinforces that image, which they are careful never to examine, just like someone else who's interested in maths, flying saucers or angling. It's not this kind of "baggage", nor this kind of "interest", that I meant earlier - although the same words here refer to things of a different nature.

To put it another way: **meditation is a solitary adventure**. Its nature is to be solitary. Not only is the **work** of meditation solitary - I think this is true of any work of discovery, even when it is part of a collective effort. But the **knowledge** that arises from the work of meditation is "solitary" knowledge, knowledge that cannot be **shared**, let alone "communicated"; or if it can be shared, it's only in rare moments. It's a work, a knowledge that goes against the grain of the most inveterate consensus, and worries each and every one of us. This knowledge

is expressed simply, in simple, clear words. When I express it to myself, I learn by expressing it, because expression *même* is part of a job, driven by intense interest. But those same simple words and are powerless to communicate meaning to others, when they come up against the closed doors of indifference or fear. Even the language of dreams, with its infinite resources and strength, constantly renewed by a tireless and benevolent Dreamer, cannot penetrate these doors. ...

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There is no meditation that is not solitary. If there is a shadow of concern for anyone's approval, confirmation or encouragement, there is no work of meditation and no self-discovery. The same is true, it may be said, of any genuine work of discovery, at the very moment of the work itself. Of course. But outside of the work itself, the approval of others - be it someone close to you, or a colleague, or a whole milieu to which you belong - is important for the meaning of this work in the life of the person who gives it his or her all. This approval and encouragement are among the most powerful incentives that make the "boss" (to use this image) give an unconditional green light for the kid to give it his all. Above all, they 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, on the other hand, there's no such incentive. It's a passion of the young worker that the boss is basically kind enough to tolerate, because **it doesn't "earn" anything**. It bears fruit, of course, but it's not the kind of fruit a boss aspires to. When he's not fooling himself about it, it's clear that he's not going to invest in meditation - the boss is gregarious by nature!

Only children, by nature, are solitary.

11.3. (48) Donation and welcome

Speaking yesterday of the solitary essence of meditation, I was touched by the thought that the notes I've been writing for nearly six weeks, which have ended up becoming a kind of meditation, are nonetheless intended for publication. Inevitably, this has influenced the form of the meditation in many ways, notably in terms of brevity and discretion. One of the essential aspects of meditation, namely constant attention to what was going on inside me at the very moment of the work, manifested itself only very occasionally, and superficially. Surely all this must have **infiltrated** on the course of the work and on quality. I feel, however, 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**) that I had evaded until now. Another aspect is spontaneity, which has meant that for none of the nearly fifty "sections" or

sap.

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"I couldn't have said at the outset what the substance would be; each time it was revealed only along the way, and each time the work brought new facts to light, or shed new light on hitherto neglected facts.

The most immediate sense of this work was that of a dialogue with myself, a meditation. However, the fact that this meditation is destined to be published, and moreover, to serve as an "overture" to the "Mathematical Reflections" that are to follow, is by no means an incidental circumstance, which would have been a dead letter in the course of the work. For me, it is an essential part of the meaning of this work. If I hinted yesterday that the boss is surely getting something out of it (he's a master at "getting something out of everything", or very nearly so!), that in no way means that its meaning can be reduced to this - to a belated, almost posthumous "return" of the famous three-legged horse! More than once, too, I've felt that the deeper meaning of an act sometimes goes beyond the motivations (apparent or hidden) that inspire it. And in this "return to mathematics", I've guessed a meaning other than that of being the result-sum of certain psychic forces that were present in my person at such and such a time and for such and such a reason.

This "meditation" that I'm pursuing in order to offer it to those I've known and loved in the mathematical world - if I feel it's an important part of this glimpsed meaning, it's not in the expectation that the gift will be welcomed. Whether or not it is accepted does not depend on me, but only on the person to whom it is addressed. I'm certainly not indifferent to whether it's accepted or not. But that's not **my** responsibility. My only responsibility is to be true to the gift I give, that is to say, to be myself.

What I learn from meditation are the humble and obvious things, things that don't pay for themselves. mine. They're also the ones I won't find in any book or treatise, however learned, profound, brilliant - the ones no one else can find for me. I have questioned a "fog", I have taken the trouble to listen to it, I have learned

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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, Plato, Nietzsche, Freud and Jung on top of it all - I would have been a prodigy of vast and profound erudition - but all that would have done was to **distance me** from this truth, a childish, self-evident truth. And I would have repeated Christ's words a hundred times, "Happy are those who are like little children, for theirs is the Kingdom of Heaven", and commented on them in fine detail, and it would only have served to keep me away from the child in me, and from the humble truths that bother me and that only the child can see. **These things** are the best I have to offer.

And I'm well aware that when such things are said and offered, in simple, clear words, they're not always welcomed. To welcome is not simply to receive information, with embarrassment or even interest: "Gee, who'd have guessed... . .", or "It's not so surprising after all... . ". Welcoming often means recognizing oneself in the giver. It means getting to know yourself through the person of another.

11.4. (49) Acknowledgement of a division

This short reflection on the meaning of the present work, and on giving and receiving, comes as a digression in the thread of reflection; or rather, as an illustration of certain aspects that distinguish "meditation" from any other work of discovery, and in particular from mathematical work. Yesterday, I realized that these aspects have a double effect, namely two effects **in opposite directions**: a unique fascination with "the kid", and a total lack of interest in "the boss". It seems that this double effect is in the nature of things, and cannot be mitigated by any compromise or arrangement. Whatever we do, when the kid

is his real predilection, the boss doesn't like it, not at all!

There's no doubt that this is the meaning of the shift that's taken place, which could well wipe the slate clean of meditation in my life in the years to come (with the exception of "occasional meditations", like three months ago). I don't think these have to be entirely barren years for that, any more than the year past has been fruitless. But it is also true that what I learned there (apart from maths) is minimal, if I p . 131
The strange thing is that each of the four long periods of meditation I experienced were times of great fulfillment. The strange thing is that each of the four long periods of meditation I experienced were times of great fulfillment, with nothing to suggest that something inside me remained frustrated. Yet, if pots exploded, it was because somewhere there was pressure, and that pressure must not have been there that day; it must have been there, somewhere out of my sight, for weeks or months, while I was intensely and totally absorbed in meditation.

But now I'm getting 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 off midstream by a combination of events and circumstances), the intensity of meditation gradually diminished from one moment onwards, like a wave about to be followed by another about to take its place... . The feeling of fullness, in fact, followed this same movement, with the difference that it was only present at the time of the meditation-waves, not the "mathematical" waves.

The situation I'm trying to define is no longer, it seems to me, a situation of conflict, but it's becoming apparent that it still contains the germ, the potentiality of conflict. For me, it is now 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's well and truly detected in this manifestation, is pay attention to it, and follow its signs and evolution over the months and years ahead. Perhaps this passion for maths, a little misguided it must be said, will burn itself out (as another passion in me has already burned itself out. . .), to make way for the sole passion of discovering myself and my destiny.

This passion is vast enough, as I said, to fill my life - and surely my whole life won't be enough to exhaust it.

11.5. (50) The weight of a past

It's been a few days since I finished putting the finishing touches to "Récoltes et Semailles" - after having believed, for over a month, that I was surviving to finish in the next few days. Even this time- p . 132
here, after I'd put the finishing touches to it, I wasn't entirely sure whether I'd actually finished it or not. - there was one question I'd left unanswered. It was to "understand what events or circumstances finally triggered the "tipping" in favor of mathematics instead of meditation, against considerable forces of inertia. Without any deliberate intention, my thoughts returned with some insistence to this question, in these last few days when I had already begun to branch off into other matters of a completely different order, including mathematical questions (of conformal geometry). I might as well make the most of this meditative "fin de lancée", to dig a little deeper and clear the decks.

Several associations come to mind, when I try to answer "on the spur of the moment" why "I'm getting back into maths" (in the sense of a major investment intended to be long-term, of the order of at least

11. Lonely adventure

a few years ago). Perhaps the strongest of all relates to the feeling of chronic frustration I've come to feel in my teaching activity over the last six or seven years. There's this increasingly strong feeling of being "**underemployed**", and even, quite often, of investing myself and giving the best of myself for morose students who don't care what I have to give.

I see wonderful things to do everywhere, just waiting to be done. Often, all that's needed to tackle them is a derisory baggage, and it's these things themselves that tell us what language to develop to understand them, and what tools to acquire to dig into them. I can't help seeing them, simply because of regular contact with maths (at however modest a level) as a result of teaching, even in those periods of my life when my interest in maths is most marginal. Behind everything we look at, no matter how little we look, there are other beautiful things, covering and revealing others in their turn... . Whether in maths or anywhere else, wherever you look with genuine interest, you'll see a richness revealed, a depth opened up that you'd guess is inexhaustible. The frustration I'm talking about is that of not being able to communicate this feeling of richness - of depth - to my students, even if it's only a spark of desire to explore at least what's right at their fingertips, to have fun with it.

p. 133 during the few months or years that they are in any case determined to invest in a so-called "research" activity, for the purposes of preparing this or that degree. Except for two or three of the students I've had since

At ten years of age, it seems that the very idea of "giving it their all" frightens them, and that for months and years they'd rather sit back and do nothing, or laboriously do some mole's work for which they know neither the ins and outs, as long as there's a diploma at the end. There's a lot to be said for this kind 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 beginning of my reflection, when I touched in passing on the root cause of such blockages. But that's not my point here, which is rather to note the state of chronic frustration that these situations, constantly repeated throughout the last seven years of my teaching career, have come to create in me.

