

Harvest and Sowing

Reflection and testimony
on a past as a mathematician

by

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First Part:

FATUITY AND RENEWEL

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

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

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I. Work and discovery

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1. The child and the Good God

The mathematical notes I am working on now are the first in thirteen years that I intend for publication. The reader will not be surprised that after a long silence, my style of expression has exchanged. This change of expression is not, however, the sign of a change in style or method of work (1), and even less is it a sign that a transformation has happened in the very nature of my mathematical work. Not only did it remain the same - but also I have acquired the conviction that the nature of the work of discovery is the same from one person to another, and that it is beyond the differences created by the infinitely varying conditions and temperaments.

Discovery is the privilege of the child. It's the little child that I want to talk about, the child who is not afraid to be wrong, to look silly, to not be serious, to not be like everyone else. He is neither afraid that the things he looks at will have a bad taste, different from what he expects, from what they appear to be, or rather: from what he has **already understood them to be**. He ignores the unspoken and unwavering consensus that form part of the air we breathe - which all the grown-ups are supposed to know and they do know. God knows (I suppose the grown-ups know well) if there have been any such child, since the dawn of ages!

Our minds are saturated with a motley "knowledge", a tangle of fears and laziness, of cravings and prohibitions; of all kinds of information and push-button explanations - a closed space to pile up information, cravings and fears without the breeze of the open sea ever blowing in. Except for routine knowledge, it would seem that the main role of this "knowledge" is to evacuate a living perception and awareness of things of this world. Its effect is above all that of immense inertia, of an often overwhelming weight.

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

God created the world along as he gradually discovered it, or rather, he created the world eternally, and then, little by little, he discovers it - and he discovers it along as he creates it. He created the world and created the day after day, by repeating it millions and millions of times, without respite, by groping, mistaking millions and millions of times and correcting it, tirelessly... Every time, in this game of knocking and probing into things, in the response of things ("not bad, that try", or: "there you're really messing up", or "this works like roulette, continue like that"), and then the new probing, rectifying or resuming the previous one, in response to the previous response..., at each round in this infinite dialogue between the Creator and the Things, which takes place at every instant and in all places of Creation, God learns, discovers, and gets to know things more and more intimately, as they take life and form and transform themselves in His hands.

Such is the process of discovery and creation, such has it been for all eternity (as far as we can tell). She has been like this, before man made his late entry into the scene, barely one or two million years ago, and gets his hands dirty - leading to, in recent times, the unfortunate consequences which we all know.

It happens that one or another of us discovers this or that thing. Sometimes he then rediscovers in his own life, with wonder, what it means to **discover**. Everyone has everything they need to discover whatever attracts him in this vast world, including that wonderful ability that is within him - the thing that is the simplest and most obvious in the world! (This is the thing, however, that many have forgotten, just as we have forgotten how to chant, or how to breathe the way a child breathes...)

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

2. Error and discovery

To come back to the style of my mathematical work per se, or to its “nature” or “approach”: they are now the same as before, as what the good God himself taught us all without words, God knows when, perhaps long before we were born. **I do as he does**. This is also what everyone does instinctively, as soon as curiosity pushes him to know this thing of all things, a thing invested from then on by this desire, this thirst...

When I am curious about something, mathematical or otherwise, **I question[interroge] it**. I question it, without caring if my question is perhaps stupid or if it will appear so, without it being carefully weighed. Often the question takes the form of an assertion - an assertion which, in truth, is a knocking probe. I will then believe more or believe less in the assertion, which depends of course on where I stand in the comprehension of the things I’m looking at. Often, especially at the beginning of a research, the assertion is completely false - but this still had to be done to convince yourself. Often, it suffices to write it down for it to become obvious that it is false, whereas before writing it down there was a vagueness[flou], like an uneasiness[malaise], instead of obviousness. It then enables us to return to the probing with less ignorance, with a question-assertion that is perhaps a little less “off the mark”. More often still, the affirmation taken literally turns out to be false, but the intuition which, still clumsily, tries to convey itself through this is correct, though remaining vague. This intuition will, little by little, be decanted from an equally shapeless gangue of false or inadequate ideas, it will gradually emerge from the limbo of the misunderstood which only asks to be understood, of the unknown which only asks to be known, to take a form which is her own, to refine and sharpen its contours, as the questions I ask of these things in front of me become more precise or more pertinent, to surround them more and more closely.

But it also happens that by this approach, the repeated knocking and probing converge towards a certain image of the situation, emerging from the mists with features definite enough to lead to a conviction that this image does express reality well - whereas this is not the case, however, when this image is tainted by a major error that distorts it profoundly. The work, sometimes laborious, which leads to the detection of such a false idea from the first “break-offs” observed between the image obtained and certain obvious facts, or between this image and others which also had our confidence - this work is often marked by an increasing tension, as one approaches the node of the contradiction, which from being vague at first to becoming more and more blazingly transparent

- until the moment when it finally bursts out, with the discovery of the error and the collapse of a certain vision of the things, occurring as an immense relief, as a liberation. **The discovery of the error is one of the crucial moments, a creative moment among all, in all works of discovery**, be it a work mathematical, or a work of self-discovery. It is a moment when our understanding of the thing being probed is suddenly renewed.

To fear the error and to fear the truth are one and the same. One who fears to be wrong is powerless to discover. It is when we are afraid of making mistakes that the mistake inside us becomes immovable like a rock. Because in our fear, we cling to what we have decreed to be “true”, or what has always been presented to us as “true”. If we are moved, not by the fear of seeing an illusory security vanish, but by a thirst for knowing, then error, like suffering or sorrow, will cross us without ever becoming frozen, and the trace of its passage will be a renewed understanding.

3. The unmentionable labour

It is surely no coincidence that the natural process of any real research never appears in texts or talks that are supposed to communicate and transmit the substance of what has been “found”. Texts and talks most often are limited to recording the “**results**”, which must be made in a form that appears to the common people as austere and immutable laws, inscribed from all eternity in granite tables of a sort of giant library, and dictated by some omniscient God to insider-scriber-scholars and assimilated; to those who write scholarly books and no less scholarly articles, those who transmit knowledge from a pulpit, or in the smaller circle of a seminar. Is there a single textbook, a single manual for the use of schoolchildren, high school students, university students, even “our researchers”, which can give the unfortunate reader the slightest idea of what research is - if not just the universally accepted idea that research is when you are very knowledgeable, when you have passed lots of exams and even competitions, big heads, Pasteur and Curie and the Nobel prizes and all that... We as readers or listeners, ingesting the best we can the Knowledge that these great men were kind enough to record for the good of humanity, we are barely good enough (if we work hard) to pass our exam at the end of the year, and then over and over again...

How many are there, including among the unfortunate “researchers” themselves, in need of theses or articles, including even among the most “scholarly”, most prestigious among us - those who has the naivety to see that “research” is neither more nor less than **questioning** things, passionately - like a child who **wants to know** how he or his little sister came into the world. To search and to find, that is to say: to question and to listen is the simplest, most natural thing in the world, in which no one in the world has a privilege. It is a “gift” that we all have received since the cradle - made to express and flourish with an infinity of faces, from one moment to another and from one person to another...

When you venture to make such things heard, you receive from both ends: from the dunce of all dunces to the scholar of all scholars who well above the common people, the same half-embarrassed, half-understood smiles, as if you have just made a joke which is a little too big that it spills over the edges, as if you are displaying an utterly predictable naivety; that’s all very well, you mustn’t spit on people, of course - but you also mustn’t push things to people - a dunce is a dunce, not Einstein or Picasso!

In face of such an unanimous agreement, it would be ungraceful for me I to insist. But incorrigible as I am, I still have to lose this opportunity to remain silent...

No, it is surely no coincidence that, with a perfect unanimity, instructive or educational [*édifiants*] books and manuals of all kinds present “Knowledge” as if it had emerged, dressed up from head to toe, from the brilliant brains that recorded it for our benefit. Nor can we say that this done in bad faith, even in those rare cases where the author is “in the know” enough to know that this image (as his text cannot fail to suggest) does not correspond to reality at all. In such a case, it happens that the exposition presents more than a compilation of results and recipes, that a breath of air flows through it, that a living vision animates it, which sometimes then communicates itself from the author to the attentive reader. But a tacit consensus, of considerable force it seems, ensures that the text does not leave the slightest trace of the **labour** leading to the product, even when it expresses with lapidary force the sometimes profound vision of things which is one of the true fruits of this work.

To tell the truth, at certain moments I have myself vaguely 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 taken by this consensus, or rather the form taken by the resistance within me against my project triggered by this consensus, the term “indecenty” immediately comes to me. The consensus, internalised into me since I cannot say when, says to me (and this is the first time I take the trouble to bring into the light of day, into the field of my gaze, what it has been mumbling to me with a certain insistence for weeks, if not months): “It is indecent to display in front of others, or even publicly, the ups and downs, the crappy trial and error around the edges, the “dirty laundry” in short, of a work of discovery. It just wastes the reader’s time, which is precious. Moreover, it will add pages and pages to the work, which will have to be typeset and printed - what a waste, at the price of science printing paper! You really have to be very vain to exhibit things that are of no interest to anyone, as if your own scrambles were something remarkable - an opportunity to show off yourself, in short.” And even more secretly it says: “It is indecent to publish the notes of such a reflection, as it **really** goes, just as it would be indecent to make love in a public place, or to expose, or just leave lying around, the blood-stained sheets of the toils of a childbirth...”.

The taboo here takes the insidious and imperative form simultaneously, which is the form of the sexual taboo. It is at the moment of writing this introduction that I begin to only glimpse its extraordinary force, and the extraordinary scope of it, which attests to the force: that the true process of discovery, of such disconcerting simplicity, a childlike simplicity, is practically nowhere to be seen; and it is silently concealed, ignored, denied. This is so even in the relatively innocuous field of scientific discovery, not the discovery of one’s penis or anything like that, thank God - a ‘discovery’ fit to be put into everyone’s hands, and (one would think) has nothing to hide...

If I wanted to follow the “thread” that appears here, a thread that is by no means tenuous but actually thick and strong, then surely it would take me much further than the few hundred pages of homologico-homotopical algebra which I will eventually finish and deliver to the printer.

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

To be sure, it was an understatement when earlier I cautiously noted that “my style of expression” had changed, even suggesting that there was nothing surprising about it: you understand well, that when you haven’t written for thirteen years, it cannot be the same as before, the “style of expression” must change, necessarily... The difference is that in the past I “expressed myself” (sic) like everyone else: I did the work, then I did it again backwards, carefully erasing all the alterations. Along the way, new alterations were made, messing up all the work and sometimes making it worse than the first draft. So it had to be redone - sometimes three times, 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 never liked sweepings in the corners, if I took the trouble to sweep); but above all, when reading the final text, the certainly flattering impression emanating from it (as from any other scientific text) is that the **author** (my modest self in this case) was **the-infallible embodied**. Infallibly, he fell right onto “the” good notions, then onto “the” good statements, one following another in the purring sound of a well-oiled engine, with demonstrations “falling” with a monotone rustle, each exactly at its right moment!

Let us judge the effect of these on an unsuspecting reader, a high school student learning the Pythagorean theorem or second degree equations, or even perhaps one of my colleagues in the so-called “supérieur” (a word to the wise!) research or teaching institutes shouting about (say) reading such and such an article of a prestigious colleague! As this kind of experience is repeated hundreds, thousands of times throughout the life of a schoolchild, or even a student or researcher, amplified by the appropriate concert in the family and in all media in all countries of the world, the effect is one that you can foresee. One can see it in yourself as well as in others, as long as he takes the trouble to be attentive to it: **it is the intimate conviction of one’s own invalidity**, in contrast to the competence and importance of those “who know” and those “who make[font]”.

This intimate conviction is sometimes compensated for, but in no way resolved or defused, by the development of an ability to memorise things that are not understood, or even by the development of a certain operative skill: multiplying matrices, ‘assembling’ a French composition with ‘thesis’ and ‘antithesis’... It is the ability, in short, of the parrot or the learned monkey, more prized nowadays than ever, sanctioned by coveted diplomas, rewarded by comfortable careers. But he who is wrapped up with diplomas and well established, perhaps covered with honours, is not fooled, at the bottom of his heart, by these false signs of importance, of “value”. Not even the rarer ones, who has invested his all in the development of some real skills, and who in his professional life has been able to give his best and do real creative work - even he is not convinced, deep inside himself, by the brilliance of his fame, with which he often likes to pull the wool over the eyes of himself and others. The same unexamined doubt lives in them all, just as in a layman, a conviction which they will perhaps never dare to acknowledge.

It is this doubt, this intimate, unspoken conviction, which drives them all to constantly surpass themselves during the accumulation of honours or works, and to project onto others (above all onto those over whom they have some power...) this contempt for themselves which secretly gnaws at them - in an impossible attempt to escape from it, by the accumulation of “proofs” of their superiority over others (2).

II. The Dream and the Dreamer

February 1984

5. The forbidden dream

I am taking the opportunity of a three-month break between the writing of Pursing Stacks to pick up the Introduction from where I left it last June. I have just reread it carefully, more than six months later, and added a few subtitles.

In writing this Introduction, I was well aware that this type of reflection could not fail to raise many ‘misunderstandings’ - and it would be futile to try to note them before hand, which would simply be piling up more misunderstandings on top of it! The only thing I would add to this is that it is not my intention to go to war against the scientific writing style that has been established for thousands of years, which I myself have practised assiduously for more than twenty years of my life, and taught to my students as an essential part of a mathematician’s craft. Rightly or wrongly, I still consider it as such and continue to teach it. Perhaps I would even be old-fashioned, with my insistence on a job done to the end, hand-sewn from start to finish, and sparing not a single dark corner. If I’ve had to put water in my wine over the last ten years or so, it was by force of the circumstance! For me, ‘writing in form’ remains an important stage[*étape*] in mathematical work, both as an instrument of discovery, to test and deepen an understanding of things that otherwise remains approximate and fragmentary, as well as a means to communicate such an understanding. From a pedagogical point of view, the rigorous (therefore deductive) mode of exposition, which in no way excludes the possibility of drawing large pictures[*tableaux*], offers obvious advantages in terms of conciseness and convenience of reference. These are real advantages, and important ones, when it comes to presentations addressed to, say, mathematicians, and more particularly, mathematicians who are already sufficiently familiar with some of the ins and outs of the subject which is being treated, or very close.

These advantages, on the other hand, become entirely illusory for a presentation addressed to the children, young people or adults who are absolutely not “in the know” beforehand, whose interest is already awakened, and who, moreover, are (and will remain, and for good reason...) in total ignorance of what the true approach of a work to discovery is - in other words, to put it better, readers, who are unaware of the very **existence** of such work, which is **within the reach of everyone** gifted with curiosity and common sense - that work from which our intellectual knowledge of things of the Universe is born and reborn unceasingly, including that which is imposingly expressed as in Euclid’s “Elements” or Darwin’s “The 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 schoolteachers to university professors. This is an extraordinary fact, which was first revealed to me in full light during the reflection I began last year in the first part of this Introduction, at the same time as I glimpsed the deep roots of this puzzling fact...

And even if it would be addressed to readers who are perfectly “in the know” in every respect, there is still one important thing that the “rigorous” mode of exposition is unable to communicate. It is also a thing that is absolutely frowned upon in the circles of serious people, like us scientists in particular! I mean the **dream**. The

dream, and the visions it breathes into us - impalpable like it at first, and often reluctant to take shape. Long years, even a lifetime of intense work may still not be sufficient for one to see such a dream vision fully manifested and to see it condensed and polished to the hardness and brilliance of a diamond. This **is** our work, we workers by hand or by spirit. When the work is completed, or some part of it, we present the tangible result in the brightest light we can find, rejoice in it, and often take pride in it. However, it is not in this diamond, which we have carved for a long time, that we find what inspired us to carve it. Perhaps we have forged a tool of great precision, an efficient tool - but the tool itself is limited, just as anything made by the hand of man, even if it seems great to us. A vision, nameless and featureless at first, tenuous as a shred of mist, has guided our hand and kept us bent on the work, without sensing the passing of hours or even years —a shred that has silently detached itself from a bottomless sea of mist and darkness... What is boundless in us is Her, this Sea ready to conceive and give birth ceaselessly, when our thirst fertilises Her. From these marriages the Dream is born, like the embryo nestled in the nourishing womb, awaiting the obscure labours that will lead it to a second birth, into the light of day.

Woe to a world where the dream is despised - it is also a world where what is deep in us is despised. I don't know if any there is other culture before ours - the culture of television, computers and transcontinental rockets - that has held this despise. This must be one of the many ways in which we differ from our predecessors, whom we have so radically supplanted and, so to say, eliminated from the face of the planet. I am not aware of any other culture where the dream is not respected, where its deep roots are not felt and recognised by all. And is there any great work in the life of a person or the people that was not born of the dream and nourished by the dream before blossoming in broad daylight? For our culture, however, (should we already even say: everywhere?), the respect for the dream is called "superstition", and it is well known that our psychologists and psychiatrists have analysed the dreams in great length and breadth - but surely still hardly enough to clutter the memory of a small computer. It is also true that no one "back home" knows how to light a fire, nor dares he to see in his house the birth of his child being born or his mother or father dying - there are clinics and hospitals for that. Thank God... Our world, so proud of its powerful megaton atomics and enormous information stored in its libraries and computers, is probably also one in which the **powerlessness** of each person, this fear and despise of the simple and essential things of life, has reached its peak.

Fortunately the dream, like the original impulse for sex in even the most repressive society, has a tough-strong life! Superstition or not, it continues obstinately to whisper to us knowledge that our waking mind is too heavy or too pusillanimous to apprehend, and to give life and lend wings to the plans it has inspired in us.

If I have suggested earlier that the dream is often reluctant to take shape, this only touches upon the appearance of things and doesn't really get to the bottom of it. The "reluctance" would rather come from our waking mind, in its ordinary "seat/*assiette*" - and for this even the term "reluctance" is an understatement! It is rather a deep distrust, which covers an ancestral fear - **the fear of knowing**. Speaking of dreams in the true sense of the word, this fear is all the more active, it makes a shield all the more effective, as the message of the dream touches us more closely, heavy with the threat of a profound transformation of our being, if by chance it were to be heard. But it must be said that this mistrust is present and effective even in the relatively innocuous case of the mathematical 'dream'; to the point that all dreams seem to be banned not only from texts (I know of not a single case where there is a trace), but also from discussions between colleagues, in small groups, or even tête-à-tête.

If this is indeed so, it is certainly not that the mathematical dream does not 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 non-existence, of this conspiracy of silence, is closely linked to this other consensus - that of carefully erasing all trace and any mention of the work by which the discovery is made and our knowledge of the world renewed. Or rather, **it is one and the same silence that surrounds both the dream and the work that it arouses, inspires and nourishes**. So much so that the very term “mathematical dream” will seem nonsensical to many, driven so often by push-button clichés, rather than by the direct experience we can have of a very simple, day-to-day and important reality.

6. The Dreamer

In fact, I know very well from experience that when the mind is eager to know it, instead of running away from it (or approaching it with a patented grid/*grille*] in hand, which amounts to the same thing), the dream is in no way reluctant to “take shape” - to let itself be described with delicacy and to deliver its message, which is always simple, never foolish, and sometimes deeply moving. On the contrary, the Dreamer in us is an incomparable master at finding, or creating from scratch, from one occasion to the next, the language best suited to circumvent our fears, to shake our torpor, with infinitely varying scenic means, from the absence of any visual or sensory element whatsoever, to the most breathtaking scenes. When He manifests Himself, it is by no means to steal away, but to encourage us (almost always to no avail, but his benevolence never wearies...) to get out of ourselves, out of the heaviness in which he sees us trapped, and he sometimes amuses himself, casually, by parodying in funny colours. To listen to the Dreamer in us is to communicate with ourselves, against the powerful barriers that would like to prevent us from doing so at all costs.

But he who can do more can also 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 which, say, does not bring into play resisting forces of comparable power. And to tell the truth, what else in my past have I done as a mathematician, except to follow, to ‘dream’ to the end, to their most manifest, most solid, most unimpeachable manifestation, with shreds of dream detaching themselves one by one from a heavy, dense fabric of mists? And how many times have I been stamped with impatience at my own obstinacy to jealously polish to the last facet each precious or semi-precious stone in which my dreams were condensed, rather than following a deeper impulse: that of following the multiform mysteries of the mother-tissue - with the uncertain confines of the dream and its licensed incarnation, “publishable” in short, according to the canons in force! I was about to follow this impulse, to launch into a work of “mathematical science fiction”, “a kind of waking dream” on a theory of “motives” which remained purely hypothetical at that time - and which has remained so to this day, for lack of another “waking dreamer” to embark on this adventure. This was towards the end of the sixties, when my life (without my having the slightest suspicion of it) was about to take a completely different turn, which for a decade or so was to relegate my mathematical passion to a marginal, perhaps even disowned, place.

But all in all, “Pursuing Stacks”, 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 continuation. Admittedly, the themes of these two dreams are as dissimilar, at least at first sight, as it is possible

for two mathematical themes; not to mention that the first one, that of the motives, would seem to be situated on the horizon of what could be “feasible” with the means at hand, whereas the second one, the famous “stacks” and the sort, seem to be completely within reach. These are dissimilarities that could be called fortuitous or accidental, and which will perhaps fade away much sooner than we expect (3). They have relatively little impact, it seems to me, on the kind of work to which the two themes can give rise, as long as they remain a ‘daydream’, or, to put it in less provocative terms: to pursue the work of conceptual roughing out 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, essentially, to the reality of things. In the case of the theme developed in the present work, this should mean, more or less, that the detailed verification of the validity of this vision becomes a matter of pure work-of-art[*métier*]. This may certainly require considerable work, with its share of ingenuity and imagination, and no doubt also unexpected twists and turns and insights, which will, fortunately, make it something more than just a routine job (a ‘long exercise’, as André Weil would say).

Basically, it is the kind of work, that I have done over and over again in the past, that I have at my fingertips and that it is therefore useless for me to do again in the years that lie still ahead of me. Insofar as I am investing myself once again in mathematical work, it is on the realms of the ‘daydream’ that my energy will surely be best used. For this choice, it is not a concern for profitability that inspires me (assuming that such a concern can inspire anyone), but really the dream, or dreams. If this new impetus in me is to prove to be a source of strength, it will have been drawn from the dream!

7. The legacy of Galois

It would seem that among all the natural sciences, it is only in mathematics that what I have called “the dream”, or “waking dream”, is subject to an apparently absolute prohibition, for more than two thousand years. In the other sciences, including sciences deemed “exact” such as physics, dreams are at least tolerated, even encouraged (depending on the era), under names that are admittedly more “respectable[*sortables*]” such as: “speculations”, “hypotheses” (such as the famous “atomic hypothesis”, resulting from a dream, or rather, a speculation by Democritus), “theories”... The passage from the status of the dream-which-doesn’t-dare-to-say-its-name to that of “scientific truth” is made through imperceptible degrees, by a consensus which is progressively widened. In mathematics, on the contrary, it is almost always (nowadays at least) made by a sudden transformation, by virtue of the magic wand of a **proof** (4). In the days when the notion of mathematical definition and proof 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.

The progressive clarification of the notions of definition, statement, proof and mathematical theory has been very beneficial in this respect. It has made us aware of all the power of the tools, however childishly simple, that we have at our disposal to formulate with perfect precision even what might have seemed unformulable - by the sole virtue of a sufficiently rigorous use of, more or less, our everyday language. If there is one thing that has fascinated me in mathematics since my childhood, it is precisely this power to define in words, and to

express in a perfect way, the essence of such mathematical things which at first sight appear in such an elusive or mysterious form that they seem to lie beyond words...

However, an unfortunate psychological backlash, of this power, of the capabilities offered by perfect precision and proof, is that they have further accentuated the traditional taboo against the “mathematical dream”; that is to say, with regard to everything that does not present itself under the conventional precise appearance (even at the expense of a broader vision), guaranteed “colourfast” by proofs suited in form, or otherwise (which is more and more so these days...) by sketches of proofs, which are supposed to be able to be put in form. Occasional **conjectures** are tolerated to a limited extent, provided that they meet the conditions of having the precision of a questionnaire, where the only acceptable answers would be ‘yes’ or ‘no’. (And also on the condition, needless to say, that the person who allows himself to do so 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 is explicitly conjectural in its essential parts. It is true that according to modern standards, the whole calculus of the “infinitely small” developed from the seventeenth century onwards, which has since become the differential and integral calculus, would seem to be a daydream, which would be transformed into serious mathematics only two centuries later, by the stroke of the magic wand of Cauchy. And this inevitably reminds me of the daydream **of Evariste Galois**, who had no luck with this very Cauchy; but this time it only took less than a hundred years for another stroke of a wand, this time by Jordan (if I remember correctly), to give this dream the right to be mentioned, rebaptised for this as “Galois theory”.

The observation that emerges from all of these, which is not to the advantage of “Mathematics 1984”, is that fortunately people like Newton, Leibnitz and Galois (I’m sure I have missed many others, being not well-versed in history...) were not encumbered by our current canons, at a time when they were content to discover without taking the leisure to canonise!