The obvious way to "resolve" such frustration, at least insofar as it's that of the "mathematician" in me and not that of the teacher, is to do for myself at least some of those things that I despaired of seeing any of my students grasp at the end of the day. And that's what I've done here and there, whether it be occasional reflection lasting a few hours, or even a few days, on the bangs of my teaching activity, or during periods of mathematical frenzy (which sometimes occurred like veritable explosions. . .), sometimes lasting weeks or months. Such occasional and intermittent work could usually only give rise to a very first rough sketch of a question, and to a most fragmentary vision - rather, a clearer vision of the work in perspective, whereas this work itself always remains to be done and, to be better seen, only appears all the more burning. Two months ago, I gave an overall sketch of the main themes I've begun to take the measure of. This is the "Esquisse d'un Programme", to which I have already alluded, and which will finally be attached to the present reflection, to constitute together volume 1 of "Réflexions Mathématiques".

It is quite clear that this ("private", so to speak) prospecting work alone was not enough to solve the problem. my frustration. This feeling of "being underemployed" surely reflected a **desire** (of egotic origin, I believe, i.e. "the boss's" desire) **to exert an action**. Here, it's not so much a question of acting on others (on my students

p. 134 let's say, set them in motion, "communicate something" to them, or help them get that degree that could enable them to apply for such and such positions, etc. . .) than "mathematician" action: contributing to the discovery of such and such unsuspected facts, to the emergence of such and such a theory, etc. This is immediately associated with

I've already made the observation that mathematics is a "collective adventure". If I reflect on my attitude when I was doing maths over the last ten years, at a time in my life when it would never have occurred to me that I might one day go back to publishing, 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 occurred to me that these were by no means the dispositions of someone doing something for personal pleasure alone, or driven by an inner need that concerned only himself, with no relationship to others. When I do maths, I believe that somewhere within me it is clearly understood that this maths is meant to be communicated to others, to be part of a larger thing to which I am contributing, a thing that is by no means individual in nature. I could call this "thing" "mathematics", or better still, "our knowledge of mathematical things". The term "our" here undoubtedly refers, first and foremost, in concrete terms, to the group of mathematicians whom I know and with whom I have interests in common; but it is also beyond doubt that it goes beyond this restricted group just as much as it goes beyond myself. This "our" refers to **our species**, insofar as it, through some of its members down the ages, has been and is interested in the realities of the world of mathematical objects. I have never, before this very moment of writing, considered the existence of this "thing" in my life, let alone wondered about its nature and its role in my life as a mathematician and teacher.

The desire to take action to which I have alluded seems to take the following form in my life as a mathematician: to bring out of the shadows that which is **unknown to all**, not only to me (as I saw earlier), and this, moreover, for the purpose of being made **available to all**, thus enriching a common "patrimony". In other words, it's the desire to contribute to the enlargement and enrichment of this "thing", or "heritage", which goes beyond my person.

In this desire, certainly, the desire to enlarge my person through my works is not absent. By this aspect, I find again the craving for "growth" ^{d'}agrandissement, which is one of the characteristics of the ego, of the "boss" ; p.

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This is its invasive and ultimately destructive aspect (cf. note 44' § 13.1.1 p. 260). However, I also realize that the desire to increase the number of things that (for a short or long time) will more or less bear my name, is far from exhausting, from covering up this desire or this more vast force, which drives me to want to contribute to enlarging a common heritage. It seems to me that such a desire could find satisfaction (if not "in my company", where the boss remains rather invasive, at least in a mathematician of greater maturity) while the role of one's own person would remain anonymous. Perhaps this is a "sublimated" form of the ego's tendency to enlarge, through identification with something beyond itself. Unless this kind of force is not egotistical in nature, but more delicate and profound, expressing a deep need, independent of any conditioning, that attests to the profound link between the life of a person and that of the whole species, a link that is part of the meaning of our individual existence. I don't know, and it's not my purpose here to probe such far-reaching questions.

Instead, I'd like to examine (from a more modest angle) a concrete situation concerning myself: a situation of frustration, with a partial and provisional outlet in the form of sporadic mathematical activity. The logic of the situation, therefore, was bound to lead me sooner or later to **communicate** what I found. Since, until last year, I was by no means prepared to make the large-scale, long-term investment in my mathematical passion that would have been necessary to "exploit" the mines I was uncovering for publication purposes, by means of detailed "piecework", I was left with the alternative of communicating to certain mathematician friends who were sufficiently "in the know" at least those things that were closest to my heart.

I think that if I had found a mathematician friend in the last ten years who plays opposite

of me as an **interlocutor** and source of information (as had been the case with Serre to a very large extent, for many years in the 50s and 60s), as well as a **relay** for any "information" I could pass on to him (a role Serre had not had to play in the past, as I

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myself!), my desire "to exercise action in maths" would have found sufficient satisfaction to resolve my frustration, while contenting me with an episodic and moderate \square vestment d'énergie in mathematics, leaving the lion's share to my new passion. The first time I approached a mathematician friend with such an expectation (at least implicit in me) was in 1975, and the last time in 1982, a year and a half ago. Funny coincidence, both times it was to try to "place" (for the purpose of being echoed and, who knows, developed at the end of the ends!) the same "program" of homo-logical and homotopic algebra, the first seeds of which date back to the fifties, and which was perfectly "mature" (according to the intimate conviction I had of it) even before the end of the sixties; a program of which a preliminary and broad outline development is the very theme of this *Poursuite des Champs* whose Introduction I'm supposed to be writing at the moment! The fact remains that, for reasons that undoubtedly differ from one case to another, my attempts to rediscover a "privileged interlocutor" relationship, such as I had (before 1970) with Serre, and then with Deligne, came to nothing. A common circumstance, however, was the relatively limited availability I was willing to give to maths. On the two occasions I've already mentioned (in 1975 and 1982), this surely contributed to the lack of communication. In fact, I was mainly looking to "place" something, without worrying too much about making the necessary effort to "(re)bring myself up to speed" to be on my side a satisfactory interlocutor for my correspondent, who was much more "in the know" than I was (to say the least!) when it came to current techniques in homotopy.

I could consider the "Letter to . . ." which serves as the first chapter of the *Poursuite des Champs* (letter from February last year, just over a year ago) as my last attempt to find an echo, from one of my friends of yesteryear, for some of my ideas and concerns of now. The continuation of the reflection begun (or rather, taken up) in that letter was to become (without my even suspecting it for weeks) the first mathematical text since 1970 promised to be published. It was only almost a year later that I received an indirect reaction to this substantial letter (compare note² (38)). It was more eloquent than any other letter received to date from a fellow mathematician, in making me feel certain attitudes towards my modest self that have become commonplace among my mathematician friends since I left the milieu of which I was a part with them. There is in this letter, from someone at

p. 137

to whom I had addressed myself as a friend, in a mood of warm sympathy, a deliberate intention to \square dérision, which reminded me in a particularly violent way of something I had come to realize

more and more clearly in recent years. Previously, I had had occasion to notice a distancing from myself in the mathematical "big world", and above all among those who had been my close friends (45). Here, it's no longer a question of distancing myself as a person, but rather of a consensus, in the nature of a fashion and as it presents itself as something to be taken for granted, between people who are "in the know" to some extent: that the thousand-page maths genre, and the notions I've been harping on about for a decade or two (46,47), aren't very serious at all; that there's a lot of bombast there for not much worthwhile, and that apart from the "general nonsense" toast around the notion of pattern and

²These notes were in fact a continuation of the long letter to... which became the first chapter. They were typed so as to be legible for this old friend, and for two or three others (Ronnie Brown in particular) whom I thought might be interested. This letter, by the way, was never answered, nor was it read by the addressee, who almost a year later (when I asked him if he'd received it) expressed sincere astonishment that I'd even thought for a moment that he could read it, given the kind of mathematics that was to be expected of me. ...

cohomologie étale (which sometimes have their uses; alas, we're willing to admit it), it's more charitable to at least forget the rest; that those who would nevertheless pretend to still be singing this kind of Grothendieckian trumpet, despite good taste and the obvious canons of seriousness, are to be lumped in with their Master, avowed or not, and have only themselves to blame if they are treated as they deserve... ..

Surely, the many echoes in this direction (which I've just transcribed "in plain English") that have reached me since 1976 (50), and especially over the last two or three years, have finally awakened in me a fighting spirit that had become somewhat dormant over the last ten years. Like a reflex, they've made me want to throw myself into the fray, to shut the mouths of these whitewashers who haven't understood a thing - a completely idiotic reflex, in fact, like that of the bull to whom all you have to do is show a piece of red cloth and wave it in front of his nose, and he'll immediately get into a frenzy and start moving, forgetting the path he was quietly following and which was his own! Still, I think this reflex is pretty epidermal, and wouldn't have been enough on its own to shake me off. Fortunately, doing maths is much more appealing than running into a piece of cloth and getting larded from all sides. But doing maths, while pursuing my own style of work} and approach to things, is also a bit like "throwing myself into the fray"; it means asserting myself in the face of signs of disdain and rejection - which I'm sure will come my way,

in response to the disdain my former friends have felt or thought they felt in me, if not towards them, at least towards a milieu with which they continue to identify unreservedly. It is therefore also, to some extent, following p. 138

instead of following **my** path.