The example of Galois, who came up without calling, strikes a sensitive chord in me. I seem to remember that, when I was still a high school or university student, I think, a feeling of fraternal sympathy for him was awakened in me the first time I heard about him and his strange destiny. Like him, I felt a passion for mathematics - and like him I felt like an outsider, a stranger in the ‘beautiful world’ which (it seemed to me) had rejected him. 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 completely new light, while I was writing the “Sketch of a Programme” (on the occasion of my application for admission as a researcher at the Centre National de la Recherche Scientifique). This report is mainly devoted to an outline of my main themes of reflection over the past ten years. Of all these themes, the one that fascinates me the most, that I especially intend to develop in the coming years, is exactly the kind of a mathematical dream, which moreover links with the “dream of motives”, of which it provides a new approach. While writing this Sketch, I remembered the longest mathematical reflection I have pursued in one go in the last fourteen years. It continued from January to June in 1981, and I called it “Long march through Galois theory”. One thing leading to another, I became aware that the daydream I had been pursuing sporadically for several years, which had come to be called “Anabelian algebraic geometry”, was nothing but a continuation, “an ultimate culmination of Galois theory, absolutely in the spirit of Galois”.

When this continuity appeared to me, at the moment of writing the passage from which the quoted sentence is taken, a joy came over me, which has not dissipated. This was one of the rewards of work pursued in complete solitude. Its appearance was as unexpected as the more than fresh welcome I had received recently from two or three colleagues and old friends who were nevertheless well ‘in the know’, one of whom, moreover, was my pupil, with whom I had had the opportunity to discuss, once again ‘heatedly’ and in the joy of my heart, about these things I was discovering...

This reminds me that to take up Galois’ legacy today is surely also to accept the risk of the solitude that he had had in his time. Perhaps times are changing less than we think, but this ‘risk’ often does not appear as a threat to me. If I am sometimes saddened and frustrated by the indifference or disdain of those I have loved, I have, however, never been weighed down by the many years’ solitude, mathematical or otherwise. If there is one faithful friend whom I would always long to find again after we have parted, it must be it!

8. Dream and proof

But let us return to the dream, and to the prohibition that has been imposed on mathematics for thousands of years. This is perhaps the most inveterate of all the preconceptions, often implicit and rooted in habit, which decrees that such and such a thing is “maths” and such other things not. It took millenniums before things as childish and ubiquitous as the groups of symmetries of certain geometric figures, the topological forms of some others, the number zero and the sets found admission into the sanctuary! When I talk to students about the topology of a sphere, and the shapes that can be deduced from a sphere by adding handles - things that don’t surprise young children, but which confuse the students because they think they know what “maths” is - the first spontaneous echo I get is: but this is not maths! Maths, of course, means the Pythagorean theorem, the heights of a triangle and second degree polynomials... These students are no more stupid than you or me, they react as all the mathematicians in the world have reacted from time immemorial until today, except for people like Pythagoras or Riemann and maybe five or six others. Even Poincaré, who was not the first to come along, managed to prove by a well-felt philosophical A plus B that infinite sets were not maths! Surely there must have been a time when triangles and squares were not maths - they were drawings that children or pottery craftsmen traced on the sand or in the clay of vases, so as not to make mistakes...

This fundamental inertia of the mind, suffocated by its ‘knowledge’, is certainly not specific to mathematicians. I am straying somewhat away from my subject: **the prohibition imposed upon the mathematical dream**, and through it, anything that does not present itself under the usual appearance of a finished product, ready to be taken in. The little I have learned about the other natural sciences is enough to make me realise that a similarly rigorous prohibition would have condemned them to sterility, or to progressing like a tortoise, a bit like in the Middle Ages when there was no question of cadging[*écornifler*] the letters of the Holy Scriptures. But I am also well aware that the deep source of discovery, as well as the process of discovery in all its essential aspects, is the same in mathematics as in any other region or thing of the universe that our body and mind can know. **To banish the dream is to banish the source** - to condemn it to an occult existence.

And I also know well, from an experience that has not been denied since my first and juvenile love affair with mathematics, that is: the unfolding of a vast or profound vision of mathematical things. It is this unfolding of a

vision and understanding, this progressive penetration, that always **precedes** the proof, that makes it possible and gives it meaning. When a situation, from the most humble to the most vast, has been understood in its essential aspects, the proof of what is understood (and of the rest) falls like a perfectly ripe fruit. Whereas the proof plucked like a still green fruit from the tree of knowledge leaves an aftertaste of dissatisfaction, a frustration of our thirst, by no means appeased. Two or three times in my life as a mathematician I have had to resolve, for lack of anything better, to pluck the fruits rather than to collect them in. I'm not saying that I did wrong, or that I regret it. But those best I have done and those I have loved most, I have taken by willingness and not by force. If mathematics has given me joy in abundance and continues to fascinate me in my mature years, it is not because of the proofs I have been able to extract from it, but because of the inexhaustible mystery and perfect harmony I feel in her, which is always ready to reveal itself to a loving hand and gaze.

III. Birth of fear

9. The welcomed stranger

It seems to me that the time has come to say something about my relationship to the world of mathematicians. This is quite different from my relationship to mathematics. The latter existed and was strong from a very young age, long before I even knew that there was a world and a milieu of mathematicians. A whole complex world, with its scholarly societies, its periodicals, its meetings, colloquiums, congresses, its *prima donnas* and its labourers, its power structure, its grey eminences, and the no less grey mass of those exploitable workers, who are in need of a thesis or articles, and also those, rarer still, who are rich in means and ideas and who come up against closed doors, desperate to find the support of one of these powerful, hasty, and feared men, who have that magic power: to have 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 manuscript with tight lines, written on both sides, without margins (paper was expensive!), representing three years of solitary reflections on what (I learned later) was then well known under the name of “measure theory” or “Lebesgue integral”. Since I had never met anyone else, I well believed, until the day I arrived in the capital, that I was the only one in the world “doing maths”, hence the only **mathematician**. (They were the same thing for me, and have remained so to this day). I had juggled with sets that I called measurable (without having met any set that was not measurable...) and with the concept of convergence almost everywhere, but did not know what a topological space was. I was still a bit lost in a dozen or so non-equivalent notions of “abstract space” and compactness, found in a small booklet (by a man called Albert, I think, in the *Actualités Scientifiques et Industrielles*), which I had stumbled upon: God knows how. I had never heard before, in a mathematical context at least, strange or barbaric words like group, field, ring, modulus, complex, homology (and so on!), which suddenly, without warning, came at me all at once. It was a severe shock!

If I ‘survived’ this shock, and continued to do maths and even make it my profession, it is because in those early days, the mathematical world did not yet even barely resemble what it has become since then. It is also possible that I was lucky enough to have landed in a more welcoming corner of this unsuspected world than the others. I had a vague recommendation from one of my professors at the Faculty of Montpellier, Mr. Soula (he had not seen me in his classes often, any more than his colleagues!), who had been a pupil of Cartan (father or son, I can no longer tell). As Elie Cartan was then already “out of the game”, his son Henri Cartan was the first “fellow” I had the pleasure to meet. I had no idea then how auspicious this was! I was greeted by him with the courtesy and benevolence that distinguishes him, which is well known to generations of normaliens who were lucky enough to have had their very first experience with him. He must have not realised the full extent of my ignorance, judging by the advice he gave me at the time to guide my studies. In any case, his benevolence was obviously directed at the person, not at the background or perspectives, nor (later) at the reputation or notoriety...

In the following year, I was a guest of a course by Cartan at the “Ecole” (on differential formalism on varieties), to which I hang on firmly; I was also at the “Séminaire Cartan”, as an astonished witness of the discussions

between him and Serre, with great blows of “Spectral Sequences” (brr!) and drawings (called “diagrams”) full of arrows covering the whole board. It was the heroic era of the theory of “sheaves”, “carapaces” and a whole arsenal whose meaning totally escaped me, while I forced myself as best I could to swallow definitions and statements and to check the proofs. At the Séminaire Cartan there were also periodic appearances of Chevalley and Weil, and on the days of the Séminaire Bourbaki (which brought together up to twenty or thirty participants and listeners), the other members of the famous Bourbaki gang would turn up like a group of somewhat boisterous friends: Dieudonné, Schwartz, Godement, Delsarte. They called each other by first names, spoke the same language which almost totally escaped me, smoked a lot and laughed freely, the only thing missing to complete the scene was beer cases - this was replaced by chalk and mops. It was a completely 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 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 the explanations he gave me, nor whether I understood anything - only that there too I felt a kindly welcome, addressed to the first stranger coming to him. It was this and nothing else, surely, that made me go to this course and bravely hang on to it, as I did at the Séminaire Cartan, even though the meaning of what Leray was explaining there almost totally escaped me.

The strange thing is that in this world where I was a newcomer and whose language I hardly understood and spoke even less, I did not feel like a stranger. While I hardly had the opportunity to speak (for good reason!) with one of these jolly fellow like Weil or Dieudonné, or with one of these more distinguished Messieurs like Cartan, Leray, or Chevalley, I nevertheless felt **accepted as**, I would almost say: **one of them**. I do not remember a single occasion when I was treated with condescension by one of these men, nor an occasion when my thirst for knowledge, and later, anew, my joy of discovery, was rejected by complacency or by disdain (5). Had it not been so, I would not have “become a mathematician” as they say - I would have chosen another profession, where I could give my whole strength without having to face scorn.

Although ‘objectively’ I was a stranger to this world, just as I was a stranger in France, a link nevertheless united me to these men from another milieu, another culture, another destiny: a common passion. I doubt that in that crucial year when I was discovering the world of mathematicians, any of them, not even Cartan, of whom I was a bit of a pupil but who had many others (as well as those fewer ones who dropped out!), perceived in me this same passion that also inhabited them. To them, I must have been one among a large audience of lectures and seminars, taking notes and obviously not understanding well. If somehow in someway I stood out from the other listeners, it was because that I was not afraid to ask questions, which most often had to reveal my huge ignorance of both language and mathematics. The answers could be brief, or even astonished, but, a weirdo in awe [*hurluberlu ébahi*] as I was, I never got stricken by a rebuff, a ‘putting me where I belong’, not in the informal circles of the Bourbaki group, nor in the more austere atmosphere of the Leray course at the Collège de France. In those years, ever since I arrived in Paris with a letter for Elie Cartan in my pocket, I have never had the impression of finding myself in front of a clan, a closed, even hostile world. If I have come to experience, which indeed I well have, this inner contraction in the face of contempt, it was not in that world; not at that time, at least. Respect for the person was part of the air I breathed there. You didn’t have to earn the respect, or prove yourself before being accepted and treated with some kind of kindness. Strangely enough perhaps, but it was enough to be a person, to have a human face.

10. The “mathematical community”: fiction and reality

It is then not surprising that, in my inner self, perhaps from that year onwards, and in any case more and more clearly in the course of the following years, I felt myself a member of this world, to which I was pleased to refer by the name of the “**mathematical community**”, a name filled with meaning for me. Before writing these lines, I never had the opportunity to examine the meaning I gave to this name, although I identified myself with this ‘community’ to a large extent. It is now clear that this community represented for me no more and no 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 identified myself, was not an entirely fictitious extrapolation of the mathematical milieu that had initially welcomed me. The initial milieu gradually widened, I mean: the circle of mathematicians I was led to meet regularly, driven by common themes of interest and personal affinities, grew wider in the ten or twenty years following this first contact. In concrete terms, it is the circle of colleagues and friends, or rather this concentric structure extending from the colleagues to whom I was most closely linked (first Dieudonné, Schwartz, Godement, later Serre especially, 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 expanding little by little, and the students who came to me from the sixties onwards...), and other colleagues whom I had had the opportunity to meet here and there and to whom I was linked more or less closely by more or less strong affinities - it was this microcosmos, constituted by chance encounters and affinities, which represented the concrete content of this name, charged with warmth and resonance for me: the mathematical community. When I identified myself with it as a living, warm entity, it was in fact this microcosmos that I identified with.

It was only after the ‘great turning point’ of 1970, the first **awakening** I should say, that I realised that this cosy and friendly microcosmos represented only a very small portion of the ‘mathematical world’, and that the features I liked to attribute to this world, which I continued to ignore and to which I had never thought of taking any interest, were fictitious features.

In the course of these twenty-two years, this microcosmos itself had changed its face, in a surrounding world that was also changing. I too had certainly, with no doubt, changed over the years, as had the world around me. I don’t know if my friends and colleagues were more aware of this change than I was, living in the surrounding world, in their own microcosmos, and in themselves. Nor can I say when or how this strange change came about - it probably came about insidiously, secretly: **the man of fame is to be feared**. I myself was feared - if not by my students or my friends or those who knew me personally, then at least by those who knew me only through my reputation and who did not feel protected by a comparable reputation.

I only became aware of the fear that prevails in the mathematical world (and just as much, if not more, in other scientific circles) in the aftermath of my ‘awakening’ nearly fifteen years ago. During the fifteen years that had preceded, gradually and without realising it, I had entered the role of the “big boss”, in the mathematical world of Who is Who. Also without realising it, I was a prisoner of this role, which isolated me from all but a few

‘peers’ and a few students (and still...) who resolutely ‘desired it’. It was only when I got out of this role that at least some of the fear surrounding it fell away. The tongues were loosened, which had been silent in front of me for years.

The testimony[*témoignage*] they gave me was not only one of fear. It was also one of **contempt**. Especially the contempt of those in power vis-à-vis the others, a contempt that arouses and feeds fear.

I had hardly experienced fear, but I did experience contempt, in times when a person and a person’s life did not carry much weight. I had liked to forget the time of contempt, and here it was again in my memory! Perhaps it had never stopped, when I was content simply to change the world (as I had thought), to look elsewhere, or simply: to pretend to see nothing, hear nothing, apart from the passionate and interminable mathematical discussions? In those days, I finally accepted to learn that contempt was rampant all around me, in this world that I had chosen as mine, one that I had identified myself with, one that I had made my contribution to and one that had pampered me.

11. Encounter with Claude Chevalley, or: liberty and good intensions

Perhaps the above lines may give the impression that I was overwhelmed by the testimonies, which flooded towards me almost overnight. This was not the case. These testimonies were recorded at a level that remained superficial. They were simply added to other facts that I had just learned, or that I had known but until then had avoided paying attention to. Today, I would express the lesson I learned then as follows: “Scientists”, from the most illustrious to the most obscure, are just people like everyone else! I had allowed myself to imagine that “we” were something better, that we had some extra things - it took me a year or two to get rid of that utterly stubborn illusion!

Among the friends who helped me, only one was part of the milieu which I had just left with no desire of returning (6). It was Claude Chevalley. While he did not give talks and was not interested in mine, I think I can say that I learned from him more important and more hidden things than what I have just said. In the days when I used to see him quite regularly (the days of the “Survivre” group, which he had joined with mixed conviction), he often puzzled me. I couldn’t say how, but I felt that he held a knowledge that escaped me, an understanding of certain essential and very simple things, which can surely be expressed by simple words, but without all that understanding “passing” from him to me. I realise now that there was a difference in maturity between him and me, which meant that I often felt awkward[*porte-à-faux*] when being with him, in a sort of dialogue between the deaf, but which was not due to a lack of mutual sympathy or appreciation. Although he did not express himself in these terms (as far as I can remember), it must have been clear to him that the ‘questionings’ (on the ‘social role of the scientist’, of science, etc.) that I was arriving at at that time, either alone or by means of a joint reflection and activity within the ‘Survivre’ group (which later became ‘Survivre et Vivre’), remained fundamentally superficial. They were about the world I lived in, certainly, and even the role I played in it - but they didn’t really involve me in any deep way. My view of myself, during those turbulent years, didn’t change a bit. It was not then that I started to get to know myself. It was only six years after that for the first time in my life I got rid of a stubborn illusion, not about others or the world around me, but about myself. It was another

awakening, more far-reaching than the first one that had prepared it. It was one of the first in a whole “cascade” of successive awakenings, which, I hope, will continue in my remaining years.

I don’t recall Chevalley making any reference to self-awareness, or ‘self-discovery’, to put it better. In retrospect, however, it is clear that he must have been getting to know himself for a long time. Sometimes he talked about himself, just a few words on this occasion or that, with a disconcerting simplicity. He was one of the two or three people from whom I never heard letting out a cliché. He spoke little, and what he said expressed, not ideas that he had adopted and internalised, but a personal perception and understanding of things. That is surely why he often disconcerted me, already at the time when we were still meeting in the Bourbaki group. What he said often disturbed the ways, which were dear to me, of seeing things, and that for this reason I considered what he said to be “true”. There was an inner autonomy in him that I lacked, and that I began to perceive obscurely at the time of “Survivre et Vivre”. This autonomy is not by order of the intellect or speeches. It is not something that can be “adopted”, like ideas, points of view, etc... The idea never occurred to me, fortunately, to want to “make my own” this autonomy perceived in another person. I had to find my own autonomy. This also means: that I learn (or relearn) to be myself. But in those years, I had no idea of my lack of maturity, of inner autonomy. If I ended up discovering it, surely the meeting with Chevalley was among the ferments that worked in me silently, while I was embarking on great projects. It wasn’t speeches or words that sowed that seed. To sow it, it was enough for a person I met by chance along the way to speak for himself and be content to be himself.

It seems to me that in the early seventies, when we met regularly for the publication of the bulletin “Survivre et Vivre”, Chevalley was trying, without insistence, to communicate a message that I was then too clumsy to grasp, or too confined to my activist work. I was obscurely aware that he had something to teach me about freedom - about inner freedom. Whereas I tended to operate on high moral principles and had begun to blow that trumpet in the early issues of Survive as something taken for granted, he had a particular aversion to moralistic discourse. I think that was the thing that most confused me about him in the early days of Survive. To him, such a discourse was just an attempt at coercion, superimposed on a multitude of other external coercions stifling the person. One can, of course, spend one’s life discussing such a view and the pros and cons. His view totally upset mine, which was driven (as one can imagine) by the noblest and most generous intentions/*sentiments*/. I was upset, it was incomprehensible to me that Chevalley, for whom I had the greatest esteem and with whom I found myself a bit like a comrade in arms, should take a malicious pleasure in not sharing these feelings! I did not understand that the truth, the reality of things, is not a question of good intentions, nor of points of view or preferences. Chevalley was **seeing** something, all simple and real, and I was not seeing it. It was not that he had read it somewhere; there is nothing in common between seeing a thing, and reading something about it. You can read a text word by word with your hands (if it is written in Braille) or with your ears (if someone reads it to you), but you can only see the real thing itself with your own eyes. I don’t think Chevalley had better eyes than me. But he was using them, and I wasn’t. I was too caught up in my good intentions and so on to have the leisure to look at the effect of my good intentions and principles on myself and on others, starting with my own children.

He must have seen that I often did not use my eyes, that I did not even want to. It’s strange that he never let me know. Or he did, and I didn’t hear? Or did he refrain, judging it to be a futile effort? Or perhaps the idea didn’t even occur to him - it was my business after all, not his, whether I used my eyes or not!

12. The merit and the contempt

I would like to examine more closely, in the light of my own limited experience, when and how contempt took hold in the world of mathematicians, and more particularly in that ‘microcosmos’ of colleagues, friends and students which had become like my second home. And at the same time, to see what my part was in this transformation.

It seems to me that I can say, without reservation, that in 1948-49, in the circle of mathematicians of which I spoke earlier (whose centre for me was the initial Bourbaki group), I did not encounter the slightest trace of contempt, or simply of disdain, of condescension, towards myself or any of the other young people, French or foreign, who had come there to learn the profession of a mathematician. The men who played a leading role there, by virtue of their position or prestige, such as Leray, Cartan, Weil, were not feared by me, nor, I believe, by any of my fellow students. Apart from Leray and Cartan, who were very “distinguished gentlemen”, it even took me a long time to realise that each of these fellows who arrived there with no formalities, talking to Cartan like a friend and apparently “in the know”, was a university professor just like Cartan himself, who did not aim for high from hand to mouth as I did, but who received what I considered to be astronomical emoluments, and who was, moreover, a mathematician of international stature and audience.

Following a suggestion from Weil, I spent the next three years in Nancy, which at that time was somewhat the headquarters of Bourbaki, with Delsarte, Dieudonné, Schwartz, Godement (and a little later also Serre) teaching at the University. There were only a handful of four or five young people with me (among whom I remember Lions, Malgrange, Bruhat, Berger, unless I am mistaken), so we were much less ‘drowned in the crowd’ than in Paris. The atmosphere was all the more friendly, everyone knew each other personally, and we were all on first-name terms, I think. Searching my memory, however, this is the first and only time I saw before me a mathematician treating a student with undisguised contempt. The unfortunate man had come for the day from another city to work with his boss. (He had to prepare a doctoral thesis, which he ended up passing honourably, and he has since gained some reputation, I believe). I was quite blown away by the scene. If someone had allowed themselves to be so rude to me for even a second, I would have slammed the door in their face right away! In this case, I knew the “boss” well, I was even on a first name basis with him, not the student I knew only by sight. My senior had, in addition to a wide-ranged cultural knowledge (not just mathematical) and an incisive mind, a kind of peremptory authority which at that time (and for quite a long time afterwards, until the early 1970s) impressed me. He had a certain influence over me. I don’t remember whether I asked him about his attitude, only the conclusion I drew from the scene: that this unfortunate student must have been really bad, to deserve to be treated in this way - something like that. I didn’t think then that if the student was indeed bad, that was a reason to advise him to do something else, and to stop working with him, but in no way a reason to treat him with contempt. I had identified myself with the ‘strong in maths’ such as this prestigious senior, at the expense of the ‘bad ones’ who would be acceptable to despise. I then followed the path of a connivance with the contempt, which was convenient for me, in emphasising the fact that I was accepted in the brotherhood of the meritorious, the strong in maths! (7)

Of course I could have, no more than anyone else, said to myself in plain words that people who try to do maths and don't succeed are fit to be despised! I could have heard someone say something of this sort, around that time or any other, and I could have nicely taken it up, being sincerely sorry for such enormous spiritual ignorance. The fact is that I was in an ambiguous state, I was playing on two sides that didn't communicate: on the one hand, beautiful principles and sentiments, on the other hand: the poor guy, you really have to be a idiot to be treated like that (which means: this kind of misadventure couldn't happen to me, for sure!).

In the end, it seems to me that the incident I just mentioned, and especially the (apparently harmless) role I played in it, is in fact typical of an ambiguity in me, which followed me throughout my life as a mathematician in the twenty years that followed, and which only dissipated in the aftermath of the 'awakening' in 1970 (8), without my having clearly noticed it until today, when I am writing these lines. It is a great shame that I did not realise it at the time. Perhaps the time was not ripe for me. In any case, the evidence I gathered 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 the colleagues and friends in the part of my dear microcosmos which was closest to me (9). It was more like the tune of: ah! how sad it is to have to hear (or: to tell you) such things, who would have thought it, you really have to be a bastard (I was going to say: idiot, sorry!) to treat living beings in that way! Not so different from the other tune after all, just replace "idiot" for "bastard" and "to be treated" for "to treat" and you're done! And your honour, of course, is safe, well-kept for the champion of good causes!

The thing that is clear from this is my connivance with attitudes of contempt. It goes back at least to the very beginning of the fifties, in the years following the kind reception I received from Cartan and his friends. If I did not 'see anything' later on, when contempt was becoming more or less commonplace, it was because I did not want to see - any more than in this isolated and particularly blatant case, where it was really necessary to do everything possible 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 the meritorious, the strong in maths. I remember that I was particularly satisfied, proud even, that in this world I had chosen for myself, which had co-opted me, it was not social position or even (but no!) the reputation alone that counted, still it had to be earned - one could then be a university professor or an academician or whatever, but if you were only a mediocre mathematician (poor guy!), you were nothing, what counted was merit, deep and original ideas, technical virtuosity, vast visions and all that!

This ideology of merit, with which I had identified unreservedly (although it remained, of course, implicit, unexpressed), nevertheless took a heavy blow at me in the aftermath, as I said, of the famous 1970 revival. I'm not sure that it disappeared at that moment without leaving any trace. For that to happen, I would surely have to first detect it in myself clearly, whereas it seems to me that I was mostly denouncing it in other people. It was Chevalley who was one of the first, along with Denis Guedj, whom I also knew through *Survivre*, to draw my attention to this very ideology (they called it "**meritocracy**", or something like that), and to the violence and contempt it contained. It was because of this, Chevalley told me (it must have been at the time of our first meeting at his house, concerning *Survivre*), that he could no longer stand the atmosphere in Bourbaki and had stopped going there. I'm convinced, thinking back, that he must have realised well that I had indeed been part of that ideology, and perhaps even that there were still traces of it in some corners. But I don't remember him ever

suggesting it. Perhaps there again, he preferred to leave it to me to dot the i's he drew for me, and I waited until today to dot them. Better late than never!

13. Strength and thickness

It is quite possible that the incident I have described also marks the moment of an inner shift in me, towards a more or less unconditional identification with the brotherhood of merit, at the expense of people considered worthless, or simply 'without genius' as we would have said a few generations before (this term was no longer in vogue in my time): the dull, mediocre people - at best 'sound 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 mobilise considerable psychic energy, retained this episode, which is not linked to any other directly related memory, and appears in such an innocuous form, makes plausible this feeling of a "swinging/*basculement*" that might have taken place then.

In a meditation less than five years ago, I came to realise that this ideology of "we, the great and noble minds...", in a particularly extreme and virulent form, had been present in my mother since her childhood, and dominated her relationship with others, whom she liked to look upon from the height of her grandeur with an often disdainful, even contemptuous commiseration. In fact, I had unreserved admiration for my parents. The first and only group with which I identified myself, before the famous "mathematical community", was the family group restricted to my mother, my father and myself, who had the honour of being recognised by my mother as worthy of having them as parents. This means that the seeds of contempt must have been sown in my person from my childhood. It might be a good time to follow the vicissitudes, through my childhood and adult life, of these seeds, and the harvests of illusion, isolation and conflict which some of them have grown into. But the place for it is not here, where I have a more limited purpose. I think I can say that this attitude of contempt has never taken on a vehemence and a destructive force in my life comparable to that which I saw in my mother's life (when I took the trouble 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 the time, if ever, to examine carefully, here, at least what the place of this attitude has been in my life as a mathematician.

Before doing so, in order to place in its general context the incident described in the preceding paragraph, I would like to emphasise that it is entirely isolated among my memories of the 1950s, and even later. Even today, when I see a sometimes disconcerting erosion of certain basic forms of courtesy and respect for others in my own milieu (10) the direct and undisguised expression of contempt from boss to pupil must be something quite rare. As far as the 1950s are concerned, I have very few memories in direction of any fear surrounding a renowned figure, or of a contemptuous or simply disdainful attitude. If I dig into this direction, I can say that the first time I was received at Dieudonné's home in Nancy, with the delicate friendliness he always had with me, I was a bit flabbergasted by the way this refined and affable man spoke about his students - all morons, basically! It was a chore to lecture them, and it was obvious that they didn't understand anything... After 1970 I heard the echoes coming from the side of the lecture hall, and I knew that Dieudonné was indeed feared by the students. Yet, while he was known to have strong opinions and to serve them with 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 the times of his legendary huge tantrums, which subsided as quickly and easily as they arose.

Without aligning myself with Dieudonné's feelings about his students, nor did I take distance against his attitude, which seemed to be the most obvious thing in the world, almost taken for granted by a person who had a passion for mathematics. With the helpful influence of my senior's most benevolent authority, this attitude seemed to me to be at least one of the possible attitudes that one could reasonably take towards the students and teaching tasks.

It seems to me that for both Dieudonné and me, imbued as we were with the same ideology of merit, its insulating effect was largely neutralised when we found ourselves in front of a real living 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 happened to most of our colleagues or friends, no less imbued than Dieudonné or me with the widespread superiority syndrome. And surely this is still the case today for many of them.

Weil also had a reputation for being feared by his students, and he was the only one in my microcosmos in the 1950s whom I had the impression of being feared even among colleagues of more modest status (or simply temperament). He sometimes had attitudes of unanswerable hauteur, which could disconcert even the most hardened self-confidence. Because of my susceptibility, this led on one or two occasions of brief quarrels. I did not perceive in his manner a hint of contempt or a deliberate intention to hurt or crush; rather, his attitudes were those of a spoiled child, taking (sometimes mischievous) pleasure in making people feel uncomfortable, as a way of convincing himself of a certain power that he wielded. He had a truly astonishing influence on the Bourbaki group, which he sometimes gave me the impression of bossing around, a bit like a kindergarten teacher over a group of well-behaved children.

I can only recall one other occasion in the 1950s when I sensed a brutal expression, of undisguised contempt. It came from a foreign colleague, a friend, about my age. He had an uncommon strength in mathematics. A few years earlier, when this strength was already quite evident, I had been struck by his submission (which seemed to me almost obsequious) to the great professor of whom he was still a modest assistant. His exceptional abilities soon earned him an international reputation and a key position in 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 (meaning: who were doing good work with him), he replied, with an air of faked casualness (I translate into French): "twelve pieces!" - where "pieces" was the name by which he referred to his students and assistants. It is certainly rare for a mathematician to have so many students at the same time doing research under his direction - and surely my interlocutor was secretly proud of this, which he tried to hide under this careless air, as if he was saying: "oh, just twelve pieces, not even worth talking about!". It must have been around 1959, I must have already had a good shell then, but I still had a disgusting feeling! I must have told him on the spot one way or another, and I don't think he was angry with me. Perhaps indeed his relationship to his students was not as sinister as his expression might suggest (I did not get a testimonial from one of his students), and that he had simply been caught up in his childish desire to strut in front of me in all his glory. In retrospect, 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 delicacy 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, an uneasiness towards him remained in me - I definitely no longer felt myself to be part of the same world as his...

Yet we were indeed part of the same world - and, without realising it any more than he did, I was surely getting thicker, too. In this respect, I have a vivid memory of the Edinburgh International Congress in 1958. Since the previous year, with my work on the Riemann-Roch theorem, I had been promoted to a big star, and (without my having to tell it to myself in clear terms then) I was also one of the stars in the Congress. (I gave a talk on the vigorous launch-off of the theory of schemes that year.) Hirzebruch (another star of the day, with his own Riemann-Roch theorem) was giving a commencement speech, in honour of Hodge who was retiring that year. At one point, Hirzebruch suggested that mathematics was mainly done by the work of young people, rather than by older mathematicians. This triggered a general outcry of approval in the Congress hall, where young people formed the majority. I was delighted and very much in agreement of course, I was thirty years old and could still pass for young and the world was mine! In my enthusiasm I found myself shouting out loud and banging on the table. I happened to be sitting next to Lady Hodge, the wife of the eminent mathematician who was supposed to be honoured on this occasion, as he was about to retire. She turned to me with wide eyes and said a few words, which I cannot remember - but I must have seen reflected in her astonished eyes the tactless thickness that had just been unleashed on this lady who is near the end of her life. I felt something then, of which the word “shame” gives perhaps a distorted picture - a humble truth which is rather about who I was then. I didn’t bang the tables anymore that day...

14. Birth of fear

It was around this time, I suppose, when (without having sought it) I began to be seen as a star in the mathematical world, that a certain fear must also have begun to surround my person for a good number of unknown or lesser known colleagues. I suppose so, without being able to pinpoint it by a precise memory, by an image that would have struck me and become fixed in my memory, like that incident mentioned earlier (which undoubtedly marked my first encounter with contempt in my adopted milieu). It must have happened imperceptibly, without attracting my attention, without manifesting itself in some particular, typical incident that memory would have retained, perhaps in a light just as deliberately anodyne as that other incident. What my memory of those transitional years recalls ‘en bloc’ is that it was not uncommon for people who approached me, whether after my seminar, or during a meeting such as the Bourbaki seminar or some colloquium or congress, to have to overcome a kind of stage fright, which remained more or less apparent during our discussion, if there was any discussion. When the discussion lasted more than a few minutes, this discomfort usually gradually disappeared as we talked and the conversation became more lively. Sometimes, rarely, it must have happened that the discomfort remained, to the point of becoming a real obstacle to communication even at the impersonal level of a mathematical discussion, and that I then felt confusedly in front of me a powerless suffering, exasperated with itself. I speak of all this without really “remembering”, as if through a fog which, nevertheless, restores to me impressions that must have been recorded, but undoubtedly evacuated as time went by. I wouldn’t be able to situate in time, other than by a supposition, the appearance of this discomfort, an expression of fear.

I don't think that this fear was personal and that it was limited to an attitude, to behaviours that would have distinguished me from my colleagues. If this had been the case, it seems to me that I would have ended up receiving echoes of it at the beginning of the seventies, when I left a role to which I had lent myself until then, the role of the star, the 'big boss'. I think it was this role, and not my person, that was surrounded by fear. And this role, it seems to me, with this halo of fear which has nothing in common with respect, did not exist, not yet, at the beginning of the fifties, at least not in the mathematical milieu which had welcomed me from the very moment I encountered it, in 1948.

Before this 'awakening' in 1970, I would not have thought of calling it 'fear' this stage fright, this embarrassment that I was sometimes confronted with, in colleagues who were not part of the most familiar environment. I was embarrassed by it myself when it came up, and did my best to dispel it. A remarkable thing, typical of the lack of attention paid to such things in my beloved microcosmos, is that I cannot recall a single time in the twenty years that I have been part of this milieu, when the matter was discussed between a colleague and myself, or by others in front of me! (11) Nor does this "fog" that serves as my memory give me 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 assert that I wasn't occasionally touched by it on an unconscious level in the early years. If so, it must have been fleeting, without reverberating into a behaviour that would have acted as a fixative for the discomfort. It is certainly not that my fatuity was not involved in the role I was playing! But if I invested in this role to the full, what motivated my ego was not the ambition to impress the "colleague of the rank", but to constantly surpass myself in order to force out the ever-renewed esteem from my "peers" - and above all, perhaps, from the elders who had given me credit and accepted me as one of their own since a time before I could give my best. It seems to me that the inner attitude I had towards the fear of which I was the object, which I tried as best I could to ignore while at the same time to dispel it where it manifested itself - that this attitude can be considered typical throughout the sixties in the milieu (the "microcosmos") of which I was part.

Yet the situation has deteriorated considerably, in the ten or fifteen years that have passed 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 able to be a close witness, or even sometimes a co-actor. More than once, among those of my former friends or students who had been dearest to me, I have been confronted with the familiar, unmistakable signs of contempt; with the (seemingly 'gratuitous') desire to discourage, to humiliate, to crush. A wind of contempt has risen, I cannot say when, and is blowing in this world that had been dear to me. It blows, regardless of "merit" or "demerit", burning with its breath the humble vocations as well as the most beautiful passions. Is there a single one among my companions of yesteryear, each protected, with "his own", by solid walls, installed (as I was once) in the muffled fear that surrounds his person - is there a single one who feels this breath? I know one and only one of my former friends who felt it and told me about it, without calling it by name. And such a one as well who perceived it one day as if against his will, only to rush to forget it the very next day [*lendemain*]. (12) For to feel this breath and to bear with it, for one of my yesteryear friends as well as for myself, is also to accept to take a look at oneself.

15. Harvest and sowing

I do not think and I will no longer think of being indignant about a wind that blows, when I have seen clearly that I am not a stranger to this wind, as a fatuity in me would have me believe I am. And even if I had been a stranger to it, my indignation would have been a paltry offering to those who are humiliated as well as to those who humiliate, of whom both I have loved.

I was no stranger to this wind, through my connivance with contempt and fear, in this world that I had chosen. It suited me to turn a blind eye to these blunders, as well as to many others, in my professional life as well as in my family life. In both, I harvest what I sowed - and what others also sowed before me or with me, both my parents (and my parents' parents...) and my new friends from yesteryear. And still others than me are harvesting today these seeds that have risen, both my children (and my children's children), and my pupils of today, treated with contempt by my pupils of past.

And when I speak of the sowing and harvesting, there is no bitterness or resignation in me, nor self-pity. For I have learned that even in the bitter harvest there is a substantial flesh which is up to us to nourish. When this substance is consumed and becomes part of our flesh, the bitterness has disappeared, which was only a sign of our resistance to a nourishment of our destiny.

And I also know that there are no harvests that are not also the sowing of other harvests, often bitterer than those before them. It still happens that something in me tightens at the seemingly endless chain of carefree[*insouciantes*] sowing and bitter harvesting, passed on and repeated from generation to generation. But I am 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 others - it is up to me to consume it and see it transformed into awareness[*connaissance*]. And it is no different for my children and all those I have loved and those I love at this moment, when they harvest what I have sown in times of fatuity and carelessness, or even what I am to sow today.

IV. The double visage

16. The swamp and the front rows

But I have not yet come to the end of this reflection, about the part I played in the appearance of contempt and its progression in this world to which I continued blithely to refer to by the name of “mathematical community”. This reflection, now I feel, is the best I have to offer to those I have loved in this world, as I prepare, to certainly not return, but to express myself anew [*à nouveau*].

I think what remains for me is, above all, to examine what kind of relationship I have had with the people who were part of that world, when I was still part of it with them.

Thinking about it now, I am struck by the fact that there was a whole part of this world that I used to come into contact regularly, but which escaped my attention as if it had not existed. I must have perceived it at the time as a kind of “swamp” with no definite position in my mind, not even as a “soundbox” 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 had been assigned there by birth, those who never opened their mouths during a talk to venture a question, certain as they must have been in advance that their question could only be off the mark. If they asked a question to people like me, who were considered to be “in the know”, it would be in the corridors, when it was obvious that “the competent” did not pretend to want to talk to each other - they would then ask their question quickly and as if they were on their tiptoes, ashamed of taking up the precious time of important people like us. Sometimes the question seemed indeed to be off the mark and I would then (I guess) try to say in a few words why; and oftentimes it was pertinent and I would also answer it as best I could, I think. In both cases it was rare that a question asked in such a disposition (or, should I say, in such an atmosphere) was followed by a second question, which would have clarified or deepened it. Perhaps we, the people in the front rows, were indeed too much in a hurry in such cases (even though we were, at times, surely trying not to appear so), for the fear towards us to dissipate, and for an exchange to take place. I felt, of course, as did my interlocutor, what was wrong and artificial about the situation in which we were involved - without my ever having formulated it to myself, and, no doubt, without his ever having formulated it to himself either. Both of us functioned like strange automatons, and a strange connivance bound us together: that of pretending to ignore the anguish that was gripping one of us, obscurely perceived by the other - that parcel of anguish in the anguish-laden air that saturated the place, which everyone surely perceived as we did, and which everyone chose to ignore by mutual acquiescence. (13)

This vague perception of anguish only became conscious in me after the first ‘awakening’, in 1970, when this ‘swamp’ came out of the darkness which, in my mind until then, I had been happy to keep the swamp in. Without any deliberate decision, without my being aware of it at the time, I left one milieu to enter another - the milieu of the “front row” people for the “swamp”: suddenly, most of my new friends were precisely those whom a year before I would have tacitly located in this nameless and featureless land. The so-called swamp suddenly came to life, through the visages of friends linked to me by a common adventure - another adventure!

17. Terry Mirkil

To tell the truth, even before this crucial turning point, I had been friends with fellows (who later became ‘colleagues’) whom I would have doubtlessly considered to be in the ‘swamp’, if the question had been put to me (and if they had not been my friends...). It took this reflection, and the digging of my memories, to recall and to make scattered memories come together. I got to know 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 “eminent”. It is 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 link - my relations with the young ‘normaliens’, who parachuted into Nancy like me, were much less personal, we hardly saw each other except at the University. One of my three friends emigrated to South America one or two years later. Like me, he was an associated researcher at the CNRS, and I had the impression that he himself didn’t really know what he was “searching” for, and because of this his situation at the CNRS was becoming a bit risqué[scabreuse]. We continued to see each other or write to each other from time to time, and eventually we lost touch. My relationship with the other two friends was longer, also stronger, and much less superficial. Our mathematical interests played only a very minor role, if any at all.

With Terry Mirkil and his wife Presocia, she being slim and fragile while he being stocky, with an air of gentleness in both of them, we often spent evenings, and sometimes nights, in Nancy, singing, playing the piano (the player was Terry), talking about music, which was their passion, and other important things in our lives. Not the **most** important things, of course - not the things that are always so carefully kept silent. I got a lot out of that friendship though. Terry had a delicacy, a discernment that I lacked, when most of my energy was already focused on mathematics. Much more than I did, he had retained a sense of the simple and essential things - the sun, the rain, the earth, the wind, the song, the friendship...

After Terry had found a position to his liking at Dartmouth College, not so far from Harvard, where I was a frequent visitor (from the late fifties onwards), we continued to meet and write each other. In the meantime, I knew that he was prone to depressions, which led to long stays in ‘maisons de fous’, as he called them in the single and laconic letter about them he wrote to me, following one of those ‘séjours horribles’. When we met, there was never any mention of them - except once or twice, very incidentally, in response to my astonishment that he and Presocia were not adopting children. I don’t think it ever occurred to me that he and I could talk about the heart of the matter, or even touch upon it - probably not even that there might be problems to look at, in my friend’s life or in mine... There was a taboo on these things, unspoken and impassable.

Gradually, the meetings and letters became less frequent. It is true that I was becoming more and more of a prisoner of my duties and my role, and above all of the desire, which had become like a fixed idea and perhaps an escape from other things, to constantly surpass myself with the accumulation of works - while my family life was mysteriously and inexorably deteriorating...

When I learned one day, through a letter from a colleague of Terry’s at Dartmouth, that my friend had committed suicide (it was long after he was already dead and buried...), this news came to me as if through a fog, like an echo from a world far away which I had left at a time God knows when. Perhaps it is a world inside

me, which had died long before Terry ended his life, devastated by the violence of an anguish, which he had not known or wanted to resolve, and which I had not known or wanted to divine...

18. Twenty years of fatuity, or: the indefatigable friend

My relationship with Terry was not distorted at any time, I believe, by the difference in our status in the mathematical world, or by any sense of superiority I might have derived from it. This friendship, and one or two others that life gave me in those days (without worrying whether I ‘deserved’ it!) was surely one of the rare antidotes at the time against a secret fatuity, fuelled by social status and, even more so, by the awareness I had attained of my mathematical power and the value I myself attached to it. This was not the case in my relationship with the third friend. This friend, and later his wife (whom he had met around the time we met in Nancy), have shown me a warm friendship over the years, marked by delicacy and simplicity, on all the occasions that we have met, in their house or in mine. In this friendship there was obviously no ulterior motive, related to status or brain power. However, my relationship with them remained imprinted for more than twenty years with that deep ambiguity in me, that division I mentioned, which marked my life as a mathematician. In their presence, each time anew, I could not help but feel their affectionate friendship and respond to it, almost against my will! At the same time, for more than twenty years I succeeded in this tour de force of looking at my friend with disdain, from the top of my grandeur. This must have been the case from the very first years in Nancy, and for a long time my avoidance extended to his wife, as if it was to be understood from the outset 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, which was in 1957. It now appears to me that at least one of the forces behind my attitude was the influence that my mother’s strong personality had on 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 is only now, taking the trouble for the first time to examine what that relationship has been, that I discover the full extent of that insane isolation from the warm sympathy of others, which has marked [*marquée*] it for so long. My friend Terry, no more combative or forceful than this other friend, had the good fortune to be approved of by my mother and was not the object of her mockery - and I suspect that this is why my relationship with Terry was able to flourish without inner resistance in me. His investment in mathematics was no more fervent, nor his “gifts” more prominent, but I never used this as an excuse to cut myself off from him and his wife with this carapace of disdain and complacency!

What still remains incomprehensible to me in this other relation is that my friend’s affectionate friendship was never discouraged by the reluctance, which he could not fail to sense in me, at each new meeting. However, today I know that I was **something else** than this carapace and this disdain, something else than a brain muscle and a fatuity that took pride in it. As in them, there was the child in me - the child I tried to ignore, the object of disdain. I had cut myself off from him, and yet he lived somewhere in me, healthy and vigorous as in the day of my birth. It was surely to the child that went the affection of my friends, who were less cut off from their roots than I was. And surely it was he too who responded in secret, on the sly [*à la sauvette*], when the Great Chief had his back turned.

19. The world without love

The Great Chief has aged, thankfully, he's faded a bit, and the kid has since been able to take it more in his stride. As for the relationship with these really enduring friends, it seems to me that I have really put my finger on the most flagrant, the most grotesque case in my life of the effects of a certain fatuity (among others) in a personal relationship. Perhaps I am still deceiving myself, but I believe that this is also the only case in which my relationship with a colleague or friend in the mathematical world (or even elsewhere) has been intervened in a lasting way by fatuity, instead of it only appearing occasionally, in a stealthy and elusive way. It seems to me, moreover, that among the many friends I had in the mathematical world at the time and whom I liked to keep in touch with, there is not a single one whom I could imagine to have experienced a similar folly [*égarement*], in a relationship with a colleague, friend or not. Of all my friends, I was perhaps the least "cool", the most "nerdy", the least inclined to show a hint of humour (it only came to me later), the most inclined to take myself terribly seriously. And surely, I wouldn't have sought out the company of people like me (assuming there were any)!

The amazing thing is that, my friends, "swamp" or not "swamp", put up with me and even took an affection for me. This is 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 at the moment and me (based on affinities, which were sometimes fortuitous), from that first moment when I was received with affection in Nancy, in 1949, in the house of Laurent and Hélène Schwartz (where I was somewhat part of the family), that of Dieudonné, and 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 for my entire life as a mathematician. It is surely this warmth that gave a similar warm tone to my relationship with the milieu embodied by my seniors. It gave all its strength to my identification with this milieu, and all its meaning to the name "mathematical community".

Clearly, for many young mathematicians today, it is being cut off during their apprenticeship, and often well after, from any current of affection, of warmth; seeing their work reflected in the eyes of a distant boss and his parsimonious comments, rather as if they were reading a newsletter from the ministry of research and industry, which clips the wings of the work and deprives it of a deeper meaning than that of a dull and uncertain livelihood.

But I am getting ahead of myself, by speaking of this disgrace, the deepest of all perhaps, of the mathematical world of the 70s and 80s - the mathematical world where 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 - this or none! Like a prisoner is assigned a cell: this is where you will serve your solitude! Where such painstaking and solid work, the fruit of years of patient effort, is rejected by the smiling contempt of the one who knows everything and has the power in his hands: "this work does not amuse me!", and the question is discarded. Good for the bin, let's not talk about it anymore...

Such disgraces, I know well, did not exist in the milieu I knew, among the friends I haunted, in the fifties and sixties. It is true that I learned in 1970 that this was rather the everyday-bread in the scientific world outside of maths - and even in maths it was apparently not so rare, the open-face contempt, the flagrant abuse of power

(and with no recourse), even among certain renowned colleagues whom I had had the opportunity to meet. But in the circle of friends that I had naively taken to be ‘the’ mathematical world, or at least a faithful miniature representation of it, I knew nothing of the sort.

Yet the seeds of contempt must have been there already, sown by my friends and me, and have grown up in our students. And not only in our students, but also in some of my former companions and friends. But my role is not to denounce or even to fight: one does not fight corruption. To see it in such and such a student whom I loved, or in such and such a companion of yesteryear, something in me clenches - and rather than accept the awareness that a pain brings me, I often refuse the pain and struggle and take refuge in refusal and a fighting attitude: such and such a thing shouldn’t be like this! And yet it is - and indeed, I know deep down what it means. In many ways, I am not innocent for it, if one student or companion whom I liked in the past takes pleasure in discreetly crushing another whom I liked and in whom he recognised me.

Again I digress, doubly so I might say - as if the wind of contempt only blew around my home! Yet it is by its blowing on me above all and on those who are close and dear to me that I am touched by it and become aware of it. But the time is not ripe to speak of it, except to myself alone, in silence. Rather, it is time for me to take up the thread of my reflection-testimony, which could well be called “Pursuing contempt” - contempt in myself and around me, in this mathematical milieu that was mine in the fifties and sixties.

20. A world without conflict?

I had thought of talking about the “swamp” in just a few lines, for the sake of my conscience, just to say that it was there but that I did not frequent it - and as so often in meditation (and also in mathematical work); the “nothing” that one looks at turned out to be rich in life and mystery, and in hitherto neglected awareness. Like this other “nothing”, which was also located in Nancy as if by chance (decidedly the cradle of my new identity!), the “nothing” of this student who was surely a bit useless[nul] and being treated as such... I thought of it again in a flash a little later[tantôt], when I wrote (a little quickly perhaps?) that “these disgraces” did not yet exist “with us”. Let’s just say that this is the one and only incident of its kind that I can relate, which (admittedly) resembles the ‘disgrace’ I was alluding to, without dwelling too much on a detailed description. Those who have been through it know what I’m talking about, without having to draw. And also those who, without having undergone it, do not hasten to close their eyes each time they are confronted with it. 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 quick to shut their eyes whenever they are confronted with it. As for the others, those who despise with joy as well as those who are content to shut their eyes (as I myself did successfully for twenty years), even an album of drawings would still be useless...

It remains for me to examine my personal and professional relationships with colleagues and students over these two decades, and incidentally also what I have known of 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 must add immediately that this is something that, to me, in those days, seemed quite natural - somewhat like the very least of things. Conflict, between people of goodwill, mentally and spiritually mature and so on, (again, the very least of it!), **had no place**. When there was conflict somewhere, I

looked at it as a kind of unfortunate misunderstanding: with proper goodwill and explanation, it could only be settled as soon as possible and without leaving any traces! If I chose mathematics as my favourite activity from a young age, it was surely because I felt that it was in this direction that this view of the world had the best chance of not bumping into disturbing denials at every step. When you have **proved** something, after all, then everyone would agree, I mean, of course, people of goodwill and so on.

It turns out that I had sensed correctly. And the story of those two decades spent in the peace and tranquility of the “without-conflict” (?) world of my beloved “ mathematical community “, is also the story of a long inner stagnation in me, eyes and ears blocked, without learning anything, or very little, except maths - while in my private life (first in the relationship between my mother and me, then in the family I set up right after her death) a silent destruction was raging that at no time during those years did I dare to look at. But that’s another story... The ‘awakening’ of 1970, which I have often mentioned in these pages, was a turning point not only in my life as a mathematician, and a radical change of milieu, but also (within a year) a turning point in my family life. It was also the year that, for the first time, in contact with my new friends, I risked an occasional, still very furtive, glance at the conflict in my life. It was the moment when a doubt began to dawn upon me, which matured over the years that followed, that the conflict in my life, and the conflict that I sometimes perceived in the lives of others, was not just a misunderstanding, a “smudge” that could be wiped away with a sponge.