This idea has occurred to me on several occasions over the past few weeks, and it's perhaps this aspect in particular that has prompted today's reflection. Along the way, another aspect has come to light, one in which the forces of the ego surely play a large part too, but which is not a simple combative reflex. Rather, it's a desire within me, the nature of which I can't yet clearly discern, to give meaning to the mathematical work I've been doing for the last ten or twelve years, or to see it take on its full meaning; a meaning which (I'm firmly convinced) cannot be reduced to that of private pleasure or personal adventure. But even if the nature of this desire remains misunderstood, since I haven't taken the time to examine it more closely, this reflection is enough to show me that it is indeed here, in this desire, that the force that weighs on me and forces my hand, so to speak, in favor of a mathematical investment - the "tipping" force - really lies. It would be just as effective. red fabric or not. If it's a sign of attachment to a past, it's the past of the last ten years, the "post-1970" past, and not the past of things already written in black and white, things done, things before 1970.

Basically, I'm not worried about these things, about what "posterity" will do to them in the future (although it's doubtful there will even be a posterity. . .). What interests me in this past is by no means what I did (and the fortune that is or will be its), but rather what was not done, in the vast program that I had before my eyes at the time, and of which only a very small part was realized by my efforts and those of the friends and students who sometimes kindly joined me. Without having planned or sought it, this program itself was renewed, along with my vision and approach to mathematics. Over the years, the emphasis has shifted both in terms of themes and my own approach.

my first aim now is to probe the **mysteries** that have fascinated me most, such as "motifs", or "patterns".

that of the "geometric" description of the Galois group of \mathbb{Q} over \mathbb{Q} . Along the way, of course, I won't be able to p.

at least prevent me from sketching out the foundations here and there, as I've begun to do (among other things)

in "La longue Marche à travers la théorie de Galois", or as I'm doing now in "La Poursuite des Champs". But the subject has changed, and so has the style that expresses it.

To put it another way: in the last ten years, I've glimpsed mysterious and beautiful things in the world of mathematics. These things are not personal to me, they are meant to be communicated - the very meaning of having glimpsed them, as I see it, is to communicate them, to be taken up, understood, assimilated... . But communicating them, if only to oneself, also means deepening them, developing them a little - that's a **job**. I'm well aware, of course, that there's no way I could complete this work, even if I had a hundred years left to devote to it. But I don't have to worry about that today, about how many years or months I'm going to devote to this work out of the time I have left to live and discover the world, when there's **another** job waiting for me that only I can do. It is not in my power, nor is it my role, to regulate the seasons of my life.

12. NOTES for the first part of "RECOLTES ET SEMAILLES" (harvests and weeks)

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12.1. Ø

Note 1 □(Added March 1984) It is probably an overstatement to say that my "style" and "method" of workingp
. 141 have not changed, whereas my style of expressing myself in mathematics has been profoundly transformed. Most of the time devoted over the last year to "La Poursuite des Champs" has been spent on my machine at typing reflections that are intended to be published virtually as they are (with the addition of relatively short notes added later to facilitate reading by cross-referencing, error correction, etc. .). No scissors or glue to laboriously prepare a "definitive" manuscript (which, above all, must reveal nothing of the process that led to it) - that's a lot of changes in "style" and "method"! Unless you dissociate the mathematical work itself from the writing and presentation of results, which is artificial, because it doesn't correspond to the reality of things, since mathematical work is indissolubly linked to writing.

12.2. \emptyset

Note 2 (Added in March 1984) On rereading these last two paragraphs, I had a certain feeling of unease, due to the fact that in writing them, I implicate others and not myself. Obviously, the thought that my own person might be involved hadn't occurred to me while writing. I surely didn't learn anything when I confined myself to putting down 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. As I continue my reflection, I'm led to remember that there has been no shortage of contemptuous attitudes towards others in my life. It would be strange if the link I've 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 towards myself, which I've come to realize) tells me that this must surely not be the case! For the time being, however, this is no more than a simple deduction, the only possible use of which would be to encourage me to see with my own eyes what's going on, and to see and examine (if it does indeed exist, or has existed) this as yet hypothetical contempt for myself, so deeply rooted in my own life.

p. 142 buried that it has completely escaped my gaze until now. It's true that there's been no shortage of things to look at!□This ^{one} suddenly seems to me to be one of the most crucial, precisely because it's at such a crucial point in my life. hidden...¹ .

12.3. \emptyset

Note 3 I'm thinking in particular of the famous conjectures by Mordell, Tate and Chafarevitch, all three of which were demonstrated last year in a forty-page manuscript by Faltings, at a time when the well-established consensus of those "in the know" was that these conjectures were "out of reach"! As it happens, "the" fundamental conjecture that serves as the keystone of the "Anabelian algebraic geometry" program I'm so fond of, is close to Mordell's conjecture. (It would even seem that the latter is a consequence of the former, which just goes to show that this program is not a story for serious people. ...).)

12.4. \emptyset

Note 4 Even today, we come across "demonstrations" of uncertain status. So it was for years with Grauert's demonstration of the finiteness theorem that bears his name, which nobody (and there was no shortage of good-willers!) could read. This perplexity was resolved by other, more transparent demonstrations, some of which went even further, taking over from the initial one. A similar, more extreme situation is the "solution" to the so-called "four-color problem", the computational part of which was solved with a computer (and a few million dollars). This is a "demonstration" that is no longer based on the intimate conviction that comes from understanding a mathematical situation, but on credit given to a machine devoid of the faculty of understanding, and whose structure and operation the mathematician user is unaware of. Even supposing that the calculation is confirmed by other computers, following other calculation programs, I don't consider the four-color problem to be closed. It will just have changed its face, in the sense that it's no longer a question of looking for a counter-example, but only a demonstration (readable, of course!).

¹(August 1984) On this subject, however, see the last two paragraphs of the note "The massacre", n° 87.

12.5. Ø

Note 5 This fact is all the more remarkable given that, until around 1957, I was regarded with a certain reserve by more than one member of the Bourbaki group, who ended up co-opting me, I believe, with some reluctance. There was a good-natured quip that I was a "dangerous specialist" (in Analyse Fonctionnelle). I sometimes sensed in Cartan a more serious unexpressed reserve - for some years, p. 143

I must have given him the impression of someone inclined towards gratuitous and superficial generalization. I saw him quite surprised to find in the first (and only) rather long essay I wrote for Bourbaki (on differential formalism on varieties) a reflection of any substance - he hadn't been too keen when I'd offered to take it on. (This reflection came in handy again years later, when I developed the residue formalism from the point of view of coherent duality). I was more often than not left behind during the Bourbaki congresses, especially during the joint readings of the essays, being unable to keep up with the readings and discussions at the rate they were going. Maybe I'm just not cut out for group work. In any case, this difficulty I had in fitting into the common work, or the reservations I may have aroused for other reasons in Cartan and others, never drew sarcasm or rebuff, or even a shadow of condescension, except once or twice from Weil (definitely a case apart!). At no time did Cartan deviate from an equal kindness towards me, imbued with cordiality and also with that distinctive touch of humor that for me remains inseparable from his person.

12.6. My friends from Survivre et Vivre

Note 6 Among these friends, I should probably also count Pierre Samuel, whom I had previously known mainly through Bourbaki, as had Chevalley, and who (like Chevalley) played an important role in the Survivre et Vivre group. It doesn't seem to me that Samuel was much given to this illusion of the superiority of the scientist. Above all, I feel he contributed a great deal through the common sense and smiling good humor he brought to joint work, discussions and relations with others, as well as gracefully taking on the role of "ugly reformer" in a group inclined towards radical analyses and options. He remained with Survivre et Vivre for some time after I withdrew, acting as editor of the newsletter of the same name, and 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 belonged to the same restricted milieu as me, but that didn't stop him from being one of my friends.

those bubbling years from which I think I learned something (however bad a student I was. . .). These ways of being, like Chevalley's even though they hardly resemble each other, were a better antidote p. 144 for my "meritocratic" leanings, only the most incisive analysis!

It now seems to me that for all the friends I learned something from during this period, it was more through their way of being and their sensibility, which differed from mine, and from which "something" ended up being communicated, than through explanations, discussions, etc. . . . In addition to Chevalley and Samuel, I especially remember Denis Guedj (who had a great influence on the Survivre et Vivre group), Daniel Sibony (who kept his distance from this group, while pursuing his evolution with a half-disdainful, half-narcotic eye), Gordon Edwards (who was a co-actor in the birth of the "movement" in June 1970 in Montreal, and who for years did prodigious feats of energy to maintain an "American edition" of the Survivre et Vivre newsletter, in English), Jean Delord (a physicist about my age, who was also a member of the "Survivre et Vivre" group), and the other members of the group.