This (at least relative) absence of conflict, in the milieu I had chosen as my own, seems to me in retrospect a rather remarkable thing, whereas I have come to learn that conflict rages wherever humans live, in families as well as in workplaces, whether these be factories, laboratories or the offices of professors or assistants. It almost seems as if I had, in September or October 1948, fallen straight into [*débarquant*] Paris without any doubt on this unique paradise island in the Universe, where people live without conflict with each other!

The thing suddenly seems really extraordinary to me, after all I’ve learned since 1970. Surely it deserves a closer look - is it a myth, or a 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 have to invent conflict, in this heavenly world from which conflict seems banished!

It is true that in this reflection I have had the opportunity to touch upon two instances of conflict, each time revealing an inner attitude in me: One is the incident of the “useless pupil” in Nancy, in which I have no idea of the ins and outs of the direct protagonists. The other is a situation of conflict within myself, a division, in my relationship with the “indefatigable friend” - but this was never expressed as a conflict between persons, which is the only form of conflict generally recognised. Remarkably, in the conventional sense of the word, the relationship between these friends and me was entirely free of conflict - at no time was there a slightest cloud. The division was in me, not in them. The division was in me, not in them.

Let me continue with the census. One of the first thoughts: the Bourbaki group! During the years in which I participated more or less regularly, that is to say until the end of the fifties, this group embodied for me the ideal of a collective work carried out with respect for both the seemingly minute details in the work itself, as well as for the freedom of each of its members. At no time did I feel among my friends in the Bourbaki group the shadow of a hint of constraint, either on me or on anyone else, senior member or guest, who had come to try out to see if things would ‘click’ between him and the group. At no time was there any hint of a fight for influence,

either over differences of opinions on this or that question on the agenda, or a rivalry for exercising hegemony over the group. The group functioned without a chief, and no one apparently had any inner desire, as far as I could see, to play that role. Of course, as in any group, one member had a greater influence on the group or on other members than others. Weil played a special role in this respect, which I have mentioned. When he was present, he was a bit of a “leader of the game” (14). Twice, I think, my sensitivities were offended by this, and I left - these are the only signs of ‘conflict’ that I know of. Gradually, Serre exerted an ascendancy over the group comparable to that of Weil. During my time in Bourbaki, this did not give rise to situations of rivalry between the two men, nor was I aware of any enmity developing between them later on. Looking back twenty-five years, Bourbaki, as I knew him in the 1950s, still seems to me to be a remarkable example of success in terms of the quality of relationships, in a group formed around a common goal. This quality of the group seems to me to be of an even rarer nature than the quality of the books that came out of it. It has been one of the many privileges of my life (which has been full of privileges) to have met Bourbaki and to have been part of it for a few years. If I did not remain with it, it was in no way because of conflicts or because the quality of which I have spoken had deteriorated, but because more personal duties attracted me even more strongly, and I devoted all my energy to them. Moreover, this departure did not cast a shadow on my relationship with the group, nor on my relationship with any of its members.

I would have to examine the conflict situations in which I was involved, which opposed me 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, very passing, on my relations with Serre, because of my sensitivity [*susceptibilité*] to a certain sometimes disconcerting casualness that he had in cutting short a conversation when he was no longer interested, or in expressing his lack of interest, or even his aversion, for such and such a work in which I was engaged, or such and such a vision of things that I insisted upon, perhaps a little too much and too often! It never fell into a quarrel. Beyond the differences in temperament, our mathematical affinities were particularly strong, and he must have felt as I did that we complemented each other.

The only other mathematician to whom I was linked by a comparable and even stronger affinity was Deligne. In this regard, I remember that the question of Deligne’s appointment to the IHES in 1969 gave rise to tensions, which I did not perceive at the time as a ‘conflict’ (which would have been expressed, say, by a quarrel, or by a turning point in a relationship between colleagues).

It seems to me that I have come full circle - that at the level of conflict between people, visible through tangible manifestations, in the relationships between colleagues or between colleagues and students in the milieu that I haunted, these are all during those twenty-two years, incredible as it may seem. In other words, no conflict in this paradise that I had chosen - so, are we to believe, no contempt? A contradiction in mathematics again?

Clearly, I’ll have to take a closer look!

21. A well-kept open secret

I have surely forgotten some minor episodes yesterday, such as temporary “coldness” 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 did not remember, in some of their publications, that some ideas or results 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 in me, and one that perhaps has not entirely disappeared with age! Except once, I refrained from mentioning it to the people concerned, whose good will was certainly beyond any suspicion. The opposite situation must surely have occurred as well, but I did not hear about it. I am not aware of any case, in my “microcosmos”, where a question of priority is the cause of a quarrel or enmity, or even of bitter-sweet words between the persons involved. Still, the one time I had such a discussion (in what seemed to me to be an egregious case) there was some sort of a spat, but it cleared up the atmosphere without leaving a residue of resentment. This was a particularly bright colleague, whose abilities included absorbing everything he heard with impressive speed, and it seems to me that he often had an unfortunate tendency to take other people’s ideas that he had just heard as his own.

There is a difficulty here which can certainly be found in a more or less strong form in all mathematicians (and not just mathematicians), and which is not only due to the egotistical training which pushes most of us (and I am not an exception) to attribute to ourselves “merits”, both real or presumed. The understanding of a situation (mathematical or otherwise), however we come to it, with or without the assistance of others, is in itself something of a personal essence, a personal experience, the fruit of which is being 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, one must be very vigilant in order to determine the part played by others in the formation of one’s vision. Surely I myself did not always have this vigilance, which was the least of my concerns, although I expected it from others vis-à-vis myself! Mike Artin was the first and only person who once told me, with the joking air of someone who is divulging an open secret, that it was both impossible and completely pointless to bother trying to discern which part is “one’s own” and which is “someone else’s” when one manages to take a subject head on and understand something about it. This was a bit bewildering to me, as it was not at all part of the ethics that I had been taught by example of Cartan, Dieudonné, Schwartz and others. Yet I sensed vaguely in his words, just as much in his laughing eyes, that there was a truth which had eluded me until then*. My relationship to mathematics (and especially to mathematical achievement) was heavily weighted by ego, and this was not the case with Mike. He really gave the impression of doing maths like a kid having fun, while also not forgetting to eat and drink.

22. Bourbaki, or my great fortune - and its downsides

Even before diving a little further below the visible surface, there is one observation that imposes itself on me right now: it is that **the mathematical milieu I haunted for two decades, in the 1950s and 1960s, was indeed a “world without conflict”**, so to speak! This is quite an extraordinary thing in itself, and it deserves my pausing for a moment.

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

I should make it clear at the outset that this is a very restricted milieu, the central part of my mathematical microcosmos, limited to my immediate ‘environment’ - the twenty or so colleagues and friends I met regularly, and to whom I was most strongly linked. Looking back, I was struck by the fact that more than half of these colleagues were active members of Bourbaki. Clearly **the core and soul of this microcosmos was Bourbaki**. It was, more or less, Bourbaki and the mathematicians closest to Bourbaki. In the 1960s I was no longer part of the group myself, but my relationship with some of the members remained as close as ever, notably with Dieudonné, Serre, Tate, Lang, Cartier. I continued to be a regular participant in the Séminaire Bourbaki, or rather, I became so at that time, and it was at that time that I gave most of my talks (on the theory of schemes).

It was undoubtedly in the 1960s that the ‘tone’ in the Bourbaki group shifted towards an increasingly pronounced elitism, of which I was surely a part at the time, and which I was unlikely to notice for this reason. I still remember my astonishment, in 1970, when I discovered to what extent the very name of Bourbaki had become unpopular in large sections of the mathematical world (which I ignored until then), as a synonym for elitism, narrow dogmatism, the cult of the ‘canonical’ form at the expense of a lively comprehension, hermeticism, castrating anti-spontaneity, and so on! Moreover, it was not only in the “swamp” that Bourbaki was getting bad publicity: in the 1960s, and perhaps even before that, I had heard occasional echoes of it from mathematicians with a different way of thinking, allergic to the “Bourbaki style” (15). As an unconditional adherent, I was surprised and a little saddened by this - I thought that mathematics made the minds of people agree! Yet I should have remembered that in my early days, it was not always easy or inspiring to ingest a Bourbaki text, even if it was expeditious. The canonical text hardly gave any idea of the ambience[*ambiance*] in which it was written, to say the least. It seems to me now that this is precisely the main shortcoming of the Bourbaki texts - that there is not even an occasional smile to suggest that these texts were written by **people**, and those bound by anything other than some oath of unconditional fidelity to ruthless canons of rigour...

But the question of the slide towards elitism, like that of Bourbaki’s writing style, is a digression here. The thing that strikes me here is that this “Bourbakian microcosmos”, which I had chosen as my professional milieu, **was a world without conflict**. This seems to me all the more remarkable because the protagonists in this milieu each had a strong mathematical personality, and many are considered to be “great mathematicians”, each of whom certainly had the weight to form his own microcosmos, of which he would have been the centre and undisputed chief! (16) It is the cordial and even affectionate conviviality, for two decades, of these strong personalities in the same microcosmos and in the same working group, which seems to me to be such a remarkable thing, perhaps unique. This is in line with the impression of ‘exceptional success’ that was already conveyed yesterday about Bourbaki.

Finally, it would seem that I was exceptionally lucky, at the time of my first contact with the mathematical world, to have stumbled upon **the** privileged place, in time and space, where a mathematical milieu of an exceptional quality, perhaps unique for this quality, had been forming for several years. This milieu became mine, and has remained for me the incarnation of an ideal “mathematical community”, which probably did not exist at that time (beyond the milieu which 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).

My identification with this milieu was very strong, and inseparable from my new identity as a mathematician, born at the end of the 1940s. It was the first group, beyond the family circle, where I was warmly welcomed, and accepted as one of them. Another link, of a different nature: my own approach to mathematics found confirmation in that of the group, and in those of the members of my new milieu. It was not identical to the 'Bourbachique' approach, but it was clear that the two were brothers.

This milieu, moreover, must have represented for me that ideal place (or very close to it!), that **place without conflict** whose quest had undoubtedly led me to mathematics, the science of all sciences where any hint of conflict seemed to be absent! And if I spoke earlier of my 'exceptional luck', it was clear in my mind that this luck had its downside. If it allowed me to develop my ways, and to give my best as a mathematician in the milieu of my elders who became my peers, it was also the convenient [*bienvenu*] means of escape from the conflict in my own life, and of a long spiritual stagnation.

23. De Profundis

This 'Bourbachique' milieu has certainly exerted a strong influence on my person and on my vision of the world and my place in it. It is not the place here to try to define this influence, and how it has been expressed in my life. I would only say that it does not seem to me that my inclinations towards fatuity, and their meritocratic rationalisations, were stimulated by my contact with Bourbaki and by my inclusion in the 'Bourbachique milieu' - at least not the years at the end of the forties and in the fifties.

The seeds had been sown in me for a long time, and would have found opportunity to develop in any other milieu. The incident of the 'useless pupil' that I have mentioned is in no way typical of the atmosphere that had been prevailing in this milieu, but, I repeat, quite the contrary, typical 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 is how I felt it; and it was such as to discourage and attenuate any inclination towards attitudes of domination or fatuity, whether individual or collective.

This milieu of exceptional quality is no more. He died I don't know when, without anyone, probably, noticing and sounding the death knell, even in his own heart. I suppose there must have been an insensible degradation in people - we all had to "bottle up", to become stale. We became important people, listened to, powerful, feared, sought after. Perhaps the spark was still there, but the innocence was lost on the way. Some of us may find it again before we die, like a new birth - but the milieu that welcomed me is no more, and it would be in vain for me to expect it to resurrect. Everything is back in order.

And respect too, perhaps, was lost along the way. By the time we had students, 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 own'.

The wind can rise and blow and burn - we are safe behind thick walls, each, with "his own".

Everything is back in order...

24. My farewell, or: the foreigners[*étrangers*]

This retrospective of my life as a mathematician takes a completely different path than I had planned. To tell the truth, I was not even thinking of a retrospective, but only of saying in a few lines, or even in a page or two, what my relationship today is with this world I had left, and perhaps also, conversely, what was the relationship to me of my former friends, according to the echoes that reach me from time to time[*de loin en loin*]. I had intended, on the other hand, to take a closer look at the sometimes strange vicissitudes of some of the ideas and notions that I had introduced in these years of intense mathematical work - I should say rather: the new types of objects and structures that 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 be out of place in what has become a meditation on a past, in an effort to better understand and take on a sometimes confusing present. Decidedly, the planned reflection on a certain 'school' of geometry, which was formed under my impetus, and which vanished without (almost) leaving any trace, will wait for a more favourable occasion*. For the time being, therefore, my concern will be to bring to a conclusion this retrospective on my life as a mathematician in the world of mathematicians, not to elongate on the work and its fate.

During the last five days, while I was busy with other tasks than these notes of reflection, one memory came back to me with some insistence. It will serve as an epilogue to the *De Profundis* on which I had stopped.

It happened towards the end of 1977. A few weeks earlier, I had been cited to the Montpellier Correctional 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 at the time of this quotation that I learned of the existence of this incredible paragraph of the 1945 ordinance governing the status of foreigners in France, a paragraph which prohibits any French from providing assistance in any form whatsoever to a foreigner "in an irregular situation". This law, which had no analogue even in Hitler's Germany with regard to the Jews, had apparently never been applied in its literal sense. By a very strange "coincidence", I had the honour of being taken as the first guinea pig for a first enforcement of this paragraph, which is unique in its kind.

Then I reacted, I shook myself. For a few months I invested all my energy in trying to mobilise public opinion, first in 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 unwinnable, 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" in 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 a villainous law, which was equivalent to outlawing hundreds of thousands of foreigners residing in France, and to designate millions of other foreigners to the suspicion of the population, like lepers, who at the same time became suspects, likely to attract the worst trouble to the French who would not be on their guard.

* This "more favourable occasion" came earlier than expected, and the reflection in question is the subject of the second part, "The Burial", of *Harvest and Sowing*.

Surprisingly, and completely unexpectedly by me, I did not receive a response from any of these five “personalities”. Definitely there were some things for me to learn...

It was then that I decided to go to Paris, on the occasion of the Séminaire Bourbaki, where I would not fail to meet many old friends, in order to first of all mobilise opinions in the mathematical milieu, which was the most familiar to me. This milieu, it seemed to me, would be particularly sensitive to the issue of foreigners, since all my mathematician colleagues, like myself, have to be in daily contact with foreign colleagues, pupils and students, most of whom, if not all, have had difficulties with their residence papers, and have had to face arbitrariness and often contempt in the corridors and offices of the police headquarters. Laurent Schwartz, whom I had informed of my project, had told me that I would be let to speak at the end of the presentations on the first day of the Séminaire, to put forward the situation to the colleagues present.

So I arrived that day with a large packet of leaflets in my suitcase for my colleagues. Alain Lascoux helped me to distribute them in the corridor in the Institut Henri Poincaré, before the first session and during the “interlude” between the two exposés. If I remember correctly, he had even made a small leaflet of his own - he was one of the two or three colleagues who, having heard about the affair, had been moved and had contacted me before my trip to Paris, to offer me their help (17). Roger Godement was also one of them, and he even wrote a leaflet entitled “A Nobel Laureate in Prison?” It was his style, but we were definitely not tuned in to the same wavelength: as if the outrage was against a “Nobel Prize winner”, rather than against the guy who started the whole evil business[*premier lampiste venu*]!

There was indeed a large crowd on that first day of the Séminaire Bourbaki, and a lot of people I had known more or less closely, including Bourbaki’s friends and companions of yesteryear; I think most of them were there. Several of my former students were there too. It must have been almost ten years since I had seen all these people, and I was happy to have this opportunity to see them again, even if it was a lot at once! But we would end up meeting in smaller numbers...

The reunion, however, “was not at all like that”, as was quite clear from the beginning. Many hands extended and shaken, to be sure, and many “here, here you are, what wind has brought you?” questions, yes - but there was an air of indescribable awkwardness behind the cheerful tones. Was it because they were not interested in the cause that brought me here, when they had come for a certain tri-annual mathematical ceremony that required their full attention? Or was it that, regardless of what brought me here, it was me myself that aroused this awkwardness, rather like the awkwardness of a defrocked priest among 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 been familiar, even friends. They had frozen, one might say, or sagged. A liveliness I had known on the faces seemed to have disappeared, as if it had never been. I found myself standing before strangers, as if nothing had ever bound me to them. Somehow I felt that we were not living in the same world. I had thought I was meeting brothers on this exceptional occasion, and here I was before strangers. Well-mannered, I must admit, I don’t remember any bitter-sweet comments, nor any leaflets lying around. In fact, all (or almost all) of the leaflets handed out must have been read, simply for curiosity's sake.

This does not mean that the villainous law has been put in jeopardy! I had my five minutes, perhaps even ten, to talk about the situation of those who for me were brothers, called “foreigners”. There was a crowded amphitheatre of colleagues, quieter than if I had given a mathematical talk. Perhaps the conviction to speak to them was already gone. There was not, as there used to be, a current of sympathy and interest. There must have been people in a hurry, I had to say to myself, I cut it short, proposing that we meet again immediately, with the colleagues who felt concerned, to discuss in a more detailed way what could be done...

When the session was declared closed, there was a general rush for the exits - obviously, everyone had a train or a metro to catch, which was not to be missed at any cost! Within a minute or two, the Hermite amphitheatre was empty, it was a wonder! The three of us found ourselves in the large deserted amphitheatre, under the harsh lights. Three, including Alain and me. I didn't know the third one, yet one of those unmentionable foreigners I bet, in dubious company and irregular situation on top of that! We didn't take the time to talk at length about 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 thoughtful enough to refrain from commenting on the matter. Obviously, I was the greenhorn [*je débarquais*]...

The evening ended at Alain and his ex-wife Jacqueline's place, taking stock of the situation and reviewing what could be done; as well as getting to know each other a little better. Neither that day nor later did I take the leisure to situate the episode I had just experienced in relation to the past. It was on that day, however, that I had to understand without words that a certain milieu, a certain world that I had known and loved was no more, that a living warmth that I had thought I would find again had dissipated, since long ago no doubt.

This did not prevent the echoes that still reached me, year after year, from that world whose warmth had fled, from disconcerting me many times, from striking me painfully. I doubt that this reflection will change anything for the future - except, perhaps, that I will rebel less against being struck this way...

V. The master and students

25. The student and the programme

I have not finished reviewing my relations with other mathematicians, at the time when I felt I was part of the same world and of the same ‘mathematical community’ with them. It still remains, above all, for me to examine my relations, as I experienced, with my students and with others for whom I was a senior fellow.

Generally speaking, I think I can say, without any reservation, that my relations with my students have been relations of respect. In this respect at least, I believe, what I had received from my seniors when I was myself a student, did not deteriorate over the years. As I had the reputation of doing “difficult” maths (a very subjective notion, to be sure!), and moreover of being more demanding than other bosses (this is less subjective), the students who came to me were from the start quite strongly motivated: “they wanted it”! There was just one student who at the beginning was a bit “ollé ollé”, it was not so clear if he was going to start up - and then he did, he launched off without needing my push...

As far as I can remember, I accepted all the students who asked to work with me. For two of them, it turned out after a few weeks or months that my style of working was not suitable for them. To tell the truth, it seems to me now that both times it was a matter of blockage situations, which I then hastily interpreted as signs of ineptitude for mathematical work. Today I would be much more cautious about making such predictions. I had no hesitation in sharing my impressions with the two of them, advising them not to continue in a career that I felt did not match their dispositions. In fact, I knew that for one of these two students at least, I had made a mistake - this young researcher later became well known in difficult subjects, at the borders of algebraic geometry and number theory. I did not know whether the other student, a young lady, continued or not after her disappointment with me. It is not impossible that my impression of her abilities, expressed too peremptorily, discouraged her, although she was perhaps just as capable as anyone else to do good work. I think I had given credit and confidence to these students just as I had given to others. However, I lacked the discernment to distinguish in the front what were sure signs of blockage, rather than of ineptitude (18).

From the beginning of the sixties, therefore for about ten years, eleven students did doctorate d’état theses with me (19). Having chosen a subject to their liking, they each did their work with enthusiasm, and (so I felt) they identified strongly with the subject they had chosen. There was one exception, however, in the case of a student who had chosen, perhaps without real conviction, a subject that “had to be done”, but which also had its unglamorous aspects, involving a technical, sometimes arduous, even dry, development of ideas that had already been established, with little surprise or suspense in prospect (20). Carried away by the needs of a vast programme for which I needed hands, I must have lacked psychological discernment in proposing this subject, which was surely not suited to the particular personality of this student. He, for his part, must have not realised what kind of mess he was getting into! In any case, neither he nor I were able to see in time that it had started off on the wrong foot, and that it was better to start again on some other things.

He was obviously working without any real conviction, and always looking a little sad, sullen. I think I had already reached a point where I didn't pay too much attention to these things, which nevertheless (I should have remembered) make up the day and night of any research work, and not just research!

My role then was limited to being annoyed when the work seemed to drag on, and to breathing a "phew!" of relief when it started to move again, and then when the planned programme was finally "buckled".

It was only years after my awakening in 1970, having had to correspond with this former student (now a professor, like everyone else in those good times!), that the idea came to me that something had definitely gone wrong in that case, that it was perhaps not a total success. Today, it seems to me to be a failure, despite the 'buckled programme' (but by no means botched!), the diploma, and the job at stake. And I bear a large part of the responsibility, for having put the needs of a programme before the needs of a person - a person who had entrusted me with confidence. The 'respect' ('without any reservation') that I had availed myself, which I would have shown towards my students, remained superficial here, separated from what makes the real soul of respect: a loving attention to the needs of the person, at least insofar as their satisfaction depended on me. The need, here, for a joy in the work, without which it loses its meaning, becomes a constraint.

In the course of this reflection, I have had occasion to speak of a "world without love", and I was searching in myself the seeds of that world which I rejected. Here is one, a big one - and I cannot say today how it has risen in others. This superficial respect, devoid of attention, of true love, is the "respect" that I also gave to my children. With them, I had the privilege to see this seed grow and to see it proliferate. And I have also understood, to a certain extent, that there is no use recoiling from the harvest...

26. Rigour and rigour

With the exception of this one student, who was surely no less "gifted" than the others, I can say that the relationship between my students and me was cordial, often even affectionate. By force of circumstance, they all learned to be patient with my two main faults as a "boss": that of having a handwriting that was impossible to read (yet all of them, I believe, eventually learned to decipher) and, something certainly more serious (and of which I only realised much later), my fundamental difficulty in following the thought of others, without first translating it into my own images, and rethinking it in my own style. I was much more inclined to communicate to my students a certain vision of things with which I had been strongly imbued, rather than encouraging them to hatch a personal vision, perhaps quite different from my own. This difficulty in relation with my students has not disappeared to this day, but it seems to me that its effects are attenuated, because I became aware of this propensity in myself. Perhaps my temperament, innate or acquired, predisposes me more to solitary work, which was the case during the first fifteen years of my mathematical activity (from 1945 to about 1960), than to the role of "master" in contact with students whose mathematical vocation and personality are not fully formed (21). It is also true, however, that since my early childhood I have loved teaching, and that from the 1960s until today, the students I have had have taken an important place in my life. This also means that my teaching activity, my role as a teacher, has had and still has a large place in my life (22).

During this first period of my teaching activity, there was no apparent conflict between any of my students and me, which would have been expressed even by a temporary "coldness" in our relations. Only once did I have to

tell a pupil that he was not serious about his work and that I was not interested in continuing with him if it went on like that. Of course he knew as well as I did what it was about, he pulled himself together and the incident was closed without a cloud. On another occasion, at the beginning of the seventies, when most of my energy was engaged in the activities of the “Survivre et Vivre” group, a student to whom I had shown (as is my habit) the thesis report I had just written on his work, became angry, deeming that certain considerations in the report called into question the quality of his work (which was not at all my intention). This time it was I who rectified the situation without any difficulty. It did not seem to me then that this short incident could leave a shadow over our relationship, but I may have been mistaken. 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 but no more, with no real warmth passing between us. I don’t think, however, that it was an unconscious lack of benevolence in me that made me put in my report the considerations that he considered disadvantageous to him, adding that “he was not going to let the thing go” as a fellow student of his, who had already done his thesis with me, had done. With this other student, who was of a sensitive and affectionate nature, I had a particularly friendly relationship; 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! Moreover, for both of them, as for all my students, I would not have given the green light for a defence if I had not been fully satisfied with the work they presented. None of my students from this period had any difficulty in finding a suitable job quickly, once their thesis was finished.

Until 1970: I had practically unlimited availability to my students (22’). When the time was ripe, and whenever it was useful, I spent whole days with one or other of them if necessary, working on questions that had not been completed, or reviewing together the conditions of subsequent drafts of their work. As I experienced these work sessions, I don’t think that I ever played the role of the decision-making “director”, but that each time it was a joint research, where discussions were held as equals, until both were completely satisfied. The student contributed a considerable amount of energy, which of course far more than what I had to contribute myself, though I had more experience and sometimes a more adept flair.