12. NOTES for the first part of "HARVESTS AND WEEKS".

age, a fine, warm-hearted man who had taken a liking to me and the Survrien microcosm), Fred Snell (another US-based physicist from Buffalo, whose country house I stayed in for a few months in 1972).

Of all these friends, five are mathematicians, two are physicists, and all are scientists - which seems to show that the environment closest to me in those years remained an environment of scientists, and especially mathematicians.

12.7. ∅

Note 7 The preceding paragraph is the first of the entire introduction to be heavily crossed out on my initial manuscript, and provided with numerous over-writings. The description of the incident and the choice of words initially went against the grain, against the current - a force was clearly pushing to get over the incident quickly, as if by conscience, to "get down to business". These are the familiar signs of **resistance**, here against the elucidation of this episode, and its significance as a revelation 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 a mathematical work: it is then **the inertia** of the es-

p. 145 prit, its reluctance to part with an erroneous or inadequate vision (but one in which our person is in no way involved), which plays the role of the "resistance". This resistance is of an active nature, inventive if necessary to ~~die~~

drown a fish even without water, whereas the inertia I've been talking about is simply a passive force. In this case, even more than in the case of mathematical work, the discovery that has just appeared in all its simplicity, in all its obviousness, is followed in the instant by a feeling of relief from a weight, a feeling of **liberation**. It's not just a feeling - it's rather an acute, grateful perception of what has just happened, which is a liberation.

12.8. ∅

Note 8 As will become clear later, this ambiguity did not "dissipate in the aftermath of the 1970 awakening". This is a typical strategic retreat of the "I", who writes off the period "before the awakening", which immediately becomes the demarcation line for an irremediable "after"!

12.9. ∅

Note 9 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 don't "fit" with a familiar, long-established view of things.

12.10. ∅

Note 10 For example, I've lost count of the number of letters, on mathematical as well as practical or personal matters, sent to colleagues or ex-students whom I considered friends, and who have never received a reply. It doesn't just seem to be a case of special treatment for

but a sign of a change in morals, according to echoes in the same vein. (Admittedly, these concern cases where the person sending a mathematical letter was not known to the recipient, a prominent mathematician... .)

12.11. Aldo Andreotti, Ionel Bucur

Note 11 Of course, it's not impossible that I've forgotten - not to mention that my particularly "polar" disposition at the time would hardly encourage anyone to talk to me about this sort of thing, nor would it lead me to remember any conversation along these lines that might well have taken place. What is certain is that it must have been very exceptional, to say the least, for the question of fear to be broached (without even to call it by that name...), and it must be just as true today, especially in the "beau monde".

□ Among my many friends in that world, apart from Chevalley, who must have become aware of this am-
The only other person I can think of who must have perceived it clearly was Aldo Andreotti. I had met him, his wife Barbara and their twin children (still very small) in 1955 (at a party at Weil's in Chicago, I believe). We remained close friends until the "great turning point" of 1970, when I left the milieu that had been ours and lost sight of them. Aldo had a very keen sensitivity, which hadn't been dulled by his dealings with mathematics and detective stories like mine. He had a gift for spontaneous sympathy for those he came into contact with. 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 shared mathematical interests (of which there were plenty), and he was one of the few mathematicians with whom I spoke at all about my life, and he about his. His father, like mine, was Jewish, and had suffered in Mussolini's Italy, as I had 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 was always in people, not in mathematical "potential" or fame. He was one of the most engaging people I've ever had the good fortune to meet.

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This evocation of Aldo brings back memories of Ionel Bucur, who was also taken from us unexpectedly and before his time, and like Aldo, missed even more (I think) as a friend whom we like to meet again, than as a partner in mathematical discussions. We sensed in him a kindness, alongside an uncommon modesty, a propensity for constantly stepping aside. It's a mystery how a man so little inclined to take himself for granted or to impress anyone ended up as Dean of the Faculty of Sciences in Bucharest; no doubt because he didn't feel like refusing to accept the responsibilities that he was far from coveting, but which his colleagues or the political authorities were placing on his shoulders, which were, it must be said, robust. He was the son of peasants (something that must have played a role in a country where "class" is an important criterion), and had the common sense and simplicity of one. Surely he must have been aware of the fear that surrounds the man of notoriety, but certainly

so it must have seemed self-evident to him, a natural attribute of a position of power. I

don't think, however, that he himself □ had ever inspired fear in anyone, certainly not his wife Florica or to their daughter Alexandra, nor to their colleagues or students - and the feedback I've had is very much along these lines.

p. 147

12.12. ∅

Note 12 The word "tomorrow" is to be taken literally, not as a metaphor.

12.13. ∅

Note 13 Clearly, the foregoing description has no pretension other than to try and render as best I can, in concrete words, what this "fog" of memory delivers to me, which has not been condensed into any kind of case that is even remotely precise, of which I could have given a description here that was even remotely "realistic" or "objective". It would be a misrepresentation to suggest that colleagues who are reluctant to sit in the front rows, or who lack star or eminence status, are necessarily tied up in anguish when talking to one of the latter. This was clearly **not the** case for most of the friends I knew in this milieu, even among those who sometimes haunted conferences and seminars. What is unreservedly true is that the status of "eminence" creates a barrier, a gulf vis-à-vis those without such status, and that this gulf rarely disappears, even if only for the space of a discussion. I would add that the subjective distinction (which nevertheless seems very real to me) between the "front ranks" and the "marshes" cannot be reduced to sociological criteria (of social position, posts, titles, etc. . .) or even of "status" or renown, but that it also reflects psychological particularities of temperament or dispositions that are more delicate to pin down. When I arrived in Paris at the age of twenty, I knew that I was a mathematician, that I had **done** maths, and despite the disorientation I've already mentioned, I basically felt "one of them", even though I was the only one to know it, and I wasn't even sure that I would continue to do math. Today, I'd be more inclined to sit in the back rows (on the rare occasions when the question arises).

12.14. ∅

Note 14 One might think that this contradicts the assertion that there is no leader, but this is not the case.

p. 148 For Bourbaki alumni, it seems to me that Weil was perceived as the soul of the group, but never as a "leader". When he was there and when he liked it, he became a "ringleader" as I said, but he didn't do anything.

not the law. When he was in a bad mood, he could block discussion on a subject he disliked, even if it meant taking up the subject again at another congress when Weil wasn't there, or even the next day when he was no longer obstructing. Decisions were taken unanimously by the members present, given that it was by no means out of the question (nor even rare) for one person to be in the right against the unanimity of all the others. This may seem an aberrant principle for group work. The extraordinary thing is that it actually worked!

12.15. ∅

Note 15 I didn't get the impression that this "allergy" to the Bourbaki style gave rise to any communication difficulties between these mathematicians and myself or other Bourbaki members or sympathizers, as would have been the case if the spirit of the group had been that of a chapel, of an elite within the elite. Beyond styles and fashions, there was in all members of the group a lively sense of mathematical substance, wherever it came from. It was only in the sixties that I remember one of my friends referring to mathematicians whose work he wasn't interested in as "pain in the ass". When it came to things I knew virtually nothing about, I tended to take such assessments at face value, impressed by such casual assurance - until one day I discovered that such a "pain in the ass" was an original and profound mind, which had not pleased my brilliant friend. It seems to me that with some

Bourbaki members, an attitude of modesty (or at least reserve) towards the work of others, when one is unaware of that work or understands it imperfectly, eroded at first, while that "mathematical instinct" which makes one feel a rich substance or a solid work, without having to refer to a reputation or a renown, still subsisted. From the echoes that reach me here and there, it seems to me that both modesty and instinct have become rare things today in what used to be my mathematical milieu.

12.16. ∅

Note 16 To tell the truth, many of the Bourbaki members surely had their own microcosm "of their own", more or less extensive, apart from or beyond the Bourbakian microcosm. But perhaps it's no coincidence that in my own case, such a microcosm only formed around me after I had ceased to be part of Bourbaki, and all my energy was invested in tasks that were personal to me.

12.17. ∅

Note 17 [□]It was mainly outside the scientific community that I encountered warm echoes of the action . 149 to which I had committed myself, and active help. Apart from the friendly support of Alain Lascoux and Roger Godement, I must mention here above all that of Jean Dieudonné, who came to Montpellier for the Correctionnelle hearing, to add his warm testimony to others in favor of of a lost cause.

12.18. ∅

Note 18 I believe that this lack of discernment was not due to any negligence on my part on those two occasions, but rather to a lack of maturity, an ignorance. It was only some ten years later that I began to pay attention to blocking mechanisms, whether in my own person, in those close to me or in students, and to measure the immense role they play in everyone's life, and 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 expressed my impressions clearly, whether well-founded or not. When, in one case, I saw work done without seriousness, naming these things for what they are seems to me to be 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 of either learning from it (which is perhaps what happened the first time), or letting himself be discouraged, and perhaps then changing profession (which isn't necessarily a bad thing either!).

12.19. Jesus and the twelve apostles

Note 19 From 1970 to the present day, another student, Yves Ladegaillerie, has prepared and passed a thesis with me. The students of the first period are P. Berthelot, M. Demazure, J. Giraud. Mme M. Hakim, Mme Hoang Xuan Sinh. L. Illusie, P. Jouanolou. M. Raynaud, Mme M. Raynaud, N. Saavedra, J.L. Verdier. (Six of them actually completed their thesis work after 1970, at a time when my availability was still limited.

mathematics). Among these students, Michel Raynaud takes a special place, having found for himself the essential questions and notions that are the subject of his thesis work, which he moreover developed entirely independently; my role as "thesis director" proper was therefore limited to reading the finished thesis, constituting the jury and serving on it.

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□ When it was me who suggested a subject, I was careful to limit myself to those for which I had an interest, relationship strong enough for me to feel in a position, if need be, to support the student's work. A notable exception was Ms. Michèle Raynaud's work on local and global Lefschetz theorems for the fundamental group, formulated in terms of 1-fields on suitable scalar sites. The question seemed (and indeed proved) difficult, and I had no idea of how to prove the conjectures I was proposing (which, incidentally, could hardly be doubted). This work continued into the early '70s, and Mme Raynaud (as had previously been the case with her husband) developed a delicate and original method without any assistance from me or anyone else. This excellent work also opens up the question of extending Ms. Raynaud's results to the case of *n*-fields, which seems to me to represent the natural outcome, in the context of schemes, of theorems of the "weak Lefschetz theorem" type. However, the formulation of the relevant conjecture here (which can hardly be doubted either) makes essential use of the notion of *n*-field, the pursuit of which is supposed to be the main object of the present work², as its name "A la Poursuite des Champs" indicates. We'll come back to this in due course,

Another rather special case is that of Mme Sinh, whom I had first met in Hanoi in December 1967, during a month-long lecture-seminar I gave at the evacuated Hanoi University. The following year, I offered her the subject of her thesis. She worked under particularly difficult wartime conditions, her contact with me being limited to occasional correspondence. She was able to come to France in 1974/75 (on the occasion of the International Congress of Mathematicians in Vancouver), and complete her thesis in Paris (before a jury chaired by Cartan, and including Schwartz, Deny, Zisman and myself).

Finally, I must mention Pierre Deligne and Carlos Contou-Carrère, both of whom were somewhat of a pupil, the former around 1965-68, the latter around 1974-76. Both obviously had (and still have) uncommon means, which they used in very different ways and with very different fortunes too. Before coming to Bures, Deligne had been a pupil of Tits (in

Belgium) - I doubt he was a student of anyone in mathematics, in the common sense of the term. Contou-Carrère had been a pupil of Santalo (in Argentina), and for a while of Thom! little □ou prou). One of them and the other already had the stature of a mathematician when the contact was established, except that Contou-Carrère lacked method and craft.

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My mathematical role with Deligne was limited to informing him, on a weekly basis, of the little I knew about algebraic geometry, which he learned as if he'd always known it, and to raising questions along the way, which he usually answered on the spot or in the days that followed. These were the first works of Deligne's that I knew. His work after 1970 (for him as well as for my "official students") is known to me only through very scattered and distant echoes³.

My role with Contou-Carrère, as he himself says at the beginning of his thesis, was limited to introducing him to the language of schematics. In any case, I've only been remotely involved in the work he's been preparing as a doctoral thesis in recent years, on a highly topical subject that falls outside my remit.

²This is actually volume 3 of *Réflexions Mathématiques*, not the present volume 1 *Récoltes et Semailles* - see Introduction, p.(v).

³In particular, I had the opportunity to browse through some Berthelot and Deligne separate prints, which they were kind enough to send me.

Following a few misadventures in the wide world, Contou-Carrère was recently led, in extremis and (it now seems to me) unwillingly, to call on my services to act as thesis director and jury. (This exposed him to the risk of appearing as Grothendieck's pupil "after 1970", in a conjecture where this can present serious disadvantages... .). I carried out this task to the best of my ability, and this will probably be the last time I do so (at the level of a state doctorate thesis). I am all the happier, in this rather special circumstance, for the friendly assistance of Jean Giraud, who also took a month or two out of his time to do a thorough reading of the voluminous manuscript, of which he made a detailed and warm report.

12.20. ∅

Note 20 This reminds me of the subject Monique Hakim had taken up, which wasn't much more engaging to tell the truth - I wonder how she managed to keep her spirits up! If she did suffer at times, it was certainly not to the point of making her sad or sullen, and the work between us was done in a cordial and relaxed atmosphere.

12.21. ∅

Note 21 It would perhaps be more accurate to say that for the temperament that is mine, it is **maturity** which I still lack to fully assume a teaching role. 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 "feminine" (or "yin") predominance. p. 152

(Added later.) Even more than maturity, I see that it's a certain **generosity** that I've lacked in my teaching life to date - a generosity that expresses itself in a more delicate way than availability of time and energy, and which is more essential. This lack didn't manifest itself visibly (through an accumulation of failed situations, let's say) in my first period of teaching, no doubt mainly because it was compensated for by a strong motivation in the students who chose to come and work with me. In the second period, on the other hand, from 1970 to the present day, it seems to me that this lack of motivation is at least one of the reasons, and in any case the one that involves me most directly, for the overall failure that I observe in my teaching at research level (from the DEA level upwards). On this subject, see "Esquisse d'un programme", par.8, and par.9 "Bilan d'une activité enseignante", where the sense of frustration that this activity has left me with for the last seven or eight years is apparent⁴.

12.22. ∅

Note 22 Not for much longer, perhaps, since I have decided to apply for admission to the Centre National de la Recherche Scientifique, thus putting an end to a teaching activity in a university environment, which in recent years has become increasingly problematic.

⁴Compare also note (23iv), added later.

12.23. ∅

Note 22 Even after 1970, when my interest in maths became sporadic and marginal in my life, I don't think there was an occasion when I recused myself when a student called on me to work with him. I can even say that, apart from two or three cases, my post-1970 students' interest in the work they were doing was far below my own interest in their subject, even in periods when I had to work with them.

where I didn't worry much about maths except on the days I set foot in college. Also the kind of availability I had to mes pre-1970 students, and the extreme demand for work that was a sign of it

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In the main, they would have made no sense to most of my later students, who did maths without conviction, as if by a continual effort they had to make on themselves... ..

12.24. The Child and the Master

Note 23 The term "transmit" here doesn't 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, while it is ignored or discouraged from a very young age, by the family environment as well as by school and 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 don't think it was passed on to me by my parents, and even less by masters, at school or among my mathematician elders. It seems to me to be one of the attributes of **innocence**, and therefore one of the things that everyone is born with. Very early on, this innocence "sees a lot of green and a lot of black", which means that it is obliged to plunge more or less deeply, and that often there is hardly a trace of it left in the rest of one's life. In my case, for reasons I haven't yet thought of investigating, a certain innocence has survived at the relatively innocuous level of intellectual curiosity, whereas everywhere else it has plunged deep, unseen and unheard of, just like everyone else. Perhaps the secret, or rather the mystery, of "teaching" in the full sense of the word, lies in reconnecting with this seemingly vanished innocence. But there's no question of rediscovering this contact in the pupil, if it isn't already present or rediscovered in the person of the teacher himself. And what is "transmitted" by the teacher to the pupil is by no means this rigor or innocence (innate in both of them), but a respect, a tacit reevaluation of this commonly rejected thing.

12.25. ∅

Note 23 For the past seven or eight years, however, there has been another chronic "source of frustration" in my life as a mathematician, but one that has expressed itself much more discreetly over the years. It eventually became apparent through an effect of repetition, of obstinate accumulation of the same type of "frustrating" situation.

in my teaching activity, and by finally bursting into a sort of "fed up!", causing me to practically put an end to all so-called de " research direction" activity. I touch on this issue once or twice at the

p. 154

In the course of my reflection, I finally examine it at least a little at the very end. At the very least, I describe this frustration, and examine the role it played in my "return to maths" (cf. par.50. "Weight of a past").

12.26. Fear of playing

Note 23 This student had worked with me on a DEA "work placement" for a whole year, and remained "contracted" in his working relationship with me right up to the end. It was a frankly friendly relationship, shot through with a mutual sympathy that could not be doubted. Yet there was this "stage fright"; this fear, the real cause of which was surely not fear of me, even though it looked like it. I might not even have noticed it, had this student not told me about it himself, no doubt to "explain" more or less the reason for an almost complete block in his work during the year.

As was the case with other students who, like him, were initially hooked on a certain geometrical substance, the blockage manifested itself from the moment it was a question of doing "work on parts", i.e. putting statements in black and white, or just grasping the meaning and significance of those I was providing and proposing to admit as the foundations of a language, as the "rules of the game". School reflexes almost always push the student, faced with a situation where he's supposed to be "doing research", to adopt as a "given", both vague and imperative, the implicit "rules of the game" handed down by the teacher, and which it's certainly not a question of trying to make explicit, let alone understand. The concrete form these implicit rules take are "recipes" for semantics or arithmetic, along the lines of, say, a mole book (or any other common textbook). What's more, the pupil expects the teacher to perform a task of the form "demonstrate that... ." (Incidentally, I don't believe that the attitudes of most professional mathematicians, and other scientists too, are essentially different - except that the "master" is replaced by the "consensus", which sets the rules of the game at the time and regards it as an immutable given. This consensus also defines the "problems" to be solved, between which everyone feels free to choose as they wish, even allowing themselves to modify them as they go along. of its work, or even to invent new ones. ...). I noticed that the entirely different attitude that p. 155 is mine vis-à-vis a mathematical substance that needs to be probed, and therefore also vis-à-vis the student, almost certainly triggers disarray, one of the signs of which is anguish. Like all anxiety, this will tend to take on a face, projecting itself onto an external "reason", plausible or not. One of the most common faces of anguish is fear.