However, the thing that seems to me to be most essential for the quality of any research, be it intellectual or otherwise, is not at all a question of experience. It is **the demand vis-à-vis yourself**. The demand I want to talk about is of a delicate nature, it is not of the kind of scrupulous conformity with any norms whatsoever, of rigour or otherwise. It consists of an extreme **attention** to something delicate inside ourselves, which escapes all norms and all measures. This delicate thing, it is the absence or presence of an understanding of the thing under examination. More precisely, the attention I want to talk about is an attention to the **quality of understanding** present at each moment, from the cacophony of a heterogeneous pile of notions and statements (hypothetical or known), to the total satisfaction, the completed harmony of a perfect understanding. The depth of a search, whether its outcome is a fragmentary or total understanding, is in the quality of this attention. Such an attention does not appear as the result of a precept that one would follow, or of a deliberate intention to “watch out”, to be attentive - it is born spontaneously, it seems to me, from the passion to know, it is one of the signs that distinguish the impulse to know from its egotistical counterfeits. This attention is also sometimes called ‘**rigour**’. It is an inner rigour, independent of the canons of rigour that may prevail at a given moment in a (say) given discipline. If in this book I allow myself to take liberties with canons of rigour (which I have taught and which have their *raison d’être* and their usefulness), I do not believe that this more essential rigour is less here than in my past publications with the canonical style. And if I was able, perhaps, in spite of everything, to

transmit to my students something of greater value than language and know-how, it is undoubtedly this demand, this attention, this rigour - if not in the relationship with others and with oneself (although at this level it was as lacking in me as it was in anyone else), then at least in the mathematical work (23). This is certainly a very modest thing, but perhaps, nonetheless, better than nothing.

27. The smudge - or twenty years later

Except perhaps in the case of the two students I mentioned, with whom a working relationship was not finally established, I don't recall that the other students who came to me to ask to work with me came with any "stage fright" or fear. No doubt they already knew me to a greater or lesser extent, having attended my seminar at the IHES for at least some time. If there was any awkwardness at the beginning of our relationship, it eventually dissipated, without leaving any trace, in the course of the work. I should, however, make two exceptions here. One concerns the student who did not really get to like his work, and who remained monosyllabic even during our work together. Perhaps he also came at a time when I was less available, and there were no sessions of work with him on parts [*sur pièces*], for whole afternoons and days. No, in fact I don't remember any such sessions; in fact I think we mostly met in a rush, for an hour or two, to see where he was at. He was certainly the one who had the worst time with me!

The other student I wanted to talk about worked with me at a time when I still had full availability for my students. Our relationship has been cordial since the beginning. He is even one of the few students with whom a friendly relationship has been established, those whom I sometimes saw at their homes just as they came to mine, a kind of relationship between families. It is true that even in these cases, the relationship always remained on a relatively superficial level, at least as far as I was concerned. On a conscious level, while I 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 my wife and children (and even those I sometimes forgot, with nobody blaming!). Perhaps I was an extreme case of a 'nerd', but I believe that in the mathematical milieu I knew, most if not all relationships, even friendly and affectionate ones, remained at that superficial level where one knew very little about each other, except what was perceived at the informal level. This is surely one of the reasons why conflict between people was so rare in this milieu, whereas it is 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 home and everywhere else.

I do not believe that my relationship to this student stood out from my relationship to others, nor did I feel at the time that, conversely, his relationship to me stood out in any significant way from that of other students, particularly those with whom friendships were formed. Only recently have I been able to realise 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 student. Only then did I make the connection with a long-forgotten 'little' fact. For a long time, perhaps even for the entire period (a few years) when we worked together more or less regularly, this student had retained a certain "stage fright". This was manifested at each meeting by unmistakable signs. These signs disappeared quite quickly afterwards, during the work together. I was of course embarrassed by these signs of discomfort, and I felt that he was even more so. Both of us pretended to ignore the matter, as was natural. Surely the idea of talking about it did not

occur to either of us, nor did it have occur to us to pay any attention to the strange situation, which was obviously worthy of interest! For him as for me, this “stage fright” was to be felt as a simple “smudge”, which shouldn’t have been there. The “smudge” comes up to us regularly, but each time, it had the good sense to disappear, leaving us free to take care of serious things, of maths - and at the same time to forget “that which shouldn’t have been there”. I don’t remember ever stopping to ask myself any questions about the meaning of this burr, and I’m sure it was the same with my student and friend. Nothing in what we had both known around us since our early childhood could suggest in him or in me any other attitude towards a bothersome thing than that of **pushing it away** as far as possible, so that it ceased to bother. In this case it was perfectly possible and even easy, and we were perfectly in agreement that we had seen nothing, felt nothing and heard nothing.

Through many echoes and cross-checks that have been coming back to me over the last two or three years, I nevertheless realise that what had been dismissed as having no reason to be, did not have to cease to be and to manifest itself. Things that sometimes came back to me does not “have reason to be” either - and yet “they are there”, and now can no longer be dismissed out of hand...

28. The unfinished harvest

Until the time of the first “awakening” in 1970, my relationships with my students, like my relationship with my own work, were a source of satisfaction and joy, one of the tangible, unassailable foundations of a sense of harmony in my life that continued to give it meaning, even as an elusive destruction raged in my family life. At that time, there was to me no apparent element of conflict in these relationships, none of which was then, at any time, even fleetingly, the cause of frustration or pain. It is something that may seem paradoxical, that the conflict in the relationship with one student of mine became apparent only after this famous awakening, after a turning point which gave to my life an openness it had not known before, and to my person a little start of flexibility perhaps - qualities which, one would think, should be of a nature to resolve or avoid conflict, not to provoke it or exacerbate it.

On closer inspection, however, I can see that the paradox is only apparent, and that it disappears from whichever angle you look. The first one that comes to mind is that: for a conflict to have a chance of being resolved, it must first have manifested itself. The stage of the manifested conflict represents a maturation compared to that of the hidden or ignored conflict, whose manifestations do exist, and are all the more “effective” because the conflict that is expressed through them remains ignored. Also: for a conflict to manifest itself in a recognisable way, a **distance** must first have been reduced or have disappeared. The changes that have taken place in my life over the last fifteen years, notably during successive ‘awakenings’, have all been changes, it seems to me, of a nature to reduce a distance, to erase an insulation. A conflict that has difficulty expressing itself vis-à-vis a prestigious and admired boss, is more at ease vis-à-vis someone 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 a person like any other: a person not only susceptible to harm, but also less and less inclined to hide from injury or pain. And thirdly and above all: the evolution that has been mine since the first awakening, especially at that time and in the years that followed, was of a nature to arouse (or perhaps to awaken) questions, a concern, a ‘questioning’ in the well-ordered universe of my former students. I have had

ample opportunity to realise that this has been the case not only for them, but also among my friends and companions of yesteryear in the mathematical world, and sometimes even among scientific colleagues who only know me by hearsay.

It must also be said that the resolution of even the slightest conflict is something very rare. More often than not, notwithstanding all the truces and reconciliations on the surface, the growing procession of our conflicts follows us without taking a single step away from us for the rest of our lives, only to let go of us in the sullen hands of the undertakers. I have occasionally seen a conflict unravelled to some extent, and sometimes even resolved with full understanding - but so far such a thing has not happened in the course of and on the occasion of my relationship with any of my students, or with any of my yesteryear friends in the mathematical world. And I also know that it is by no means certain that such a thing will ever happen, even if I were to live another hundred years.

It is remarkable that the very moment of my break with a certain past, by which I mean the episode of my departure from the IHES (the institution which represented something like the ‘matrix’ of the mathematical microcosmos which had formed around me) - that this decisive episode was at the same time as the first occasion on which a profound antagonism of one of my students towards me was expressed. It is surely this circumstance that made this episode particularly hard, particularly painful, like a childbirth or a birth that took place under particularly difficult conditions. Of course, I could not then see this episode, whose meaning escaped me, through the light in which I have since learned to see. Long afterwards, this painful surprise remained. However, from the summer of that same year, this bitter departure had revealed itself as a liberation - like a door that had suddenly become wide open (all I had to do was push it!) onto an unsuspected world, calling 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 up to the present day, this stubborn, discreet and unwavering antagonism has followed me, as the only great and lasting source of frustration I have known in my life as a mathematician (23’). I could perhaps say that it was the price I paid for this first liberation, and for those that followed. But I am well aware that liberation and inner maturation have nothing to do with a ‘price to pay’, that they are not a question of ‘profits’ and ‘losses’. Or to put it another way: when the reaping is completed, when it is finished, there is no loss - the very thing that seemed to be “loss” has become “profit”. And it becomes clear that I have not yet been able to bring this reaping to a completion, which remains, even as I write these lines, unfinished.

29. The enemy Father (1)

The kind of students who started to work with me after the turning point of 1970, in the completely different milieu of a provincial university, was also very different from the students before. There were only two who worked with me at the level of a doctorat d’état thesis. The work of the others was at the level of DEA or postgraduate doctoral theses. I should also include a good number of students who took a strong interest in some of the introductory research “courses”, which gave them the opportunity to ask themselves often unexpected mathematical questions, and sometimes to imagine original methods to solve them. I found the most active participation in some of the “optional courses” for first year students. In contrast, among students who

have already experienced the university atmosphere for a few years, a certain freshness, a capacity for interest, for personal vision is already more or less extinguished. Among the students in the optional courses, several were obviously of a calibre to make an excellent mathematician. But given the situation, I did not encourage any of them to go down this path, which could have attracted them and where they could have excelled.

With the students who were taking these “courses” of mine to prepare master’s degrees, the relationship did not continue, most of the time, beyond the year. On each occasion, I had the impression that they quickly became cordial and relaxed, on the whole. With the exception of one student who was afflicted with overwhelming ‘stage fright (23’”), the same was true of students who were expected to formally prepare a research paper under my guidance, at one level or another. One difference (among many others!) with my previous students was that our relationship was not so much limited to joint mathematical work. Often the exchange between the student and me involved our persons in a less superficial way (23v). It is therefore not surprising that in this second period of my teaching activity, the conflicting elements in the relationship with certain students appeared more clearly and directly, even vehemently. Among my former students of the first period, there were two who subsequently displayed attitudes of systematic and unequivocal antagonism (which I have had occasion to mention in passing), which remained, however, at the level of informality, and perhaps even of the unconscious. In the second, longer period, there were three students in whom I was confronted with antagonism. In two of them, this manifested itself acutely.

In one of these students, antagonism arose overnight in what had been a most friendly relationship, long years after this friend had ceased to be my student. I suspect that the cause of the conflict was not so much my unspeakable conduct and personality, but rather a long-suppressed dissatisfaction that he had found his work (which had been excellent) not to be as well received as he should have expected. This was the downside of the doubtful privilege of having had me as a boss ‘after 1970’, and he must have resented me, without much recognising it even in his own heart.

With the other student, an acute antagonism appeared already after a year and a half of work, in an atmosphere that had seemed very cordial. This was the first and only time that a relational difficulty between a student and me appeared at a time when he was still a student. It made it impossible to continue working together, even though we had started out on the right foot, with the best possible enthusiasm for a magnificent topic of reflection, I must say. I had the feeling that there was in this young researcher an insidious lack of confidence in his ability to do good work (an ability which for me was not in doubt), and that the manifestation of the antagonism in high pitch was a sort of “headlong rush” to take the lead on a feared failure, and cast the responsibility beforehand onto the person of a horrible boss (23’”).

One aspect common to all these appearances of conflict between students and myself, in the nearly twenty-five years I have been teaching mathematics, is a strong **ambivalence**. In all these cases, without exception, the antagonism manifests itself afterwards, often insidiously, in a relationship of sympathy which itself cannot be subject to any 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 exercised and still exercises a strong attraction. It is surely the very strength of this attraction that also feeds the strength of the antagonism and ensures its continuity. This is surely still the case in cases where antagonism takes the form of violent antipathy, of outraged rejection; as

well as in such other cases, at the opposite extreme, where under the flag of rigour of friendly respect is expressed (when the occasion is right) an affectation of nonchalant and delicately dosed disdain...

Such situations of ambivalence are not, in fact, unique 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 (in other words since the death of my mother). This has been the case both in my love life or marriage life, and in my relationship with men and, more specifically, with those men who are significantly younger than me. I have come to understand that something in me, innate or acquired I don't know enough to say, seems to predispose me to be a father figure. I have, it seems, the ideal build and the right vibrations to make the perfect adopted father! It must be said that the role of Father fits me like a glove - as if it had been mine from birth. I won't try to count the number of times I've stepped into such a role vis-à-vis another person, in perfect tacit agreement on both sides. Most often this distribution of father-son or father-daughter roles remained unspoken, or even unconscious, but it has also happened that it was more or less clearly expressed. In some cases I also acted as a father without even having entered into a game, I think, in ignorance, on both a conscious and unconscious level, of what was going on.

I first became aware of an adopted father role in 1972, at the time of "Survivre et Vivre", when I was suddenly confronted with an attitude of violent rejection from a young friend. (Interestingly, he was a maths student on the verge of dropping out!) Something about my behaviour towards other people had disappointed him. I would have been ready with no difficulty, I think, to acknowledge that his disappointment was well-founded, that I had been ungenerous in this instance - but the violence of the reaction had literally blown me away. It was like a sudden flaming of vehement hatred, which died down almost immediately, when it became clear that he had not really succeeded in throwing me off. (It was close, but I kept that to myself...). I don't know how I got the intuition then that he was projecting onto my person, duly idealised, the unresolved conflicts with his father. This sudden intuition, which has been forgotten, did not prevent me from continuing to play the role of father for many years with the same conviction, without being the least bit suspicious. With, of course, always the same painful astonishment, not believing my eyes or anything else, when I was later confronted with the signs of conflict, insidious or violent.

It was after six or seven months of intense solitary work on my parents' lives, which made me see them in an unexpected light, that I realised what an illusion there is in the role of adoptive parent who would replace (for the better of course!) a real parent who does exist and who would be declared (if only by tacit agreement) to be 'failing'. It means helping others to avoid the conflict where it lies, say, in their relationship with their father, and to project it onto a third person (myself in this case) who is entirely unrelated to it. Since this meditation, which took place from August 1979 to March 1980, I have been vigilant with myself, so as not to let myself go with my eyes closed to my misguided paternal vocation. This has not prevented the wrong situation from recurring (as in my relationship to that student with whom I had to stop working) - but now, I believe, it would be without connivance on my part.

If I put aside the case of the student frustrated in these legitimate expectations, there is no doubt in my mind that in all the other cases where I have been confronted with antagonism in a student or ex-student, it has been the reproduction of the same archetype of the conflict with the father: the Father at once admired and feared, loved and hated - the Man whom it is a question of confronting, of overcoming, of supplanting and perhaps of

humiliating... but also the One we secretly want to be, to strip from Him a power and make it our own - another Self, feared, hated and shunned...

30. The enemy Father (2)

It was not the great turning point of 1970 that created antagonisms between some ex-students and me, against the background of an idyllic and unclouded past. It only made visible the antagonisms that could hardly be expressed in the more conventional framework of a typical boss-student (or ex-boss-ex-student) relationship. I suspect that such conflicts must not be uncommon in the scientific milieu, but that they are more often manifested in a more roundabout and less recognisable way than in relationships which I have been involved in.

Thinking back, I don't have the impression that, after all, in these relationships with my students, I had such a tendency to take on a paternal role - indeed, I can't think of a single memory that goes more or less in this direction. As for **myself**, it seems to me that almost all the energy I invested in a relationship with a student was the same energy that I also invested in mathematics, and in the realisation of a vast programme. In the first period, I can think of only one case in a student where there was an interest in me as a person, in the nature of an affinity or sympathy, which had a strength comparable (if not equal) to that of the mathematical interest. But even in this case, I do not feel that I have entered into a paternal role towards him. As for the influence I may have had on his person or on other students, at one level or another, this is the kind of thing I didn't pay any attention to in my relationship with my students. (Even today, I tend not to pay attention to it, not with the students who have worked with me in recent years, and not even with other people.) Of course, in all these cases, the relationship between the student and me was by no means 'symmetrical', in the sense that for the duration of the teacher-student relationship at least (and probably more often than not even beyond that), the importance that a student had in my life was not comparable to that which I had to assume in his, nor were 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 recognised signs of antagonism, I realise that the nature of the relationships to me of my various students and then ex-students, during more than twenty years of teaching activity, remain a total mystery to me! It is not so much my job to probe these mysteries, but rather that of each of them on their own behalf. But as long as one is interested in one's own person, there may be hotter things to look at than the ins and outs of one's relationship with one's ex-boss... In any case, even though I showed no inclination to take on a paternal role with my students, it must not have been unusual for me to act as a sort of adopted father for them, given my particular psychological '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 have mentioned, this particular colour of the relationship between a student and me is not in the least doubtful to me. Outside my professional life, there have been many other cases where, with or without my connivance, I have visibly acted as an adopted father to younger men or women who were attracted to me and linked to me first of all by mutual sympathy, but by no means by family ties. As for my own children, the paternal fibre in me towards them has been strong, and from their earliest years they have had an important place in my life. In a strange irony, however, none of my five children have accepted the fact that I am their father. In the lives of the four of them that I have come to know closely, especially in recent years, this division in their relationship to me reflects a deep division in themselves; a refusal of everything in them that

makes them like me, their father... But this is not the place to probe the roots of this division, which plunge as much into a torn childhood as into my childhood and that of my parents; as well as into the mother's childhood and that of her parents. Nor is it the place here to measure its effects, in their own lives, or in those of their children...

31. The power to discourage

To conclude this summary tour through the relations I had in the mathematical milieu between 1948 and 1970, it remains for me to speak of my relations with the younger mathematicians, more or less beginners and consequently without the status of 'colleague' strictly speaking, without my playing the role of 'boss' towards them. These are young researchers whom I met during a year or two in my seminar at the IHES, or on the occasion of such courses or seminars at Harvard or elsewhere, or also sometimes, on the occasion of a correspondence, for example when I had received a work from a young author for which the author was waiting for comments, and surely also for encouragement.

Relationships with junior researchers are part of a role that is less apparent than that of the 'bosses' of such students, but just as important, as I have since come to realise. At that time, I did not realise, as I have done for the last six or seven years, that this role, for a prominent mathematician, represents considerable **power**. It is, first of all, the power **to encourage**, to stimulate, which exists as much in the case of visibly brilliant work (but perhaps hampered by clumsiness of presentation or lack of 'craft'), as in the case of simply solid work; it exists even in the case of work which only represents a very modest, or even negligible, contribution, according to the criteria of an elder in full possession of powerful means, of proven experience of the subject, and of extensive knowledge. The power to encourage is there, provided that the work submitted to us has been written seriously - something that is usually discernible from the first few pages.

And the power to **discourage** exists just as much, and can be exercised at will whatever the work is. This is the power that Cauchy used against Galois, and Gauss against Jacobi - it has been around for a long time, and used by eminent and feared men! If history has recorded these two cases, it is because the men who were subjected to them had sufficient faith and assurance to continue their way, despite the authority of those with no benevolence and who were then calling the shots in the mathematical world. Jacobi found a journal to publish his ideas, and Galois found the leaves of his last letter to act as a 'journal'.

Nowadays, it is certainly more difficult for an unknown or little-known mathematician to become known than in the last century. And the power of the prominent mathematician is not only psychological, but also practical. He has the power to accept or refuse a work, that is to say: 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, rejection was not a final word- if the work presented "worthy of interest" results, it had a chance of finding the support of another eminent person. Today, this is certainly no longer the case, as it has become difficult to find even one influential mathematician who will agree to review (in whatever way he or she pleases) a work in his or her field, unless the author has already acquired a reputation or is recommended by a well-known colleague. In recent years, I have seen influential and brilliant mathematicians use their power to discourage and refuse, both with respect to solid work that clearly needed to be done, and with respect to significant work that clearly shows the power and originality of its

authors. On several occasions, the person who used his discretionary power in this way happened to be a former student of mine. This is probably the most bitter experience I have had in my life as a mathematician.

But I am digressing from my point, which was to examine the way in which, in the days when I was convincingly playing the role of the “prominent mathematician”, I used the power that I had to encourage and discourage. I should add that at the more modest level where my scientific activity continued after 1970, as a teacher among others in a provincial university, this power did not cease to exist, either with regard to my students or pupils, or (admittedly rarely) with regard to occasional correspondents. But for my present purpose, it is only the first period of my life as a mathematician that matters.

As far as the relationship with my pupils is concerned, from the first one I had to the present day, I think I can say without any kind of restriction that I have done everything in my power to encourage them in the work they have chosen (23iv). It must be rare, even today, for the relationship of “boss” to pupil to be different, especially in the case of a boss who has the means to train brilliant pupils and, with their help, to clear up vast areas ready for ploughing. The hardly believable, yet true, fact is that there is even that extreme case of the prestigious boss who takes pleasure in extinguishing in brilliantly gifted students the mathematical passion which had driven himself at a younger age.

But again I am digressing! It is my relationship to young researchers who were **not** my students that needs to be examined now. In such relationships, the egotistical forces in the person of the prominent man would be less likely to push him in the direction of encouragement, as the successes of the little-known young researcher who approaches him will add little or nothing to his own glory. Quite the contrary, I think that the mere functioning of egotistical forces, in the absence of genuine benevolence, would almost invariably tend to push in the opposite direction, to use the power to discourage, to refuse. This, it seems to me, is no more and no less than that general law, which can be observed in all sectors of the society: that the egotistical desire to prove one’s own importance, and the secret pleasure which accompanies its satiation, are generally stronger and more appreciated, when the power one has at one’s disposal finds occasion to cause one’s fellows’ disappointment, or even humiliation, rather than the reverse. This law is expressed in a particularly brutal way in certain exceptional contexts, such as war, the concentration camp, prisons or psychiatric asylums, or even simply in the general 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 behaviours that attest to this law. The correctives to these attitudes are, first of all, **cultural** correctives, stemming from a consensus, in a given milieu, on what is considered “normal” or “acceptable” behaviour; they are, on the other hand, 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 whatever milieu it is sought for. As for the cultural corrective in the mathematical milieu, it seems to me that it has eroded considerably over the past two decades. This is certainly the case, at least in the milieu I have known.

Clearly, I am stubbornly straying away from my point, which was not a discourse on the century, but a meditation on myself and on my relationship with more or less junior researchers who were not my students. I do not believe that the ‘law’ to which I alluded found expression in these relationships. For reasons that need not be examined here, it would seem that the egotistical forces, as strong in me as in anyone else, have not taken this route in my life to manifest themselves at the expense of others (apart from a few instances 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 able to encourage. Even in a relationship as deeply divided as with this “indefatigable friend” I have had to talk about, never has the fatuity in me led me astray to the point where I would have thought (even if through unconscious intent) of harming him. (I would have had the opportunity to do so, and “with the best conscience in the world” of course.) And I believe that in most cases these dispositions of general benevolence (even if they were only on the surface) also marked my relations in the mathematical world, including with beginner mathematicians who, without being among my students, could need my support or encouragement.

I believe that this was the case without exception at least during the 1950s and in the early 1960s. It seems to me that in those days at least, this benevolence was not limited to such apparently brilliant young people as Heisuke Hironaka or Mike Artin (even though they were not yet well-recognised for their abilities). But it may have faded to a greater or lesser extent during the 1960s, under the influence of egotistical forces. I would be particularly grateful for hearing any testimonies on this matter.

My memory only gives me a particular case, which I will talk about, and beyond this case, only this famous “mist” which does not condense into any other case or specific fact, but rather just gives me a certain attitude within. I felt a certain irritation when it happened that another mathematician “stepped onto my territory” without even pretending to ask me, as if he was at home the young greenhorn! It must have been mostly cases of young people, who were not very familiar with the subject, and who thought they could find, sometimes in very particular cases, things that I had known for years and still knew from a higher level. It didn’t happen very often, I think, but maybe two, three or four times, I can’t say. As I just said, I only remember one case of this, perhaps because the situation happened several times with the same young mathematician, in one form or another. I can say that in all respects this young researcher, whose home university was abroad, was perfectly correct in sending me, who was supposed to be the person most in the know, the work he had just done. Each time I reacted very coolly, for the reason I just said. I couldn’t even say for sure if I told him frankly that what he was doing had been known to me for a long time, and that for this reason I was annoyed that he was publishing it without at least giving me a little bow in the introduction. Of course, if he had been my student, this authorial fatuity wouldn’t have played so much of a role, partly because of a sympathetic relationship that had already been established with the student, but also because it went without saying anyway that the student’s work also contained the boss’s ideas, unless stated otherwise! 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 of this researcher for publication in such and such a journal, nor to be part of a thesis jury (I think I remember that the question arose). It’s almost as if I had decided to choose him as a whipping boy [*tête de turc*]. The good thing is that his work was always perfectly valid - I believe it was carefully written, and I have no reason to suppose that he did not come up himself with the ideas he was developing, which at that time were not yet widely known, and were (more or less) only ‘well known’ to a handful of people in the know, such as Serre, Cartier, myself and one or two others. What is incomprehensible to me is that this young colleague (he ended up with a thesis and a well-deserved job, of course) never got weary of talking to me, who “beat him cold” at every turn, and that he apparently never held it against me. I do remember his surprise at my reluctance once, as he obviously didn’t understand what was going on. He would have had a hard time if he had been waiting for me to explain! He had a beautiful head,

a bit like a classical Greek, very youthful - rather soft, peaceful features, evoking an inner calm... Now that I am trying for the first time to grasp the impression made by his person and his physiognomy, I suddenly realise that he really did look a lot like this “indefatigable friend” of whom I have had occasion to talk about; they could have been brothers, this friend of my age with his cheerful disposition [*tonalité souriante*], and this researcher, twenty years younger, with his somewhat serious but by no means sad disposition. It is not impossible that this resemblance played a part, that I projected on one a disdain which had not found 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 carapace, not to be disarmed by the obvious good faith and the will to do well in this certainly endearing young man, who was never tired of coming back to the charge, without my deigning to give him even a smile!