Such difficulties hardly arose in the first period of my teaching activity, except perhaps in the two cases where a "teacher-student" relationship didn't continue beyond a few weeks, and perhaps (I couldn't say) in the case of the "sad student", who perhaps felt "riveted" to a subject that didn't inspire him at all, even though he had every opportunity to change it. In the case of the student (whom I also mentioned) who remained afflicted by stage fright for a long time, it's clear that the reason lay elsewhere. He was by no means blocked in his work, but on the contrary perfectly at ease with the theme he had chosen, on which he did a great deal of groundwork. In fact, most of my students during this period were former students of the Ecole Normale, and their contact with Henri Cartan had already shown them the example of a "different" approach to mathematics. At the opposite end of the spectrum (so to speak), in my second period as a teacher at the University of Montpellier, it was among first-year students that the anguish I've mentioned least interfered with reflective work. For many of these students, astonishment at a different approach didn't provoke anguish or closure, but rather openness and a willingness to do interesting things for once! From my observations, the effect of a few years in college on a student's creative disposition is radical and devastating. It's a strange thing that in this respect the effect of the long years of high school seems relatively

p. 156 trivial. Perhaps the reason is that the college years come at an age when the creativity innate in us **must** ultimately be expressed through personal work, otherwise we'll be shipwrecked forever, at least in terms of creative work of an intellectual nature. It must have been a healthy instinct that during my years as a student (also at the Fac de Montpellier) I practically refrained from setting foot in class, devoting almost all my energy to ^{per□sonnel} mathematical reflection.

12.27. The two brothers

Note 23 This student's antagonism 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, which I could decide at my own pleasure. ... Of course, events only confirmed this vision, as I soon put an end to my (now painful) responsibilities towards this student. This put him in a tricky situation, in these times when it's 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 antagonism took a similar form. I felt like the tyrannical "mandarin", who could not tolerate contradiction from those (students or lower-ranking colleagues) he considered his subordinates.

Such a "class attitude" never manifested itself, if at all, during the relationship with my students of the first period. The obvious reason was that, in the pre-1970 context, there was no doubt that the student, once he had passed his thesis, would have a position as a lecturer, and would therefore enjoy a social status identical to mine, that of "university professor". Loquacious figures: the eleven students who began working with me before 1970 were given lectureships as soon as their work was completed, whereas none of the twenty or so students who worked more or less under my direction had access to such a position. It's true that only two of them were motivated enough to do a state doctorate thesis (an excellent one in both cases).

It's hardly surprising, then, that in this second period, certain ambivalences (whose deeper origins remained hidden) took the form of class antagonism, of distrust (presented and felt as "visceral") towards the "boss". For one of those who had been more or less a pupil, friendly relations continued for ten years without any apparent antagonistic episode, and yet marked by this same ambiguity, expressed by an attitude of mistrust, held "in reserve" behind manifest sympathy. To tell the truth, I've never been fooled by this "mistrust" of command, which

appeared to me above all as a reason that this friend sees fit to give himself for not venturing outside the well-defined domain he has □ a chosen as his own, in his professional life as in his life all short - something he is free to do, however, without anyone (except, at most, himself!) calling him to account. ...

p. 157 In fact, these three cases are the only ones in all my teaching experience where a certain ambivalence in the relationship between a student (or someone who is more or less a student) and myself has been expressed in 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 salary) appear relatively insignificant. In fact, I've noticed that these attitudes disappear as if by magic (and with good reason!), as soon as the person concerned sees himself promoted to the position of which only the day before he was complaining to others.

In fact, I detect a similar ambiguity in most, if not all, of the conflict situations I've encountered.

within the mathematical world (and often outside it too). Those who have been "castrated", whether or not their rank corresponds to their expectations (justified or not), enjoy quite unheard-of privileges, which no other profession or career can offer. Those who don't fit in aspire to the same security and privileges (which doesn't necessarily prevent them from taking an interest in maths itself, and sometimes from doing great things). These days, when the competition for a place is fierce, and the unhoused are often treated like stragglers, I've more than once felt the connivance between the one who enjoys humiliating and the one who is humiliated - and who swallows and crushes. The real object of his bitterness and animosity is **not** the one who has made use of power, but is none other than **himself**, who has crushed himself and invested the other with this power which he uses at pleasure. The one who takes pleasure in humiliating is also the one who takes his revenge and compensates (without ever erasing it. . .) for a long-lasting humiliation that has long since been buried and forgotten. And he who acquiesces in his own humiliation is his brother and emulator, who secretly envies it and in bitterness buries both the humiliation, and the humble message about himself that it brings him.

12.28. Teaching failure (1)

Note 23ivSince

these lines were written, I have had the opportunity to speak with two of my ex-studentsp . 158 from after 1970, to try to probe with them the reason for the failure of my teaching at the level of re- research, 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 but not to them, could represent for them, had a discouraging effect on them, as they constantly felt they were falling short of the expectations I had of them. What's more (and this seems even more far-reaching to me), they sometimes felt frustrated when I "sold the worm" by giving them a shaped statement I had up my sleeves, instead of letting them discover it for themselves, at a time when they were already very close to it. After that, all they had to do was the "exercise" (which they weren't otherwise keen on) of proving the statement in question. Herein lies the "lack of generosity" in me that I had noted in an earlier note (note 21), without elaborating further. It is disappointments such as these, above all, that represent my personal contribution to the disappearance of interest in research in both of us, after what was nonetheless an excellent start.

I realize that I was no more generous before 1970 than after. If I didn't have the same difficulties then, it's undoubtedly because the kind of students who came to me in those days were motivated enough to find even a "long exercise" appealing, which was an opportunity to learn the trade and a host of other things along the way; and also, for a starter statement I was "selling the fuse" on, to come up with a host of others on their own that went far beyond the first. When I changed teaching location, I made the necessary adjustment in the choice of topics for reflection that I proposed to my new students, by choosing mathematical objects that could be grasped by immediate intuition, independently of any technical baggage. But this essential adjustment was in itself insufficient, due to differences in **disposition** (in my new students compared to those of yesteryear), even more important, than a single difference in **baggage**. This ties in with the observation made earlier (beginning of par.25) about a certain inadequacy in me for the role of "master", which came out much more strongly in my second period as a teacher than in the first.

12.29. ∅

p. 159 **Note 23v** □ A particularly striking sign of this difference was seen in the "episode

strangers", which I have already mentioned (section 24). While I did receive expressions of sympathy from many people who were complete strangers to me, I don't recall any of my pre-1970 students thinking of expressing this, let alone offering me any help in the action I had embarked upon. On the other hand, I can't think of a single one of my students or former students from the second period who didn't express their sympathy and solidarity with me, and several actively joined the campaign I was running at local level. Beyond this restricted circle, the 1945 ordinance affair also created a certain emotion among many students at the Faculty who knew me by name at most, and a good number of them came to the Palais de Justice on the day of my summons, to show their solidarity. This last circumstance suggests, moreover, that the difference I observed between the attitudes of my students "before" and "after" 1970 may express less the difference in **relations** between them and me, than a difference in **mentalities**. Clearly, my "before" pupils had become important people, and it takes a lot for important people to consent to be moved... . But the episode of my departure from the IHES in 1970 and my involvement in militant action seems to show that there's more to it than that. It was a time when none of them was yet such an important figure, and yet I don't remember any of them showing the slightest interest in the activity I was getting involved in. Rather, I think it must have made them uncomfortable, all of them without exception. This again points to a difference in mentality, but one that can't be blamed solely on differences in social status.

12.30. ∅

Note 24 The ethics I'm talking about apply just as much to any other milieu formed around a research activity, and where the possibility of making one's results known, and taking credit for them, is a matter of "life or death" for the social status of any member, or even of "survival" as a member of this milieu, with all the consequences this implies for him and his family.

12.31. Deontological consensus - and information control

p. 160 **Note 25** Apart from the conversation with Dieudonné, I can't recall a conversation I've participated in or witnessed, during my life as a **mathématician**, where the ethics of the profession were discussed, rules of the game" in relations between members of the profession. (I exclude here the discussions about the collaboration of scientists with the military, which took place in the early 70s around the "Survivre et Vivre" movement. They didn't really concern the relationships between mathematicians. Many of my friends in Survivre et Vivre, including Chevalley and Guedj, felt that the emphasis I placed at that time, especially in the early days, on this question to which I was particularly sensitive, distracted me from more essential everyday realities, of precisely the type I am examining in the present reflection). These things were never discussed between a student and myself. The tacit consensus was limited, I believe, to this one rule: not to present as one's own any ideas of others of which one may have been aware. This consensus, it seems to me, has existed since antiquity and has not been challenged in any scientific milieu to this day. But in the absence of this other complementary rule, which guarantees every researcher the possibility of making his ideas and results known, the first rule remains a dead letter. In today's scientific world, men in positions of prestige and power hold the key to success.

discretionary control of scientific information. This control is no longer tempered, in the milieu I had known, by a consensus such as Dieudonné spoke of, which perhaps never existed outside the restricted group whose spokesman he was. The scientist in a position of power practically receives all the information he deems useful to receive (and often even more), and has the power, for much of this information, to prevent its publication while keeping the benefit of the information and rejecting it as "uninteresting", "more or less well known", "trivial", etc. ... I return to this situation in note (27).

12.32. ∅

Note 26 The "founding members" of Bourbaki are Henri Cartan, Claude Chevalley, Jean Delsarte, Jean Dieudonné. André Weil. They are all still 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.

Rereading the text, I was tempted to delete this passage, in which I can give the impression of to award certificates of "probity" (or non-probity) which the interested parties have no use for, and which it is not my responsibility de faire. The reservation this passage may arouse is surely justified. Nevertheless, I retain it, p. 161
for the sake of authenticity, and because this passage does convey my feelings, however misplaced they may be.

12.33. Youth snobbery", or the defenders of purity

Note 27 Ronnie Brown shared with me a reflection by J.H.C. Whitehead (of whom he was a pupil), speaking of the "snobbery of the young, who believe: that a theorem is trivial because its proof is trivial". Many of my old friends would do well to ponder these words. Today, this "snobbery" is by no means limited to young people, and I know more than one prestigious mathematician who routinely practices it. I'm particularly sensitive to it, because the best I've done in mathematics (and elsewhere too. . .), the notions and structures I've introduced that seem to me to be the most fruitful, and the essential properties I've been able to extract from them through patient and persistent work, all fall under the label of "trivial". (None of these things would have stood much chance of being accepted for a CR grade these days, were the author not already a celebrity!) My lifelong ambition as a mathematician, or rather my passion and joy, has been constantly to **find the obvious things**, and this is my sole ambition also in the present work (including the present introductory chapter. . .), The decisive thing is often already to see the **question** that had not been seen (whatever the answer may be, and whether it has already been found or not) or to come up with a statement (even if it is conjectural) that sums up and contains a situation that had not been seen or understood; if it is demonstrated, it doesn't matter whether the demonstration is trivial or not, which is entirely incidental, or even whether a hasty and provisional demonstration proves to be false. The snobbery of which Whitehead speaks is that of the jaded wine-lover who deigns to appreciate a wine only after he has ascertained that it has cost a great deal of money. More than once in recent years, caught up in my old passion, I've offered the best I had, only to see it rejected by that kind of smugness. I've felt a pain that's still alive, a joy that's been disappointed - but that doesn't mean I'm homeless, and fortunately for me, I wasn't trying to fit in an article of my own.

12. NOTES for the first part of "HARVESTS AND WEEKS".

p. 162 The snobbery of which Whitehead speaks is an abuse of power and a dishonesty, not only an insensibility or a closure to the beauty of things, when exercised by a man of power against a researcher to his ^{merci}, whose ideas he has free rein to assimilate and use, while blocking their publication on the grounds that they are "obvious" or "trivial", and therefore "uninteresting". I'm not even thinking here of the extreme situation of plagiarism in the common sense of the term, which must still be very rare in the mathematical world. However, from a practical point of view, the situation is the same for the researcher who pays the price, and the inner attitude that makes it possible doesn't seem much different to me either. It's simply more comfortable, since it's accompanied by a feeling of infinite superiority over others, and the good conscience and intimate satisfaction of the intransigent defender of the intangible purity of mathematics.

12.34. ∅

Note 28 In writing the preceding pages, I was initially divided between a desire to "get it off my chest", and a concern for reserve or discretion. As a result, I had remained in a state of "à-peu-près", which was surely the main reason for my unease, my feeling that "I wasn't learning anything". Since the lines noting this malaise were written, I've twice rewritten those pages that had left me feeling internally discontented, getting more clearly involved and getting to the bottom of things. Along the way, I did indeed "learn something", and I also believe that I managed to put my finger on something important that goes beyond the case in point and beyond myself.

12.35. ∅

Note 29 I'm referring here to an intense, long-term investment in mathematics, or in some other entirely intellectual activity. On the other hand, the unfolding of such a passion - which can be a way of reacquainting ourselves with a forgotten force within us, and an opportunity to measure ourselves against a reluctant substance and, in the process, renew and enrich our sense of identity with something truly personal to us - such an unfolding may well be an important stage in an inner journey, in a maturing.

12.36. ∅

Note 30 In recent years, my children have taken over the task of teaching a sometimes reluctant pupil about the mysteries of human existence. ...

12.37. ∅

p. 163 **Note 31** I'm 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 has appeared irreversible, ineffaceable (even though it would later come to be buried, forgotten, 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 openness, and of a sudden knowledge that for a time erases all traces of conflict, comes as a grace once again, touching deeply even though its visible effect may be ephemeral. I suspect, however, that this wordless knowledge that comes to us in this way, at certain rare moments in our lives, is just as ineffaceable, and its action continues even beyond the memory we may have of it.

12.38. A hundred irons in the fire, or: there's no point in drying out!

Note 32 **W h e n** I was still doing Functional Analysis, that is, until 1954, I would sometimes persist endlessly on a question I couldn't solve, even though I had no more ideas and was content to go round in circles with old ideas that obviously didn't "bite" any more. This was the case, in any case, for a whole year, notably for the "approximation problem" in topological vector spaces, which would only be solved some twenty years later by methods of a totally different order, which could only have escaped me at this point. I was driven then, not by desire, but by stubbornness, and by an ignorance of what was going on inside me. It was a painful year - the only time in my life when doing math had become painful for me! It took that experience for me to realize that there's no point in "skipping" - that once a piece of work has reached a standstill, and as soon as you've realized it has, you have to move on to something else - even if it means coming back to the question at hand at a more propitious moment. This moment almost always comes quickly - the question matures, without me even pretending to touch it, simply by virtue of working with gusto on questions that may seem to have nothing to do with this one. I'm convinced that if I persisted, I wouldn't get anywhere even in ten years! It was from 1954 onwards that I got into the habit in maths to always have many irons in the fire at the same time. I only work on one at a time, but by a kind of miracle that constantly renews itself, the work I do on one \square profits the other as well. all the others, 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 be examined increased day by day, as the reflection continued. ...

p. 164

12.39. \emptyset

Note 33 This does not mean that moments when paper (or the blackboard, which is a substitute!) is absent are not important in mathematical work. This is especially true in the "sensitive moments" when a new intuition has just appeared, when it's a question of "getting to know" it in a more global, more intuitive way than by "working on parts", which this informal stage of reflection prepares. In my case, this kind of reflection takes place mostly in bed or out for a walk, and it seems to me that it accounts for a relatively modest proportion of total work time. The same observations apply to meditation work as I've practised it up to now.

12.40. The powerless embrace

Note 34 The word "embrace" is by no means a mere metaphor for me, and the common language here reflects a profound identity. It could be said, not without reason, that it is not true that "embrace" is a metaphor.

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, in which wonder is certainly absent, even though it happens that a being is procreated in the raped woman. Of course, the child born of such an embrace cannot fail to bear the mark of this embrace, which will be part of the "package" he or she receives and must assume; but this does not prevent a new being from being conceived and born. that there has been **creation**, a sign of **power**. And it's also true that some mathematicians I've seen, full of self-importance, find and prove beautiful theorems, signs of an embrace that didn't lack force! But it's also true that if the life of such a mathematician is suffocated by his smugness (as was to some extent the case in my own life, at one time), the fruits of these embraces with mathematics are a blessing to him and to no-one else. And the same can be said of the father and mother of a child born of rape. When I speak of a "powerless embrace", I mean above all the powerlessness to engender **renewal** in those who believe:

p. 165 create, whereas all he creates is a **product**, something external to him, with no deep resonance within himself; a product which, far from freeing him, creating harmony within him, binds him more closely to the fatuity within him of which he is

a prisoner of the constant pressure to produce and reproduce. This is a form of powerlessness at a deep level, behind the appearance of "creativity" which is basically just unbridled **productivity**.

I've also had ample opportunity to realize that complacency, the inability to marvel, is in the nature of true blindness, a blockage of natural sensitivity and flair; if not total and permanent, at least manifest in certain situations. It's a state of affairs in which a prestigious mathematician sometimes reveals himself, in the very things in which he excels, to be as stupid as the most stubborn of schoolchildren! On other occasions, he will perform prodigious feats of technical virtuosity. I doubt, however, that he is yet in a position to discover the simple and obvious things that have the power to renew a discipline or a science. They are far too far below him for him to deign to see them! To see what no one deigns to see, he needs an innocence that he has lost, or banished. . . It's no coincidence, surely, with the prodigious increase in mathematical production over the last twenty years, and the unrolling profusion of new results with which the mathematician who simply wants to "keep up to date" is inundated, that (as far as I can judge from the echoes that reach me here and there) there has hardly been any real **renewal**, any far-reaching transformation (and not just by accumulation) of any of the major themes of thought with which I have been even remotely 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 and such a "level" of mathematicians. A million mathematician-days is powerless to give birth to something as childlike as the zero, which has renewed our perception of number. Only innocence has this power, a visible sign of which is wonder. ...