32. The ethics of the mathematician

The case I mentioned yesterday, now that I have finally taken the trouble to write it down in black and white, seems to me to be of considerable significance, greater in some respects than the other three cases (which are no doubt equally typical) mentioned earlier, where forces of fatuity deeply disturbed a natural attitude of benevolence and respect in me. In this case, using a position of real power (while I pretended, like everyone else, to be unaware of that power), I used it to discourage a willing researcher, and to refuse a work that deserved to be published. This is called an **abuse of power**. It is no less blatant to not be subject to an article of the penal code. It is fortunate that the situation at that time was less difficult than it is today, so that this researcher was able, without too much difficulty I believe, to have his work published with the support of some colleagues who were more benevolent than I was, and that his career as a mathematician was not seriously disrupted, still less ruined, by my abusive behaviour. I am glad of this in retrospect, but I do not want to make it an ‘extenuating circumstance’. It is possible that in a more serious [*dure*] situation I would have paid more attention - but that is just a guess, and has little to do with anything in this case. But I think I can say that there was no secret malice in me, no desire to do harm because of the irritation I mentioned. I reacted to this irritation in a “visceral” way, without the slightest inclination to criticise myself, and even less to look at what was going on inside me, or even at the impact my reaction could have on the other person’s life. I did not realise the power I had, and the thought of responsibility that went with that power (even if it was only the power to encourage or discourage) never occurred to me during that relationship. It was a typical case of **irresponsible conduct**, such as those one encounters on every street corner, of the scientific world as well as other places.

It is possible that this only case of its kind that I can remember is an extreme case, among a few other similar ones. What triggers an attitude without benevolence is the irritation of a vanity, impatient to see “the first comer” arrogating to himself the right to walk into guarded hunts and take some small game that belongs only to the masters of these places... This irritation has its own rationalisations, which look nobler, as one can imagine: It’s not my modest person that’s at risk, no, but the love of art and mathematics; this young man who doesn’t have so much of an excuse of being brilliant but rather is of a clumsy type is going to ruin everything woe betide us; if only he could do things better than I could, but the beautiful arrangements that I had planned have all fallen by the wayside... You have to be a bit shameless, frankly...! In persistent filigree, there is the meritocratic Leitmotif: only the very best (such as myself) have the right to be with me, or those who put themselves under the protection of one of the best! (As for the less common case of another great leader

stepping onto my territories, that's a different matter - each day has enough trouble of its own!) In this case, there was (I have little doubt about this) another force going in the same direction, entirely unconscious, which had already played a strong role in my relationship with the indefatigable friend of my early days: an automatic rejection of a certain type of person, one who doesn't fit into the canons of "virility" that I had taken from my mother. But this circumstance, which has its significance and interest for an understanding of myself, is relatively irrelevant for my current purpose: that of finding in myself, in attitudes and behaviours that were mine at the time when I was still part of a certain milieu, the typical signs of a profound degradation that I can now see in them.

If this case, which I have just examined, seems to me to be of greater significance than the others in which I lacked benevolence and respect, it is because it is the one in which a certain **basic ethics** in the profession of mathematician is violated (24). In the milieu where I was welcomed in my early days, the Bourbaki and those close to Bourbaki, this ethic I want to talk about remained generally implicit, but it was nevertheless present, alive, the object (it seems to me) of an intangible consensus. The only one who expressed it to me in clear terms, as far as I can remember, was Dieudonné, probably in one of the first times when I was his guest in Nancy. It is possible that he came back to it on other occasions. He obviously felt that it was an important thing, and I must have felt the importance he attached to it then, as I remember it even today, thirty-five years later. Simply because of the moral authority of the group of my elders, and of Dieudonné who obviously expressed a consensus of the group, I had to tacitly adopt this ethic, without ever having given it a moment's thought, or understanding what made it important. To tell the truth, it would not even have occurred to me that it might be useful to give it a moment's thought, convinced as I was for many years that my parents and I myself represented, each one of us, a perfect embodiment (or close to it) of an attitude which is ethical, responsible and and all, and foolproof as well (25).

Dieudonné didn't give me a long speech - it wasn't his style, any more than any of his friends in Bourbaki. He had to tell me about it in passing, and as something that was taken for granted. He was simply insisting on a very simple rule, apparently quite innocuous, which is this: anyone who finds a result worthy of interest must have the right and the possibility 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 by one or more people, as long as they did not bother 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 (which means: including the famous "first comer"!) who finds the result by his or her own means (which means: whatever his or her methods, points of view and perspectives[*éclairages*], and whether or not they seem "narrow" to people supposedly more in the know than he or she is...) must have the possibility to publish it, according to his own methods and perspectives I think I remember Dieudonné adding that if this rule was not respected, it opened the door to the worst abuses - it is possible that it was on this occasion and through his mouth that I learned of the historical case of Gauss refusing Jacobi's work, under the pretext that Jacobi's ideas had been known to him for a long time.

This simple rule was the essential corrective to the "meritocratic" attitude that existed in Dieudonné (and in other members of Bourbaki) as well as in myself. The respect of this rule was a guarantee of probity. I am happy to be able to say, from everything that I can know now, that this essential **probity** has remained intact in each of the members of the initial Bourbaki group (26). I note that it has not been so for other mathematicians who were part of the Bourbaki group or milieu. It has not remained intact in my own person.

The ethics of which Dieudonné spoke to me in down-to-earth terms, died as the ethics of a certain milieu. Or rather, this milieu itself died at the same time with this probity that was its soul. This probity has been preserved in some isolated persons, and it has reappeared or will reappear in some others where it had degraded. Its appearance or disappearance in some of us is part of the crucial episodes of the spiritual adventure of each of us. But the scene on which this adventure takes place is deeply 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 another nature, long before the tacit ethics that controlled it were openly disavowed in practice as in professions of faith. If I have since been able to be astonished and offended, it was because of my deliberate ignorance. What came back to me from this milieu that was once mine had a message to bring to me about myself, which I have been content to evade until today.

VI. Harvest

33. The note - or the new ethics

Of course, an ethical rule only takes on its meaning through an inner attitude, which is its soul. It cannot create the attitude of respect and fairness that it seeks to express; at most it can contribute to the permanence of such an attitude in a milieu where the rule enjoys general consensus. In the absence of the inner attitude, even if the rule were expressed from the lips, it would lose all its meaning and value. No exegesis, however scrupulous, however meticulous, would change this. One of my friends and companions of yesteryear recently explained to me kindly that, nowadays, alas, with the inordinate influx of mathematical production, “we” are absolutely obliged, whether we like it or not, to make a severe sorting of the papers that are written and submitted for publication, but end up only to publish a small part of them. He said this with a sincerely sorry look on his face, as if he himself were a bit of a victim of this inescapable fate - a bit like the look he had when he said that, unfortunate but that’s the way it is!, that he himself was one of the “six or seven people in France” who decide which articles are going to be published and which are not. Having become less talkative as I grew older, I just listened in silence. There was a lot to say on the subject, but I knew it would be a waste of time. A month or two later I learned that this colleague had refused a few years ago to recommend the publication of a certain note to the CR, of which both the author and the subject (which I had suggested to him seven or eight years ago) were close to my heart. The author had spent two years of his life developing this subject, which is admittedly not fashionable (although it still seems to me to be very relevant[*actuel*]). I think he has done an excellent job (presented as a postgraduate thesis). I was not the “boss” of this young researcher, who happens to be brilliantly gifted (I don’t know if he will continue to apply his gifts in mathematics, given the reception...), and he did his work without any contact with me. But it is also true that there is no doubt to the origin of the subject he developed; he wasn’t in a good situation, the poor guy, and surely without even suspecting anything! This colleague in fact put it in an appropriate form 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 junior researcher, in exchange for a three-page note to the CR - how much would it have cost for the public purse? There is an absurdity that jumps out at you, this enormous disproportion between one and the other. Surely this absurdity disappears, if one takes the trouble to examine the deeper motivations. Only this colleague and former friend is in a position to examine their own motives, as I am in a position to examine mine. But without having to dig very far, I know that it is not the excessive influx of mathematical production that we know, nor the public purse (or the patience of an imaginary “unknown reader” of the CR) that are of their concern...

This same draft note to the CR had already had the honour 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” (verbatim!). (The boss, disgusted but cautious, himself in a rather precarious position, preferred both times to crush himself rather than to 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 think about it (it must have brought back many memories...), and that he had found that some of the statements could have been presented in a more user-friendly way. He did not, however, deign to waste his precious time in submitting his comments to the person concerned: fifteen minutes of the illustrious man, against two years of work by an

unknown young researcher! He was sufficiently ‘amused’ by the maths to seize this opportunity to get back to the situation studied in the note (which could not fail to arouse in him, as in myself, a rich fabric of various geometric associations), to assimilate the description given, and then, without difficulty given his background and capabilities, to detect the clumsiness or gaps. He did not waste his time: his knowledge of a certain mathematical situation was clarified and enriched, thanks to two years of conscientious work by a researcher making his first steps; work that the Master would certainly have been able to do (in the broad lines and without proofs) in a few days. Having learned this, he remembers who he is - the case is then judged, and two years of work by Mr. Nobody is now good for the bin...

Some people don’t feel anything when this wind blows - but even today I’m still breathless. This was surely one of the effects sought in this case (given the exquisite form of the refusal), but certainly not the only one. In the same conversation, this former friend confided to me, with an air of modest pride, that he only agreed to submit a note to the CR when ‘the results stated astonished him, or he did not know how to prove them’ (27). This is no doubt one reason why he publishes so little. If he applied his own criteria to himself, he would not publish at all. (It is true that at the position he has, he has no need to.) He knows everything, and it must be as difficult to surprise him as it is to find something provable that he does not know how to prove. (This has only happened to me two or three times in the last twenty years, but not in the last ten or fifteen years!) He is visibly proud of his criteria of ‘quality’, which make him the champion of the highest standards in the practice of the mathematical profession. I have seen in him a self-complacency that is beyond reproach, and more than once an unrestrained contempt for others, behind the appearances of a smiling and good-natured modesty. I could also see that he finds great satisfaction in it.

This colleague’s case is the most extreme I have encountered among the representatives of the “new ethics”. Yet it is no less typical. Here again, both in the incident I have described and in the profession of faith that rationalises it, there is an ubiquitous absurdity, in terms of simple common sense - of such enormous dimensions that this former friend with such an exceptional brain, and also surely many of his colleagues of less prestigious status (who will be content not to send him when submitting a note to the CR), no longer see it. Indeed, to be able to see it, one must at least look. When one takes the trouble to look at the motivations (and his own in the first place), then the absurdities appear in full light, and at the same time, with their humble and obvious meanings revealed, they cease to be absurd.

If in recent years it has often been so painful for me to be confronted with certain attitudes and especially certain behaviours, it is surely because I have dimly discerned in them a caricature pushed to the extreme, to the point of grotesqueness or odiousness, of attitudes and behaviours which had been mine and which were brought back to me by some of my former students or friends. More than once, I have had the old instinct to denounce, to fight against “evil” that has been clearly pointed out - but if I have given in to it, here and there, it was with a divided conviction. Deep down, I know that to fight is to continue skating on the surface of things, to evade. My role is not to denounce, or even to “improve” the world I find myself in, 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 others, it is to the extent that I am true to this vocation, that I am true to myself. It is 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 ethics, let’s say), or to convince (of the so-called “absurdity” of this ethics which has replaced it, perhaps), rather than to **probe** to discover and to know, or to **describe** as as to probe. In writing the

preceding two or three pages, with no more specific purpose than to say a few words about the current attitudes of today that have replaced those of yesterday, I have felt continually on guard against myself, in the mood of one who would be prepared at any moment to cross out with a large stroke all that he has just written and throw it in the bin! I am going to keep what I have written, which is not false but nevertheless makes for a wrong situation, because what I am writing involves others more than I myself. I felt deep down that I wasn't learning anything by writing, which is surely what created this uneasiness in me. It is definitely time to return to a more substantial reflection, one that instructs me instead of claiming to instruct or convince others (28).

34. The silt and the source

It seems to me that, for the most part, I have gone over what my relations with have been other mathematicians of all ages and ranks, during the time when I was part of their world, the world of mathematicians; and at the same time, and above all, I have covered the part I have taken, through my own attitudes and behaviour, in a certain spirit that I see there today, and which surely is not from the past. In the course of this reflection, or rather this journey, I have encountered four situations which appeared to me to be typical of certain attitudes and ambiguities in my own person, where spontaneous dispositions of benevolence and respect towards others were disturbed, if not totally swept away, by egotistical forces, and above all (in three of these cases at least) by a **fatuity**. This fatuity was mainly based on the so-called superiority conferred on me by a certain brain strength, and the excessive investment I made into my mathematical activity. It found confirmation and support in a general consensus that valued, practically without reservation, this cerebral power and this disproportionate investment.

It is the last of the situations examined, that of the 'young ill-mannered who stepped into my territory', 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, to be sure) - 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, say, France - it is likely that the kind of chronic bewilderment that characterised my relationship with the "indefatigable friend", for example, is as uncommon nowadays as it must have been then. My attitude and behaviour in the case of the "young ill-mannered", on the other hand, is typical of what happens every day even in the mathematical world, wherever one looks. It is the attitude of benevolence and respect of the influential mathematician towards the unknown young researcher that becomes the rare exception, when the unknown researcher is not a student of his (and perhaps even when he is...), or a student of a colleague of comparable status and recommended by him. This is undoubtedly what was reaching me already in the aftermath of my 1970 'awakening', which had loosened silent tongues - but the first-hand testimonies that I heard then remained distant for me, because they were not directly related either to me or to the friends who were dearest to me in my milieu. I was affected more than superficially from the moment (around 1976) when the echoes that reached me, or the facts I witnessed, had as protagonists some of these friends, or even ex-students who had become important, and even more so when those who were the target of malice were people I knew well, more than once students (from "after 1970", it goes without saying!), whose fate therefore affected me. In some cases, there was no doubt that the lack of benevolence, or even an attitude of ostentatious contempt, was reinforced to say the least, if not aroused, by the mere fact that such a young

researcher was my student, or that he took the risk (without necessarily being my student) of doing what my friends of yesteryear, and other colleagues as well, readily called ‘Grothendieckeries’...

The “young ill-mannered” wrote to me again in the early 1970s, asking me very courteously (although he was under no obligation to ask me anything at all!) if I did not mind if he published a proof he had found for a theorem of which he had been told I was the author, and which had never been published. I remember that I answered him in the same bad temper as in the past, without saying yes or no I think and suggesting, without knowing his proof (which he was of course ready to communicate to me but which I didn’t care about, busy as I was with my activist tasks!), that it would surely bring nothing new to me (however, it would have contributed, at the very least, to be written down, as well as the statement itself!, in black and white and available to the mathematical public.)

This answers in a very concrete way a question I had left unanswered earlier. I might as well admit this humble truth, that such attitudes of fatuity are by no means surmounted “once and for all” in my person, and I doubt that they ever will be, except at my death. If there has been a transformation, it is not by the disappearance of vanity, but by the appearance (or reappearance) of a curiosity about myself and the true nature of my certain attitudes, behaviours etc... It is through this curiosity that I have become somewhat sensitive to the manifestations of vanity in myself. This profoundly modifies a certain inner dynamic, and thereby modifies the effects of “vanity”; that is to say, of that force which often pushes me to conceal or counterfeit the healthy and fine perception I have of reality, for the purpose of enlarging my person and putting myself above others while pretending the opposite.

Perhaps such a reader will feel confused, as I once did, by the apparent contradiction between the insidious and persistent 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 indeed confused, he has within him everything he needs to regain contact (as I once did) with the reality of things themselves, which he can know by first hand, rather than spinning 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 the water that is not mud it is enough to go up to the source and look and drink. To know the mud that is not water, it is enough to go up to the bank dried by the sun and the wind, and to tear off and squeeze out a ball of grainy clay in one’s hand. Ambition and vanity can more or less control the portion of one’s life devoted to a particular passion, such as mathematical passion, and can make it devouring, if the returns satisfy them. But the most devouring ambition is powerless by itself to discover or to know even 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 out and overturns a vision of things that seemed immutable - in such work there is no trace of ambition, or vanity. What leads the way then is something that comes from much further away than the “I” and its hunger to unceasingly expand (with “knowledge” and “awareness”) - from a place which is certainly much further away than our person or even our species.

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

35. My passions

Three great passions have dominated my adult life, alongside other forces of a different nature. I have come to recognise in these passions three expressions of the same deep impulse; three paths taken by the impulse in me to knowing[*connaissance*], out of an infinite number of paths that can be taken 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 the lycée, letting go of the reins to a simple inclination, it unfolded 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 at birth), and today in my middle age, I find that she is still not exhausted. She no longer leads my life, any more than I pretend to lead her. Sometimes she dozes off, so much so that I sometimes think she is gone, only to reappear without announcing, as spirited as ever. It no longer devours my life as it once did, when I gave it my life to devour. She continues to mark my life with a deep imprint, 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 form of the quest for a companion. I was only able to distinguish one from the other when the latter ended, when I knew that what I was pursuing was nowhere to be found, or rather: that I had it within myself. My passion for women could only really unfold 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. The attachment to my children was originally an indissoluble part of the attachment to the mother, a part of that power emanating from the woman who attracted me to her. It is one of the fruits of this passion of love.

I did not experience the presence of these two passions in me as a conflict, either in the beginning or later. I must have had an obscure sense of the deep identity of the two, which became clear to me much later, after the appearance in my life of the third. Yet the effects on my life of the two passions could only be very different. The love of mathematics drew me into a certain world, the world of mathematical objects, which surely has its own “reality” of its own, but which is not the world in which human life unfolds. The intimate awareness of mathematical things has, I might say, taught me nothing about myself, still less about others - the impulse of discovery towards mathematics could only lead me away from myself and from others. There may sometimes be a communion of two or more individuals in this same impulse, but this is a communion on a superficial level, which in fact distances each one from himself and from others. This is why the passion for mathematics has not been a maturing force in my life, and I doubt that such a passion can foster maturation in anyone (29). If I gave this passion such an excessive place in my life for a long time, it is surely also precisely because it allowed me to escape from the awareness of conflict and the awareness of myself.

The impulse of sex, 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! This quest for “the companion” in my life was a quest for bliss without conflict - it was not the impulse for knowledge or the impulse for sex, as I liked to believe, but an endless escape from the awareness of the conflict in the other and in myself. (This was one of the two things I had to learn, so that this illusory quest would come to an end, and the anxiety that

accompanies it like its inseparable shadow...) Fortunately, no matter how much we run away from the conflict, sex takes care of bringing us back to it quickly!

One day I gave up trying to deny the teaching that the conflict was obstinately bringing me, through the women I loved or had loved, and through the children born of those loves. When I finally began to listen and learn, and for years to come, it turned out that everything I was learning was from the women I had loved or was loving (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, that is to say for the last seven years, it is because I protected myself from it (as I had learned to do from my parents and from the people I knew around me) by all the means at my disposal. The most effective of these means was my investment in my mathematical passion.

The day the third great passion appeared in my life - a night in October 1976 - the great fear of knowing faded away. It is also the fear of the simple reality, of the 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 that this new passion appeared, this new manifestation of the passion to know. It took the place, so to speak, of the fear that was finally recognised. For years I had seen this fear in others quite clearly, but by a strange blindness I did not 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 had not changed since my childhood. The night I'm talking about is also the night when, for the first time, this old image collapsed. Other images like it followed, holding on for a few days or months, or even a year or two, owing to stubborn forces of inertia, only to collapse in their turn under a scrutinising gaze. The laziness of looking often delayed such a new awakening - but the **fear** of looking never reappeared. Where there is curiosity, there is no room for fear. When there is curiosity in me for myself, there is no more fear of what I will find than when I want to know the final word of a mathematical situation: there is then a joyful expectation, impatient at times and yet obstinate, ready to welcome all that will come up, foreseen or unforeseen - a passionate attention on the lookout for the unequivocal signs that make one recognise the true in the initial confusion of the false, the half-true and the perhaps-true.

In the curiosity for oneself, there is love, which is not disturbed by any fear that what we are looking at is not what we would like to see. And to tell the truth, the love of myself had silently blossomed in the months preceding that night, which is also the night when this love took on an active, enterprising form so to speak, bluntly shaking up costumes and sets! As I said, other costumes and sets soon reappeared as if by magic, to be shaken up in their turn, without invectives or gnashing of teeth...

The manifestations of this new passion in my life over the last seven years have come to seem to me like the up-and-down movement of waves following one another, like the breaths of a vast and peaceful respiration. This is not the place to try to trace the sinuous and changing line, or that, in counterpoint, of the manifestations of mathematical passion. I have given up trying to control the course of the one or the other - it is this double movement of the one and the other that today controls the course of my life - which, actually, **is** the course of its own.

In the months that had preceded the appearance of the new passion - months of gestation and plenitude - the quest for the woman began to change its face. It began to separate itself from the anxiety with which it had been imbued with, like a “breath” that had been freed from the oppression that had weighed on it, and that would regain its own amplitude and rhythm. Or like a fire that has been smouldering, half-smothered for lack of an escape route, and which, under a breath of fresh air, suddenly bursts into crackling, agile and bright flames!

The fire burned to satiation. A hunger that seemed unquenchable was satiated. For the past two or three years, it seems that this quest has been consumed without any residue of ashes, leaving the field free for the chant and counterchant of two passions. One, the passion of my youth, had served for thirty years to separate me from a disowned childhood. The other is the passion of my middle age, which made me rediscover both the child and my childhood.

36. Desire and meditation

The night I spoke of, 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 appeared under the pressure of an imperious, urgent need, when I had been as if submerged in the previous days by waves of anxiety. Like all anxiety perhaps, this was an “anxiety of take-off/*décollage*”, which insistently signalled to me 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 knowing, alongside considerable forces of escape, and the desire to escape the anxiety, to be at peace as before. There was then an intense work, which went on for a few hours until its conclusion, without me yet knowing the meaning of what was going on and even less where I was going. In the course of this work, the prevarications were recognised one after another; or to put it better, it was this work that made these prevarications appear one by one, each in the guise of an intimate conviction that I finally took the trouble to write down in black and white, as if to better penetrate it, whereas it had remained until then in a propitious vagueness. I was happy to write it all down, without the slightest distrust, it must have had something that seduced me - who was in the disposition of someone who doubts nothing, and for whom the mere fact of having written an informal conviction down in black and white was the irrefutable sign of its authenticity, the proof that it was well-founded. If it hadn't been for this indiscreet, not to say indecent, desire in me, the desire to know, I would have stopped every time on this “happy ending”, and it is indeed in this condition of happy ending that the stage finished. Then, woe to me! I had a whim, God knows how and why, to look a little closer at what I had just written to completely satisfy myself: it was written there in black and white, all I wanted was to read it again! And as I reread it carefully, naively, I felt that something was a little bit wrong, that it wasn't very clear, well, well! Then, taking the trouble to look a little closer, it became clear that it wasn't like that at all, that it was all a sham, in other words, that I had just had my bladders mistaken for lanterns! This partial discovery came each time as a great surprise, “Gee, it's not that bad”, a joyful surprise that re-launched the reflection with an influx of new energy. Let's move on, we'll get to the bottom of this, it's bound to come out now, we just have to keep going! A little assessment, take the stock... and here comes another intimate conviction, with all the appearances of the “end of the story”, we just want to believe that it must be it this time, we're going to note it anyway, out of a sense of conscience, and it's a pleasure even to note down such judicious and well-felt things, you'd have to have a really bad spirit not to agree, such an obvious good will, you can't do better than that!

That was the new end of the stage, the new happy ending, on which I would have stopped quite happy, if it hadn't been for the bad boy who, incurably naughty, once again went about his troublesome deeds, making a nuisance, and put his nose into this last "final word" and happy ending. There was no stopping him: he was off again for a new stage!

And so, for four hours, the steps followed one after another, like an onion whose layers I had peeled off one by one (this is the image that came to me at the end of that night), to arrive at the end of the ends at the **heart** - at the simple and obvious truth, a truth that was actually quite staring me in the face and that I had managed for days and weeks (and my whole life, in fact) to conceal under this accumulation of "onion layers" hiding one behind another.

The appearance at last of the humble truth was an immense relief, an unexpected and complete releasing. I knew at that moment that I had touched the knot of the anxiety. The anxiety of the last five days was well and truly resolved, dissolved, transformed into the awareness that had just formed in me. The anxiety had not only disappeared from my sight, as it had throughout the meditation, and several times also during the previous five days; and the awareness into which it had been transformed was by no means in the nature of an idea, of a concession which I would have made, let us say, in order to be even and peaceful (as had happened to me here and there during the same night); it was not an external thing which I would have then adopted or acquired in order to add it to my person. It was an **awareness** in the full sense of the word, first-hand, humble and obvious, which was henceforth part of me, just as my flesh and blood is 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 ultimate step in the work that had just been carried out, which remained ephemeral, reversible as long as this last step was not taken. Throughout this work, the careful, even meticulous formulation of the thoughts that were being formed, of the ideas that were being presented, had been an essential part of this work, of which each new departure was a reflection on the stage I had just gone through, which was known to me through the written testimony I had just given (without the possibility of concealing it in the mists of a failing memory!)

Within minutes of the moment of discovery and release, I also knew the full significance of what had just happened. I had just discovered something of even greater price than the humble truth of the last few days. This thing, was the power in me, if I were interested, to know the final word of what was going on in me, of any situation of division, of conflict - and thereby the ability to resolve entirely, by my own efforts, any conflict in me of which I had become aware. The resolution does not come about through some **grace**, as I had tended to believe in previous years, but through intense, persistent and meticulous **work**, using my ordinary faculties. If there is "grace", it is not in the sudden and definitive disappearance of a conflict in us, or in the appearance of an comprehension of the conflict that would come to us ready-made (like the chickens in the land of Cognac!) - but it is in the existence or in the appearance of this desire to know (31). It is this desire that had guided me and led me in a few hours to the heart of the conflict - just as the desire for love makes us infallibly find the path that leads to the deepest core of the woman we love.

Whether it is self-discovery or mathematics, in the absence of desire, all so-called 'work' is nothing but a charade, which leads nowhere. At its best, it makes the person who indulges in it 'beat around the bush'

endlessly - the stuff in the bush is reserved for the person who is hungry to eat! Like everyone else, I sometimes find that desire and hunger are absent. When it comes to the desire for self-awareness, then my knowledge of myself and the situations I am involved in remains inert, and I act not with knowledge, but according to simple inveterate mechanisms, with all the consequences that this implies - a bit like a car that is driven by a computer, not by a person. But be it meditation or mathematics, I wouldn't think of pretending to "work" when there is no desire, when there is no hunger. This is why I have never meditated for even a few hours, or done maths for even a few hours (32), without learning something; and most often (not always) something **unforeseen** and unforeseeable. This has nothing to do with faculties that I would have and that others would not, but only comes from the fact that I don't pretend to work without really desiring to. (It is the strength of this 'desire' which alone also creates that **demand** I have spoken of elsewhere, which means that in work one is not content with a half-heartedness, but is only satisfied after having gone to the end of an understanding, however humble.) Where discovery is concerned, work without desire is nonsensical and charade, as much as making love without desire. To tell the truth, I have never had 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, including sleeping (and dreaming...) when it's time to sleep.

It was on that same night, I believe, that I understood that the desire to know and the power to know and discover are one and the same thing. As long as we trust it and follow it, it is the desire that leads us to the heart of the things we wish to know. And it is also desire that makes us find, without even having to look for it, the most efficient method of knowing these things, and the one that best suits our person. For mathematics, it seems that writing has always been an indispensable means, regardless of who is "doing maths": doing maths is above all writing (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 way of meditation. As in mathematical work, it is the material support that sets the rhythm of thinking, and serves as a reference point and rallying point for an attention that otherwise tends to scatter into the winds. Also, writing gives us a tangible trace of the work that has just been done to which we can refer at any time. In a long-term meditation, it is often useful to be able to refer also to the written traces which testify to such and such a moment of the meditation in the previous days, or even years.

Thought, and its meticulous formulation, therefore plays an important role in meditation as I have practised it so far. But things are not limited to the work of thoughts alone. It alone is powerless to grasp life. It is effective above all in detecting contradictions, often enormous to the extent of grotesqueness, in our vision of ourselves and of our relationships with others; but thoughts are often not enough to grasp the meaning of these contradictions. For those who are driven by the desire to know, thought is an often useful and effective, even indispensable, instrument, as long as one remains aware of its limitations, which is quite obvious in meditation (yet less obvious in mathematical work). It is important that thought knows how to fade away and tiptoe away at sensitive moments when something else appears - in the form perhaps of a sudden and profound emotion, while the hand perhaps continues to run over the paper to give it at the same time a clumsy and stammering expression...

37. The wonder

This retrospective on the discovery of meditation came here entirely unexpectedly, almost against my will - it was not at all what I set out to examine when I began. I wanted to talk about **the wonder**. This night, so rich in so many things, was also rich in wonder at these things. Already during the work, there was a kind of unbelievable wonder at each new prevarication uncovered, like a crude costume sewn with thick white thread that I had, unbelievably, complied to accept as real in the most serious way! Many times since then, in the years that followed, I have found the same wonder as on that first night of meditation, facing 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 at first that I began to discover the unsuspected world that I carry within me, a world that over the course of days, months and years has revealed itself to be prodigiously rich. On that first night, however, I had other things to wonder about than vaudeville episodes. It was the night that for the first time I got in touch with a forgotten power that had been sleeping in me, the nature of which still escapes me, except that it is a power, and which is at my disposal at any time.

And the previous months had already been rich in a silent wonder of something I had carried within me, for all my life surely, with which I had only just made contact. I felt this thing not as a power, but rather as a secret gentleness [*douceur*], like a beauty at once very peaceful and unsettling. Later, in the exultation of the discovery of my long-ignored power, I forgot those months of silent gestation, which were witnessed only by a few scattered poems - love poems, which perhaps would have stood out more often than not amidst the notes of my meditation...

It was only years later that I remembered those times of wonder in the beauty of the world and in the beauty I felt resting within me. I knew then that this gentleness [*douceur*] and beauty I had felt within me, and this power I discovered soon after that profoundly changed my life, were two inseparable aspects of one and the same thing.

And I also see, now, that the gentle, collected, silent aspect of this multiple thing that is creativity in us, is expressed spontaneously by the wonder. And it is also in the wonder of an indescribable beauty in oneself revealed by the beloved, that the man knows the beloved woman and she knows him. When the wonder in the thing explored or in the beloved is absent, our embracing with the world is mutilated of the best that is in it - it is mutilated of that which makes it a blessing to the self and to the world. The embrace that is not a wonder is a powerless embrace, a mere reproduction of a gesture of possession. It is powerless to engender anything other than more replicas, bigger or fatter or thicker perhaps, who cares, but never a renewal (34). It is when we are children and ready to wonder at the beauty of things in the world and in ourselves, that we also are ready to renew ourselves, and ready as supple and docile instruments in the hands of the Maker [*Ouvrier*], so that by His hands and through us beings and things may be renewed.

I remember well that in that group of carefree friends who, for me, represented the mathematical milieu at the end of the forties and the following years, a milieu which was sometimes boisterous and self-confident, where a somewhat peremptory tone was not so rare (but without any hint of complacency) - in that milieu there was always room for the wonder. The one in whom the wonder was most visible was Dieudonné. Whether he was giving a talk, or simply listening, when the crucial moment came when a sudden breakthrough opened up, you

would see Dieudonné in a state ecstatic, radiant. It was pure, infectious, irresistible wonder - where all traces of 'me' had disappeared. As I recall it now, I realise that this wonder in itself was a power, that it exerted an immediate action all around his person, like a radiation of which he was the source. If I have seen a mathematician make use of a powerful and elementary "power of encouragement", it must be him! I never thought about it before this moment, but I remember now that it was in this way that he had already welcomed my very first results in Nancy, solving questions that he and Schwartz had posed (on the spaces (F) and (LF)). They were very modest results, nothing great or extraordinary, one could say that there was nothing to wonder about. Since then I have seen things of a completely different level rejected by the unanswerable disdain of colleagues who think they are 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 small things.

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 exerted without the intention of being pleasant for anyone. It is as simple as the fragrance of a flower, as the warmth of the sun.

Of all the mathematicians I have known, it is in Dieudonné that this "gift" appeared to me in the most dazzling way, the most communicative, and the most effective [*agissant*] too perhaps, I cannot say (35). But in none of the mathematician friends I liked to frequent was this gift absent. It found opportunities to manifest itself, perhaps in a more restrained way, at all times. It manifested itself every time I came to one of them to share something I had just found and which had enchanted me.

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

There was also, of course, the other sorrow of seeing one of my friends of yesteryear treat another of my friends of today with condescension or with contempt. But this sorrow is inflicted by the same closedness, deep down. He who is open to the beauty of a thing, however humble, when he has felt that beauty, cannot help but feel also 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 for a woman, in a moment when we feel her beauty, and the power in her of which that beauty is the sign.

38. The impulse of return and renewal

The rapture that radiated from time to time in Dieudonné's person must have touched something deep and strong in me, so that the memory of it comes back to me now with such intensity, such freshness, as if I had just witnessed it again at the moment (although it's been nearly fifteen years since I've had the chance to meet Dieudonné, except for once or twice in a hurry). Of course, I paid no particular attention to it on a conscious

level - it was just a slightly touching, at times almost comical, feature of the expansive personality of my senior colleague and friend. What mattered to me, on the other hand, 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 in front of me. It is only at this moment when I evoke both that the link suddenly appears to me: what made Dieudonné the dream servant of a great task, whether within Bourbaki or in the collaboration that was ours for another great work of foundations, was the **generosity**, the absence of any trace of vanity, in his work and in his choice of great 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 is no doubt that, without seeking anything from it, he found in his work and in the very generosity he put into it a fulfilment and a blossoming, which all those who know him must have felt.

The rapture of discovery that I have so often felt radiating from his person, is immediately joined with a similar rapture within me, which I happened to have witnessed in a very young child. There are two memories that come flooding back to me - both of which take me back to my very young daughter. In the first image, she must be a few months old, and just started to crawl. She must have dragged herself from the piece of grass where she was sitting to a gravel path. She was discovering the little gravels, in a silent - and active [*agissante*] - ecstasy, grabbing them with her hands and putting them in her mouth! In the other image, she must have been a year or two old, someone had just thrown some pellets into a goldfish bowl. The fish were swimming towards them, mouths wide open, to gobble up the tiny yellow suspended crumbs that were slowly sinking into the water of the bowl. The little girl had never realised before that fish eat like us. It was like a sudden dazzle in her, expressed in a cry of pure rapture: "Look Mummy, **they are eating!**". There was much to wonder about - she had just discovered in a sudden flash a great mystery: that of our kinship with all other living beings...

There is in the rapture of a small child a communicative force that escapes words, a force that radiates from the child and acts upon us, whereas we, more often than not, do all we can to evade it. In moments of inner silence, we feel this force present in the child at all times. While in some moments its action is stronger than in other moments. It is in the newborn, in the first days and months of life, that this kind of "force field" around the child is most powerful. Most often, it remains sensitive throughout childhood, unravelling over the years until adolescence, when often no trace of it remains. However, it can be found radiating around people of all ages, for some ones in some special moments, or for a few rare people as a kind of breath or halo that surrounds their person all the time. I had the great good fortune to know such a person in my childhood, a man, now deceased.

I also think of that other force, or power, that one sometimes feels radiating from a woman, especially in those moments when she is in full blossom within her body, in communion with it. The word that often comes to mind is "beauty", which evokes one aspect of it. It is a beauty that has nothing to do with canons of beauty or the so-called "perfection", it is not the privilege of the young, or the mature. Rather, it is the sign of a deep harmony in the person. This agreement often remains fragmentary, and yet it manifests itself in this radiance, a sign of power. It is a force that draws us towards the centre from which it emanates - or rather, it calls within us a deep impulse to **return** to the body of the Mother-Woman from which we emerged, at the dawn of our lives. Its action is sometimes irresistible and overwhelming when it comes from the woman we love. But for those who do not deliberately close themselves off to it, it is perceptible in any woman who allows this beauty, this profound harmony, to blossom within her.

The force that radiates from the child is closely related to that force that emanates from the woman who loves herself in her body. One is always born from the other, as the child is always born from the Mother. But the nature of the force of infancy is not one of attraction, nor is it one of repulsion. The humble and discreet action that this force exerts on the one who does not shrink from it, is an action of **renewal**.

39. Beauty of the night, beauty of the day (or: the stables of Augeas)

The memory of wonder in one of my children was in the very late fifties and early sixties. If I have no similar memory for other children born after that, it may be because that my own ability for wonder had waned, that I had become too distant to commune in the rapture of any of my children, or even to witness it.

I have never yet thought of tracing the vicissitudes of this ability in my life, from my childhood to the present day. Surely there would be a common thread[*conducteur*], a “detector”[*détecteur*] of great sensitivity. If I have never thought of following this thread, it is surely because this ability is of such a humble nature, almost insignificant in appearance, that the idea would hardly have occurred to me to pay particular attention to it, absorbed as I was in discovering and probing what I called “the great forces” in my life (which continue to manifest themselves in it today). Yet this ability which appears so humble provides a sign, of all signs, of the presence or absence of the rarest and most precious “force” in us...

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

But my purpose here is mainly to trace 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, the wonder has never permeated my mathematical passion to the extent that it does in the passion of love. Strangely enough, if I try to recall a particular moment of rapture or wonder in my mathematical work, I can find none! My approach to mathematics, from the age of seventeen when I first became deeply involved in it, has been to set myself grand **tasks**. They were always, from the beginning, tasks of “putting things in order”, of thorough cleaning-up. I saw an apparent chaos, a confusion of heterogeneous things or sometimes imponderable mists, which visibly had to have a common essence and an underlying order, a still hidden harmony that had to be brought out through patient, meticulous, and often lengthy work. It was a work often with a mop and a brush, for the heavy work which already absorbed considerable energy, before coming to the finishing with a feather duster, which fascinated me less but which also had their charm and, in any case, an obvious utility. There was an intense satisfaction in the day-to-day work to see that little by little the order that one guessed emerged, which always turned out to be more delicate, of a richer texture than what had been glimpsed and divined. The work was constantly rich in unforeseen episodes, most often arising from the examination of what might have seemed a minute detail that had been neglected until then. Often the fine-tuning of such a “detail” threw unexpected light

on work done years before. Sometimes, also, it led to new insights, the deeper investigation of which became the subject of another “grand task”.

Thus, in my mathematical work (apart from the ‘difficult year’ around 1954 which I have had occasion to mention), there was a continual suspense, the attention was constantly held in breath. The fidelity to my “tasks” forbade me to escape too far, and I chomped at the bit in impatience to reach the end of all my tasks and to finally launch myself into the unknown, the truth - even though the dimension of these tasks had already become such that to bring them to a successful conclusion, even with the help of people of good will who had finally come to the rescue, the remainder of my days would not have been enough!

My principal guide in my work was the constant search for a perfect coherence, a complete harmony that I divined behind the turbulent surface of things, and which I patiently strove to uncover, without ever being tired of it. It was a heightened sense of “beauty”, surely, 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 shadows and mists in which it liked to evade constantly. Of course, I did not stop until I had succeeded in bringing it into the clearest light of day. I then experienced, sometimes, the fullness of contemplation, when all audible sounds contribute to the same vast harmony. But more often still, what was brought to 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 me, to know Her still further...

Dieudonné’s pleasure and rapture was, it seems to me, above all to see the beauty of things manifested in full light, and my joy was above all to pursue it in the obscure folds of the mists and the night. This is perhaps the profound difference between Dieudonné’s approach to mathematics, and mine. The sense of the beauty of things, for a long time at least, must have been no less strong in me than in Dieudonné, whereas it may have dulled during the sixties, under the influence of a fatuity. But it would seem that the perception of beauty, which manifested itself in Dieudonné through the wonder, took on different forms in me: less contemplative, more enterprising, also less manifest in terms of the emotion felt and expressed. If this is the case, then my purpose would be to trace the vicissitudes of this openness in me to the beauty of mathematical things, rather than the mysterious ‘gift of the wonder’.

40. The sporting mathematics

It is quite clear that the openness to the beauty of mathematical things never entirely disappeared in me, even in the sixties up to 1970, when fatuity gradually took an increasing place in my relationship to mathematics and to other mathematicians. Without a minimum of openness to the beauty of things, I would have been unable to ‘function’ as a mathematician, even at a modest level - and I doubt that anyone could do useful work in mathematics if this sense of beauty did not remain, at least to some extent, alive in him. It is not so much, it seems to me, a so-called “brain power” that makes the difference between this mathematician and another, or between one piece of work and another of a same mathematician; but rather the quality of finesse, of the 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 and fruitful work is also that which attests to the most delicate sensitivity in apprehending the hidden beauty of things (36).

If this is the case, it must be that this sensitivity must have remained alive in me until the end, at least at times, since it was at the end of the sixties* that I began to glimpse and to make out, to some extent, the most hidden and mysterious mathematical thing that I had ever come to discover - this thing which I called 'motive'. It is also the one that has exerted the greatest fascination on me in my life as a mathematician (except for certain reflections over the last few years, which are actually also closely linked to the reality of motives). There is no doubt that if my life had not suddenly taken an entirely unforeseen course, taking me far away from the serene world of mathematical things, I would have ended up following the call of this powerful fascination, leaving there the "tasks" that had until then kept me prisoner!

Perhaps I can say that in the solitude of my working chamber, the sense of beauty remained the same until the moment of my first "awakening" in 1970, without being really affected by the fatuity that so often marked my relations with my fellow men? A certain "flair" must have even been refined over the years, through daily and intimate contact with mathematical things. The intimate knowing[*connaissance*] that we can have of things, which sometimes allows us to apprehend beyond what we know in the present moment and to penetrate further into knowing[*connaissance*] - this knowing[*connaissance*] or maturity, and this "flair" which is the most visible sign of it, is closely related to openness to the beauty and truth of things. It favours, it stimulates such an opening, and it is the sum and fruit of all the moments of opening, of all the "moments of truth" that have come before.

What remains to be examined, therefore, is the extent to which a spontaneous sensitivity to beauty was disturbed to a greater or lesser extent at the moments when it had the chance to manifest itself in my relationship with this or that colleague.

What memory gives me on this subject is not condensed into a tangible and precise fact, which I could relate here in a more or less detailed way. Here again, the memory is limited to a kind of mist, which nevertheless gives me an overall impression, which I must try to grasp. It is the impression left in me by a certain **inner attitude**, which must have become second nature, and which manifested itself every time I received mathematical information on something that was more or less "on my string[*dans mes cordes*]". To tell the truth, in a certain relatively harmless way, this attitude must have always been mine, it is part of a certain temperament, and I had the opportunity to touch it in passing. It's about this reflex, to first of all accept to be acquainted with a **statement**, never its proof, 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. Often this leads me to reformulate the statement in a more or less profound way, in the sense that it is of a greater generality or greater precision, often both at the same time. It is only when I cannot "put[*caser*]" the statement in terms of **my** experience and **my** images, that I am ready (almost unwillingly sometimes!) to listen (or read...) the ins and outs that sometimes give "the" reason for the thing, or in the least a proof, understood or not.

* (8 August) On checking, it appears that the beginnings of my reflection on motives were at the beginning, rather than the end of the 1960s.

This is a peculiarity of my approach to mathematics which, it seems to me, distinguished me from all the other members of Bourbaki at the time when I was part of the group, and which made it practically impossible for me to fit in like them in a collective work. This peculiarity has certainly also 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 finally softened somewhat.

This trait in me is surely already in a sense a lack of openness. It implies only a partial openness, ready to welcome only what “comes in right”, or at least very reluctant to welcome anything else. In the choice of my mathematical investments, and of the time I would like to devote to an unforeseen piece of information or things like that, this deliberate intention of 'partial closure' is today stronger than ever. It is even a necessity, if I want to be able to follow the call of what fascinates me the most, without giving my "life to devour" so much to lady mathématique!

The ‘mist’, however, gives me more than this particularity, which I came to realise some years ago (better late than never!). At a certain point, this reflex became like a **point of honour**; it would be quite a hell 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 be stated! If it was an illustrious stranger who made the statement, there would be the added nuance that **I** (who was supposed to be in the know, after all!) didn't already have all this up my sleeves! And actually I often did, and more than that - my attitude then would have tended to be: “Well, you can go back [*vous pouvez aller vous rhabiller*] - come again when you've done a bit better!”

That was my attitude in the case of the “young greenhorn who stepped onto my territory”. I could not even swear that in what he was doing there were not interesting details that were not covered by what I had done in my “secret notes” - although this is an incidental matter. Finally, this episode also sheds light on the issue I am examining here; that of a profound disturbance of this openness to the beauty of mathematical things. It was as if once I had ‘done’ such and such a thing, its beauty disappeared for me, and all that remained was a vanity that claimed credit and profit. (Though I did not deign to take the time to publish it - it is true that there would have been too much of it.) It was a typical attitude of possession, analogous to that of a man who, having got to know a woman, no longer feels her beauty and runs after a hundred others without suffering as long as there are others who know her as well. This was an attitude which 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 actually my attitude towards mathematics!

I have the impression that these crude competitive dispositions, “sporting” dispositions so to speak, which I have just put my finger on in my person, must have started to become common in “my” mathematical milieu, around the time they were prevalent in me. I would be hard pressed to place in time the moment of their appearance, or the moment when they became like an intimate part of the air we breathed in this milieu, or the air that my students breathed when they came into contact with me. The only thing I can say, is that it must have been in the sixties, perhaps as early as the beginning of the sixties, or the end of the fifties. (If this is so, all my students were entitled to it - it was a case of take it or leave it!) To be able to pinpoint it, I would need other specific cases, which at the moment escape my memory completely.

This humble reality was of course in complete contrast to the noble image I had of my relationship to mathematics, and to young researchers in general. The crude subterfuge that I used to fool myself was of meritocratic origin: 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 recognised and whom I treated just like my students, without expecting for their heads to be crowned with laurels (which of course was not long in coming - one either has ‘flair’ or one does not!). As for the young people who had the good fortune to be neither among my students, nor among my friends, nor to be young geniuses, I was not at all concerned about my relationship with them. **They didn’t matter.**

I believe that this reality was most often softened, tempered, when I found myself in a personal relationship with the young researcher, either because I met him at my seminar or because he had written to me by letter. It may be that the case of the ‘young greenhorn’ is from this point of view a rather special and exceptional case. It seems to me that for the researchers I have just mentioned, I had to consider them as having put themselves ‘under my protection’, and this had to awaken in me a more benevolent attitude. In this case, too, my desire to put myself forward could find an outlet, by making my comments to the person and making suggestions for taking up his or her work in a broader perspective, perhaps, or by going deeper into things. In such a case, it is likely that the young researcher, who for a limited time was a bit of a student, would also find this to his advantage, and that he would have good memories of his relationship with me. (Any feedback in one way or another on this subject would be welcome.)

I have been thinking here mainly of the case of younger researchers, while the ‘sporting’ attitude was by no means limited to my relationship with them, needless to say. But it is in the relationship with young researchers, surely, that both the psychological and practical impact of a prominent mathematician tends to be the strongest, most fraught with consequence for their future professional lives.

41. No more merry-go-rounds!

I stopped last night with a feeling of relief, of great satisfaction, the contentment of one who has not wasted his time! I felt suddenly light, and joyful - a slightly mischievous joy at times, bursting into playful laughter - the laughter of a joking rascal. Yet I hadn’t done much in the end, I had just watched an episode that was already “known”, the one about the famous “greenhorn who...” from a slightly different angle. An angle showing **my relationship to mathematics itself**, in certain circumstances, not just my relationship to mathematicians. That was all it took for a myth that had been dear to me to go up in smoke.

To tell the truth, this is not the first time I have looked at my relationship with mathematics. Two and a half years ago I had already spent a few weeks or months on it. At that time I had realised (among other things) the importance of egotistical forces, of self-aggrandising forces, in my past investment in maths. But last night I had just put my finger on an aspect that had escaped me then. Now that I’m coming back to it, I realise that this aspect, the aspect of the **jealous attitude** in my relationship to maths, is in line with the “very silly” discovery that came at the end of the first night when I “meditated” (meditating without knowing it, like Mr Jourdain writing prose...). It is quite possible that this had something to do with the joyful exultation that followed. Even if it was not consciously perceived, it was a bit like the reconfirmation, in a new light, of something I had

discovered a short while ago - 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, which you have found perhaps years before. Each time this is accompanied by a feeling of intimate satisfaction, as the harmony of things is revealed once again, and at the same time our knowledge of them is more or less renewed.

Moreover, I think that this time, I have really “made the rounds”! For days I had felt that there was still something to be drawn out into the light, without being able to say very clearly what it is. I didn’t try to force it, I felt that I just had to let it come, by letting the thread I was following unfold freely, through landscapes that were both familiar and unforeseen. Unforeseen, because I had never bothered to look at them until now. It was at a walking pace that I approached the remaining “hot spot”. And I believe that this is the last one, in the journey I have just taken and which is coming to an end.

And I had the impression, as soon as I arrived at this point, of someone who arrives at a belvedere, from which he sees the landscape he has just travelled through unfold, of which at each moment he could still only perceive a portion. And now there is 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, often misplaced and unwelcome, in my life as a mathematician over the past few years, is a harvest and a message of what I have sown, in the days when I was part of the world of mathematicians.

Of course, this, I have said to myself many times over these years, and also in these notes that I have just written. I said it to myself, by analogy with other harvests that came to me insistently, that I had rejected them for long and that I ended up accepting [*accueillir*] and making them my own. Ever since I have accepted the first harvest, even before I knew 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 to delay the date of the resolution. This awareness 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 awareness is in me like a half-maturity, which does not yet put an end to the inveterate reflex of refusing the harvest when it appears bitter. When I say to myself “there is no point in balking”, the harvest is yet still not accepted. I don’t pity myself or perhaps feel indignant, and yet I “balk”! As long as the dish is not eaten, it is not accepted - and to not eat is to balk.