12.41.

Note 35 This "gift" is nobody's privilege; we're all born with it. When it seems absent in me, it's because I've chased it away myself, and it's up to me to welcome it back. In me or in such-and-such a person, this "gift" expresses itself in a different way than in another, less communicative, less irresistible perhaps, but it's no less present, and I couldn't say if it's less active.

12.42.

p. 166 **Note** 36 Such a delicate sensitivity to beauty seems to me intimately linked to something I've had

I've had occasion to refer to it as "exigency" (with regard to oneself) or "rigor" (in the full sense of the word), which I described as "attention to something delicate in ourselves", attention to a quality of understanding of the thing being 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 that thing.

12.43. ∅

Note 37 I think I hardly need to add that this long-term work has brought out, day by day, much more than the "result" I have just delivered in lapidary form. It's no different for a work of meditation than it is for a mathematical work motivated by a particular question that we set out to examine. Quite often, the twists and turns of the road followed (which may or may not lead to a more or less complete clarification of the initial question) are more interesting than the initial question or the "final result".

12.44. ∅

Note 38 These notes were in fact a continuation of the long letter to . . . which became the first chapter. They were typed so as to be legible for this old friend, and for two or three others (Ronnie Brown in particular) whom I thought might be interested. This letter, by the way, was never answered, nor was it read by the addressee, who almost a year later (when I asked him if he'd received it) expressed sincere astonishment that I'd even thought for a moment that he could read it, given the kind of mathematics that was to be expected of me. ...

12.45. ∅

Note 39 This is the period, among others, of the "Long Walk through Galois theory", discussed in "Esquisse d'un Programme" (par.3: "Corps de nombres associés à un dessin d'enfant").

12.46. The visit

Note 40 The work on this dream is the subject of a long letter in English, to a friend and colleague who had dropped in on me the day before. Some of the materials used by the Dreamer to bring this strikingly realistic dream out of apparent nothingness were obviously borrowed from this short episode of the visit.

of a dear friend I hadn't seen in nearly ten years. ^{Ausi} , on the first day of work and against from 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 the dream, not me! It was a way of evading the message of the dream, which (I should have known from my past experience) concerned no one but me. I finally realized this in the night that followed this first, superficial phase of the work, which I resumed the next day in the same letter. Since that memorable letter, I have received no further sign of life from this friend, one of the closest I have ever had.

This work was the only meditation that took the form of a letter (and in English to boot), so I no longer have a written record of it. I was particularly struck by this episode, one of many that show how any sign of work that goes beyond a certain façade, and brings to light simple facts that we generally make a point of ignoring - how any such work inspires unease and fear in others. I'll come back to this later (see par. 47, "The solitary adventure").

12.47. Krishnamurti, or liberation turned hindrance

Note 41 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 ultimately substitute it, appropriately enough, for reality. The reason I was so struck by Krishnamurti's first book (even though I'd only had the chance to read a few chapters) was that what he was saying totally overturned a number of things I'd always taken for granted, and which I immediately realized were **commonplaces** that had always been part of the air I'd breathed. At the same time, this reading drew my attention, for the first time, to far-reaching facts, especially that of flight from reality, as one of the most powerful and universal conditioning of the mind. This gave me an essential key to understanding situations that until then had been incomprehensible and therefore (without my realizing it until I discovered meditation five or six years later) generating anguish. I've noticed

p. 168 immediately the reality of this escape all around me. This unraveled certain anxieties, without however changing anything essential, because I only saw this reality in others, while ^{me} figuring (as going from I was, in fact, the exception that confirmed the rule (and without asking myself any further questions about this truly remarkable exception). In fact, I was in no way curious about myself or others. This "key" can only **open in the** hands of the person motivated by the desire to penetrate. In my hands, it had become an exorcism and a pose.

It was at the beginning of 1974 that, for the first time, I realized that the destruction in my life, which had been following me step by step, could not have come from others **alone**, that there was something **within me** that attracted it, fed it, perpetuated it. It was a moment of humility and openness, conducive to renewal. But the renewal remained peripheral and ephemeral, for lack of in-depth **work**. This "something inside me" was still vague. I could see that it was a lack of love, but the very idea of working to identify more closely where and how there had been a lack of love in me, how it had manifested itself, what its concrete effects had been, etc. . - (On the contrary, K. likes to insist on the vanity of all work, which he automatically equates with the ego's "craving to become"). So, with borrowed "wisdom" as my compass, I saw nothing to do but wait patiently for "love" to descend upon me like a grace from the Holy Spirit.

Yet the humble truth I'd just learned in the depths of a wave had triggered a powerful surge of new energy, comparable to that which would carry me through my first foray into meditation two and a half years later. This energy did not remain entirely unused. A few months later, when I was immobilized by a providential accident, it led to a (written) reflection in which, for the first time in my life, I examined the worldview that had been the unspoken basis of my relationship with others, and which had come to me from my parents and especially 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 fostering personal fulfillment and relationships with others. This reflection remains

by the "Krishnamurti style", and also by the Krishnamurtian taboo on any real **work** towards understanding. However, she made tangible and irreversible a knowledge born a few months before, restéep at first vague and elusive. No book and no other person in the world could have given me this knowledge. . 169

To have the quality of a meditation, what this reflection lacked above all was a look at myself and my **vision of myself**, and not just my vision of the world, a system of axioms in which I wasn't really "in the flesh". It also lacked a look at myself in **the moment**, at the very moment of reflection (which fell short of a real work); a look that would have allowed me to detect not only a borrowed style, but also a certain complacency in the literary aspect of these notes, a lack of spontaneity and authenticity. Inadequate though it was, and relatively limited in its immediate effects on my relationships with others, this reflection nonetheless seemed to me to be a step, probably necessary given the starting point, towards the more profound renewal that was to take place two years later. It was then, at last, that I discovered meditation - and discovered that first unsuspected fact: **that there were things to discover about myself** - things that almost completely determined the course of my life and the nature of my relationships with others. . .

12.48. The salutary wrench

Note 42 "The "percussive" event in question was the discovery, at the end of 1969, that the institution to which I felt I belonged was partly financed by funds from the Ministry of the Armed Forces, something which was incompatible with my basic axioms (and still is, in fact). This event was the first in a whole chain of others (each more revealing than the last!) which resulted in: my departure from the IHES (Institut des Hautes Etudes Scientifiques), and one thing leading to another, a radical change of environment and investments.

During the heroic years of the IHES, Dieudonné and I were the only members, and also the only ones to give it credibility and an audience in the scientific world, Dieudonné through the publication of "Publications Mathématiques": the first volume of which appeared as early as 1959, the year after the IHES was founded.

IHES by Léon Motchane), and I by the "Séminaires de Géométrie Algébrique". In those early years, the IHES' existence remained ^{most}precarious, with uncertain funding (through the generosity of a fewp . 170 companies acting as patrons) and with the only premises a room lent (with visible bad humor) by the Fondation Thiers in Paris for the days of my seminar⁵. 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 come to identify strongly with the IHES, and my departure (as a consequence of my colleagues' indifference) was experienced as a kind of uprooting from another "home", before proving to be a liberation.

Looking back, I realize that there must already have been a need for renewal within me, although I can't say how long ago it was. It's surely no mere coincidence that the year before I left IHES, there was a sudden shift in my investment of energy, leaving the tasks that had been burning in my hands the day before, and the questions that fascinated me most, to throw myself (under the influence of a biologist friend, Mircea Dumitrescu) into biology. I went into it with the attitude of a

⁵A recent brochure published by the IHES to mark the twenty-fifth anniversary of its foundation (of which Nico Kniper was kind enough to send me a copy) says nothing about these difficult beginnings, perhaps unworthy of the solemnity of the occasion, which was celebrated with great pomp last year.

long-term investment in IHES (in keeping with the institution's multi-disciplinary vocation). Surely this was no more than an outlet for the need for a much more profound renewal, which could not have been achieved in the "scientific incubator" atmosphere of the IHES, and which took place during that "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 ex-colleagues at IHES, have finally earned my gratitude!

12.49. ∅

Note 43 "The poetic work of my composition" contains many things that I know first-hand, and which today appear to me to be just as important in my life, and "in life" in general, as when it was written, with the intention of publishing it. If I have refrained from doing so, it is above all because I

I later realized that the form was afflicted by a deliberate intention to "make poetic", so that its overly-constructed ensemble conception, and many passages, lack spontaneity, au

p. 171

The form was at times painfully stiff and swollen. This form, bulky at times, was a reflection of my disposition, where it was decidedly often the "boss" who called the shots - heavily, it goes without saying... .

12.50. ∅

Note 44 Needless to say, I'm disregarding the hypothesis - by no means improbable, to say the least - of the unexpected eruption of an atomic war or some other such joyous event, likely to put an abrupt end, once and for all, to the collective game called "Mathematics", and to much else besides... .