To accept and eat is a **work**: a certain energy “works”, and a work is done in broad daylight or in the shadows, something is transformed by it... Whereas to balk is a waste of energy that gets dispersed - to “balk”! And one cannot avoid the work of eating, digesting, assimilating. The mere fact of going through events, of “doing” or “acquiring” an experience, has nothing in common with work. It is simply a possible **material** for a work that one is free to, or to not do. In the thirty-six years that I have been in the world of mathematicians, I have made use of this freedom that I have, by **evading** the work, while the material, the substance to be eaten and digested, increased year by year. This feeling of joyful liberation that I have been experiencing since yesterday is surely a sign that the work that was in front of me, which I kept putting off in favour of other work or tasks, has finally been done. It is indeed about time!

It is still too early to be sure that this is the case, that there is not still some dark and stubborn corner that has escaped my attention, which I will have to come back to. But it is also true that this feeling of liberation does

not deceive - each time I have felt it in my life, I have been able to see afterwards that it was indeed the sign of a **liberation**; of something lasting, acquired, the fruit of an understanding, of an awareness that has become a part of myself. I am free, if I like, to ignore this awareness, to bury it where I want and how I want. But it is not in my power or anyone else's to destroy it, any more than one can destroy the ripeness of a fruit, make it return to a state of greenness that is no longer its own.

It is a great relief to have it confirmed, once again, that I am not "better" than the others. Of course, this too is something I repeat to myself quite often - but, surely, repeating and seeing are not the same thing! In the absence of the innocence and mobility of the 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 some colleagues or ex-students who, just a few days ago, 'took my breath away'! Let's judge the weight I've been relieved of! It may be gratifying in a way to think you are better than others, but it is also very tiring. It's an extraordinary waste of energy even - the same as whenever you have to maintain a fiction. We rarely realise it, but it takes energy just to keep the fiction going against all odds, while the evidence at every step screams in my carefully plugged ears that it's all fake, look at you idiot! To see is sometimes a work, but when it's done it's done. It saves me once and for all from walking around like this, blocking my eyes and ears at every turn, which also has to be done!, and from afflicting myself with an intolerable outrage every time when something falls on me, which I had inadvertently placed there.

Fed up with this merry-go-round! When you see the merry-go-round, you're already off it. We've paid, OK, I've got the right to ride it forever, and even the duty to do so, as everyone will tell me: right, duty - no rhyme or reason. It's also very tiring with all these rights that are duties and all these duties that are rights, which cling 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 the "rights") and you "pay", you do all your duties for the honour of the human spirit and of mathematics - it's very beautiful, it's true, honour, spirit, mathematics, who can say better, bravo! bis! It's very beautiful, yes, but it's also very tiring, it ends up giving you a stiff neck. I had my stiff neck and now that's enough - I leave room for the others to stand stiffly.

It is also normal (since I was talking about students) that the student exceeds the teacher. I was offended by this, I had energy to waste! No more of that!

What a relief!

VII. The Child is having fun

42. The child

It's also certain that there must be corners where the brush hasn't swept through. It doesn't matter, they'll come to my attention and then there'll be time to take care of them. But as far as my famous "mathematician past" is concerned, the big clean-up is done, no doubt.

Now that I've seen once again that I'm not better than others, I shouldn't fall back into the same old trap of thinking I'm **better than myself**! That is, to think I'm better **now**, off the merry-go-round and all that, than I was fifteen years ago, or fifteen days ago. I've learned something during these fifteen years, that's for sure, and during the last two weeks too, and even since yesterday. When I learn something I mature, I'm not quite the same anymore. I am not "better" when I have learned something than when the thing to be learned was still ahead 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 your liking. I feel better about myself from one year to the next, so I guess the changes in me are "to my liking" - but they are not to the liking of all my friends and family. Every time I start doing maths again, I get compliments from all sides, like: "What an idea that he should like to do something else! It's now all coming back to normal, it's finally 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 recognise myself in the person I was, and that I rediscover myself, through a memory or through the unexpected testimony of others. I change, and there is also something that remains "the same". It has always been there, since my birth surely, and maybe even before. I seem to have been able to well recognise it, since a few years ago. I call it "the child". Because of this thing, I am not better at this moment than at any other moment in my life; it was there, even if it would often have been difficult to guess its presence. Also because of this thing, I am better than no one, and no one is better than me. In certain moments or in certain people, the child is more present. And this is a thing that does a lot of good. It doesn't mean that someone is "better" than someone else, or than themselves at another moments.

Often, when I do maths, or when I make love, or when I meditate, it is the child who is playing. It is not always the only one "playing". But when it is not there, there is no math, no love, no meditation. There's no point in pretending - and I have rarely played that comedy.

It's not just the child, that's for sure. There is the "me", the "boss" or the "great chief", call him what you want. Surely the boss is indispensable for running the company. If there is a boss, it must be for something. He's in charge of everything, and like all bosses, he has an annoying tendency to become invasive. He takes himself terribly seriously and wants to be better than the boss across the street. Invasive or not, he is only the boss, not the worker. He organises, he orders, and he cashes in for sure! - he takes the profits as his due, and suffers the 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 is rare to find a company where boss and worker get along. More often than not, the worker is nowhere to be seen, locked up God knows where. It's the boss who has pretended to take his place in the workshop, with the results that one may guess. And often, when the worker is actually there, the boss wages war on him, a violent war or a war of skirmishes - not much comes out of the workshop! Sometimes, too, there is a suspicious tolerance in the boss towards the worker, he lets him do his job while grumbling, and without taking his eyes off him. It is like a truce that is constantly renewed in a war that has never stopped. And the worker is able to work a little thanks to the truce.

It is not at all certain that by virtue of the meditation I have just made, the attitude of possessiveness in me towards mathematics has disappeared like magic! At the very least, I would have to take a much closer look at the manifestations of possessiveness, one of which I have just touched upon by calling it by its name. Yet there is no place for it in this "introduction", which has become an "introductory chapter", which in turn is already getting long! One thing, however, had 'clicked' last night, and I would like to come back to it now, something that I had noted with a certain surprise two or three years ago.

I was working on a mathematical question, I don't remember what it was, and at one moment (by some circumstance) it occurred to me that the question I was looking at had perhaps already been looked at, that it might well have been dealt with in black and white in some book, which it was up to me to consult in the library. The mere evocation of this possibility had a striking effect, which stunned me: from one moment to the next, the desire had disappeared. Suddenly, the question on which I had perhaps spent weeks, and was prepared to spend weeks more, had lost all interest for me! It was not a feeling of disappointment [*dépit*], it was a sudden and total lack of interest. If I had had the book in my hands, I would not have bothered to open it.

In fact, the situation [*éventualité*] was not confirmed, and so the desire returned and I continued on my way as if nothing had happened. Still, I remained taken aback. Of course, if I had really **needed** what I was doing to do **something else**, there would not have been such a dramatic drop in interest. I've often redone things that I was familiar with, knowing or suspecting that they were familiar, without caring in the least. I was then on a path where it was more economical, and much more interesting above all, to do things my way, from the perspective that they presented themselves to me, than to go digging through books or articles. I would then do it "in the stride" towards something else, towards what the desire carried me. And of course I was 'in the know' enough to know that what lies at the end is not to be found in any book or article.

This reminds me that mathematical work, even if it is done in solitude for years, is **not** a purely personal, individual work, 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 all. What is written in mathematical books is not unknown, even though I myself have never heard of it. Reading a book or an article has never attracted me, I have avoided it whenever I could. What it can tell me is never the unknown, and the interest I have in it does not have the quality of a desire. It is a circumstantial "interest", an interest in the **information** that can be useful to me, like an instrument of a desire of which it is by no means the object.

On reflection, it does not seem to me that the event I mentioned is the sign of a jealous, possessive disposition, the sign of a vanity which had been disappointed [*dépit*]. There was no frustration [*dépit*] or disappointment [*déception*] in me, just the sudden disappearance of a desire, that had been intense just a moment

before. This was at a time when I had absolutely no thought of publishing anything, nor that one day I would have the fantasy of publishing something 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 the child passionate in playing. And suddenly - nothing! Whoever can understand this, I don't... Sorry!

43. The troublemaker boss - or the pressure cooker

I feel that I have finally completed this retrospective of my life as a mathematician. Of course, I have not exhausted my subject - it would take volumes, assuming that such a subject could be "exhausted". That was not my intention. My intention was to get to the bottom of whether or not I had been a participant and co-actor in the appearance of a certain "air" that I now feel in puffs, and if so, in what way. I have a clear picture now, and it feels good. It could be exciting to go further, to deepen 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 **had to** look at, in order to come to terms with this past, has been seen.

Surely, by deepening this meditation, I would not fail to learn many interesting things about my present. One thing that this work has made me feel 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 image of myself, and also in my relationship to others; especially in my relationship to those I have, in a certain sense, left behind. Surely my relationship to this past has changed in the course of this work, in the sense of a detachment, or a greater lightness. The future will tell me more. But it is likely that an attachment will remain, as long as my mathematical passion is not 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 that this passion was extinguished. It would be truer to say that I had **decreed** that it be extinguished. 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 could not find the slightest gap through which to manifest itself. These were years of intense learning, which on a certain level that remained rather superficial. In the years that followed those years, the mathematical passion manifested itself in sudden, totally unexpected outbursts. These bursts lasted for a few weeks or months, and I stubbornly ignored their fairly clear meaning. I had decided once and for all that the urge to do maths, which was decidedly useless, was now a thing of the past, full stop! The "good-for-nothing", however, did not hear it that way - and I, for my part, remained deaf.

What may seem paradoxical is that it was after the discovery of meditation (in 1976), with the entry into my life of a new passion, that the reappearances of the old one became particularly strong, almost violent - as if each time a lid blew off under too much pressure. It was only five years later, under the pressure of many happenings so to speak, that I took the trouble to examine what was going on. It was the longest meditation I had ever done on a seemingly well-defined question: it took me six months of obstinate and intense work to go around a sort of iceberg, the visible tip of which had finally become so annoying that I was obliged, almost against my will, to look into it. It was clear that there was a **conflict** situation, 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 maths, which I treated with disdain, was, just like the desire to meditate, which I valued to the full, a desire of the child. The child has nothing to do with the disdain or the modest pride of the great chief and boss! The child's desires follow one another, as the hours and days go by, like the movements of a dance springing from one another. Such is their nature. They do not oppose each other any more than the stanzas of a chant, or the successive movements of a cantata or a fugue do. It is the evil boss - the conductor - who declares one movement to be 'good' and another 'bad' and creates conflict where there was harmony.

After this meditation, the boss has calmed down and is less inclined to stick his nose in where it doesn't belong. The work this time was long, whereas I thought it could be done in a few days. Once the work is done, the "result" appears obvious, and can be formulated in a few words (37). But if someone perceptive had said these words to me before or during the work, it would probably not have helped me at all. If the work took so long, it is because the resistance was strong, and deep. The boss took a lot of heat for it, while he never fussed, because it happened in an atmosphere where there was no way he would get angry. What's certain is that 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 little kid.

44. Re-reversing the steam

It's been a year and a half since I meditated, except for a few hours in December, when I was trying to figure out an urgent question. And it's been a year since I invested most of my energy in doing maths. This "wave" came like the others, maths-waves or meditation-waves: they come without announcing their arrival. Or if they announce themselves, I never heard! The boss has a little preference for meditation, I think: every time the meditation-wave is always 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, now lingers on and extends over months and perhaps even, who knows, years. But the boss has come to understand that he is not the one who makes these rhythms and that he has nothing to gain by trying to regulate them.

But perhaps there has finally been a swinging [*basculement*] in the boss's "little preference", since it has been almost a year since it was agreed and decided that I would leave for at least a few years to "do maths again", officially so to speak: I have even applied for a position at the CNRS! What is even more important, and entirely unexpected a year ago, is that I am starting to publish again. Even after the 1981 meditation I mentioned earlier, when the urge to do maths ceased to be treated as a poor relative, the idea did not occurred to me that I might start publishing maths again. Something else at a pinch, a book about meditation, or about dreams and the Dreamer - and yet I was far too busy with what I was doing to want to write a book about it! And what for?

So there was a sort of important decision, which affected the course of my life for years to come, and which was taken in a hurry I can't even say when and how. One day, when there started to be a good bunch of typed notes (well, well! until then I had limited myself to handwriting my mathematical cogitations... (38)), on stacks and homotopic models, etc..., it was decided: we publish this! And while we're at it, we might as well go all the way

down and start a little series of mathematical reflections, the name of which was easy to find, all we had to do was to capitalise it: “Mathematical Reflections”! This is more or less what this famous “mist”, which so often takes the place of a memory, is giving me back at the moment. A memory that is surely very abbreviated, in this case. The remarkable thing, in any case, is that this thing was done without even pausing to **look** at where I was going, what was pushing me, or carrying me ... That’s what I’d like to do again, on the momentum of this unexpected meditation, to be able to feel that it is really finished.

The question that immediately comes to mind: is this “remarkable thing” that I have just noticed a sign of the (so-called?) “discretion” of the boss, who for nothing in the world would want to interfere (even if with an indiscreet look...) in such a beautiful spontaneous movement which has no need of him etc... ; or is it a sign, on the contrary, that he has squarely taken sides, and that the so-called “little preference” makes him push all the way in the direction of maths?

It was enough to put the question in black and white to see the answer appear! It wasn’t the kid, who had started a game that would take longer than others, perhaps, who decided that he would continue for X number of years without a hitch, and during which time wisely fill in the number of pages needed to make a reasonable number of volumes of a beautiful series with capital letters! The boss has planned everything, the kid just has to do it. Perhaps the kid will not ask for anything better, you can’t know beforehand - but that’s a secondary question. The kid’s wishes depend, at least to some extent, on the **circumstances**, which depend mainly on the boss.

And it is clear that the boss has opted. He has just shown a certain flexibility, since a meditation has been going on for more than a month under his benevolent eye. It is also true that his benevolence is by no means disinterested, since the tangible product of the meditation, the notes that I am writing, will be the most beautiful cornerstone of the tower that he already sees himself building, with the stones graciously cut by the worker-child, apparently very willingly. Certainly, it is a little early to compliment him on his “flexibility”! A few hours of meditation three months ago, and a year and a half from now on all in all, would still be rather meagre!

Yet I don’t feel that during all this time there was a desire for meditation that was 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 had not 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 furtively reappeared, I mean, the one that had been resolved more than two years ago and that would have reappeared in a reversed form this time. It’s in the boss’s nature and his right to have preferences - it would be silly for him to pretend not to (although more silly things than that can happen...). This is not a sign of conflict, even if it is often the cause. At this point, it really seems that not too much blame should be put on his lack of flexibility!

Having seen this, it remains for me to try to identify the “motivations” of the boss, for this reversal of steam which was done in the most discreet way in the world, and which, however, on closer inspection, is quite spectacular.

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

This immediately brings me back to this meditation which had continued from July to December 1981, after a period of four months which I had just spent in a sort of mathematical frenzy. This somewhat insane period (very fruitful, by the way, from a mathematical point of view (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 meaning (40). Once this was done, I knew what I had to do. I did not return to this dream in my work for the next six months, but I was doing nothing but penetrating its meaning and fully assimilating its message. The day after the dream, this 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 in presence, which appeared to me as antagonistic.

So much has happened in my life since that meditation, that it seems to lie in a very distant past. If I try to formulate what I retained from what it taught me about the motivations of the “boss”, it is as follows: during the twelve years that had passed since the “first awakening” (of 1970), the boss had bet on what was obviously “the wrong horse”: **between mathematics and meditation** (which he liked to oppose one to the other) **he had opted for meditation.**

That is 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 dear image of me which in 1970 had been repainted, meditation came at the right moment, six years later, to enhance with its brilliance a certain attitude or pose, spotted for a long time but never examined until this meditation of 1981. I called it the “master’s syndrome”, and some have also called it (rightly) my “Guru pose”. If I adopted the first designation rather than the second, it is undoubtedly because it suggests a confusion about the nature of the thing, in which I liked to keep myself. There was indeed in me, since my early childhood, a spontaneous pleasure in teaching, which was in no way opposed to the spontaneous pleasure in learning, and which had nothing of a pose. It was this strength above all that was at stake 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 - it was then that ‘the boss’ took his revenge as he could: instead of teaching maths, which is just a good way to earn a living, but otherwise unworthy of my new greatness, I saw myself as teaching a certain “wisdom” by my life and my example. I was careful of course not to say anything of the sort to myself or to others, and when I received echoes of this, I had to recuse myself, pained by so much incomprehension on the part of such friends or people close to me. No matter how much I explained it to them, they stubbornly refused to understand, disappointing students if there ever was any!

I had read a book or two by Krishnamurti which had made a strong impression on me, and in no time at all my head had assimilated a certain message and values (41). That was all it took to believe all of it (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 consistency. But no matter how beautiful and flawless the discourse was, at no time did it seem to be of any use to me or to anyone else. It went on for years without me even pretending to learn from it. With the discovery of meditation, the jargon fell away from me overnight, without a trace. I knew the difference between speeches[discours] and knowledge.

The great chief rectified the situation at once: Krishnamurti out of the way, meditation in a pinch! Discreetly, of course, he now had to play with a completely different touch. Times had changed, now with this kid running around, and who was a bit sharp-eyed sometimes. I guess the kid had been busy elsewhere. In any case, it was only five years later, when a certain cooker had exploded and the kid had run to see what was going on, that the great chief's merry-go-around[*manège*] was revealed.

It wasn't so long ago after all, just a little more than two years ago, that the Guru-without-the-look was finally stale - one more disguise out of the way! The poor boss was about to be stripped naked, almost. Or to put it another way: the horse of "Meditation", which had taken the place of the horse with no name (which should certainly not have been called "Krishnamurtian"!) is making really derisory returns, especially if one compares them to the coquettish returns of the "mathematical" horse in the old days when the boss was still betting on it. If he kept the wrong bet for so long, it was out of sheer inertia - he had already changed his bet once, which is not so common, and it had taken the impact of a striking event to do so (42). Bosses don't really like to change their bets - and in this case it was a sort of backtracking to bet before.

It was from 1973 onwards, when I retired to the countryside, that the returns of the new horse began to be really meagre compared with the old one. The unexpected appearance of meditation three years later boosted them a little. There was even the episode of a dizzying peak from March to July 1979, which I will not go into here, when I once again took on the role of an apostle, this time an apostle of a wisdom that was both immemorial and new at the same time, sung in a poetic work of my composition and which I finally refrained from entrusting to the hands of a publisher (43). But two years later, with the Guru definitively out of the picture, it was as if the Meditation horse had broken a leg (as far as returns to the boss were concerned) - there was no longer any way, tactful or not tactful[*doigté ou pas doigté*], to play the Gurus!

After that, it didn't last long - the three-legged horse out of the way, 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 ...

VIII. The solitary adventure

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 should now be delved into a bit more. I would especially have to determine more closely the respective merits of the two “horses” of meditation and mathematics; and also try to understand which events or circumstances finally triggered the “swinging/*basculement*” in the boss’s bet, against the forces of inertia which would rather push him to keep a bet, even if it is a losing one, indefinitely.

Perhaps the kid’s preferences should also be explored. It’s something all clear by now, he wants to change his game from time to time, and the boss apparently has a minimum of flexibility to not at all costs force the kid to always play this and never that. Over the last few years he has learned to take the kid into account, to deal with him, without waiting for the cooker to explode. It’s not complete harmony, but it’s no longer war, more like a kind of *entente cordiale*, with the occasional tensions tending to soften, not harden.

When he is not opposed too harshly, the kid is by nature quite flexible in his preferences. (Not like the boss, who only learned a minimum of flexibility against his will in his old age...) But the fact that the kid is flexible does not mean that he does not, like the boss, have a preference, that he is not more strongly attracted to one thing than to another.

It’s not at all always easy to see clearly, to distinguish between the wishes of the child and the preferences of the boss, or even what the boss has decided upon once and for all. When I once said to myself: meditation is better, more important, more serious and so on than mathematics, for such and such reasons (the most relevant ones, 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 inclined to give speeches. When he feels like doing something he goes ahead and does it if no one is in his way, without asking himself whether it is “important” or “better”. His desires are more or less strong from one thing to another and from one moment to another. To reveal his preferences, there is no point in listening to the boss’ explanatory speeches, in which he claims to speak for the child whereas he can only speak for himself. It is only by observing the kid in his games that we can perhaps reveal 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 doesn’t put in his little nudge.

Clearly, what attracts him above all else, is **the unknown** - to pursue the nebulous foldings/*replis* of the night and bring into broad daylight what 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, and not to the boss’ vanity, who wants to impress the galleries and himself. It is also an accepted fact that what the child brings back from the darkness of inexhaustible attics and cellars are “obvious”, childish things. The more obvious they appear, the happier he is.

If they are not, it is because he has not done his job to the full, that he has stopped halfway between darkness and daylight.

In maths, the “obvious” things are also the ones that sooner or later someone **has to** come across. They are not “inventions” that you can or cannot make. They are things that have always been there, that everyone walks by without paying attention, even if it means taking a long diversions around them, or tripping over them every time. After a year or a millennium, inevitably, someone finally pays attention to the thing, digs around it, unearths it, looks at it from all sides, cleans it, and finally gives it a name. This kind of work, my workplace of choice, is something that every time another person could also do, and even more so, something that another person **is bound to do** sooner or later (44).

It is not at all the same for the discovery of myself, in the not at all collective game of “meditation”. What I discover, no other person in the world, today or at any other time, can discover for me. It is up to me alone to discover it, that is to say: to **undertake it/[l’assumer]**. This unknown is not destined to be known, almost by force of the circumstance, whether or not I care to take an interest 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 upon to know it. It is not unfamiliar with probation. Of course, I am free to follow its call, or to evade it, to say “tomorrow” or “one day”. But it is to me and to no one else that the call is directed, and no one but me can hear it, no one but me can follow it.

Each time I have followed this call, **something changes in the “company/[l’entreprise]”**, more or less. The effect has been immediate, and felt on the spot like a blessing - sometimes like a sudden liberation, an immense relief, from a weight I was carrying without even realising it often, and the reality of which is manifested in this relief, in this liberation. On a lower magnitude, such experiences are common in any work of discovery, and I have had occasions to talk about them. The thing that distinguishes the work of self-discovery (whether it is done in the open or remains underground) from any other work of discovery, however, is precisely that it really changes something in the “company” itself. It is not a quantitative change, an increase in output, or a difference in the size or even the quality of the products coming out of the workshop. It is a change in the **relationship between the boss and the worker-child**. Perhaps there is even a change in the boss himself, if that makes sense in terms of anything other than his relationship to the worker, to the child. For example, he may watch less on the production - but this is also an aspect of his relationship to the worker, through the appearance of a concern or respect to that which was perhaps previously foreign to him. In all the cases in which I have meditated, the change was in the direction of a **clarification and appeasement** in the relationship between boss and worker. Except in some cases where the meditation remained superficial, “circumstantial” meditations under the sole pressure of an immediate and limited need, the clarification has lasted until today, and the appeasement too.

This gives the work of self-discovery a different **meaning/sens/** from any other work of discovery, although many essential aspects are common. There is a dimension to self-knowledge, and to the work of self-discovery, which distinguishes it 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 the fascination of the mysteries it has revealed to me, is the fascination of the forbidden fruit. I have crossed a threshold, where fear has disappeared. The only obstacle to knowledge is an inertia, one that is sometimes considerable, but finite, not insurmountable. I felt this inertia almost at every step, insidious, omnipresent. It exasperated me sometimes, but

never discouraged me. (No more so than in mathematical work, where it is also the main obstacle, but of incomparably less weight). This inertia becomes one of the essential ingredients of the game; one of the protagonists, to put it better, in this delicate and by no means symmetrical game which involves two - or three I should say: on the one hand the child who rushes 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 stranger[*inconnue*], rich in mystery, at once close and distant, who both evades and calls...

47. The solitary adventure

This fascination with “meditation” has been of considerable power for me - as powerful as the attraction of “the woman”, whose place it seems to have taken. The fact that I just wrote “has been” does not mean that this fascination is now extinguished. During the past year in which I have been involved in mathematics, it has only faded into the background. Experience tells me that this situation can be reversed overnight, just as the situation is itself the effect of an entirely unexpected reversal. In fact, during each of the four long periods of meditation I went through (one of which lasted for almost a year and a half), it seemed to me a matter of course that I would continue until my last breath, to probe as far as I could into the mysteries of life and human existence. When the notes accumulated in impressive piles to the point of threatening to overwhelm my working room, I even ended up having a piece of furniture made to measure to store them, with plenty of space planned (thanks to a quick calculation of arithmetic progression) to store the notes that would soon be added over the years; I had allowed for a margin of about fifteen years if I remember correctly (which was already starting to be filled!). The boss had done things right, and it was a good job of stewardship! That, and a large-scale tidying up of all the personal papers closely or remotely related to the meditation work, was in fact the last task he undertook and carried out (almost) to a successful conclusion, just before the swinging of preference and bets. One wonders whether he did not have an ulterior motive in mind, and whether he did not already see tomes of “Mathematical Reflections” filling the empty shelves supposedly intended for the forthcoming “Notes”.

Certainly, the passion for meditation, for self-discovery, is vast enough to fill my life for the rest of my days. It is also true that the mathematical passion is not consumed, but perhaps this hunger will eventually be satiated in the years to come. Something in me wishes it, and feels mathematics as a hindrance to follow a solitary adventure that only I can pursue. And it seems to me that this “something” in me is **not** the boss, nor one of the boss’ vague desires (which, by nature, is divided). It seems to me that the mathematical passion still bears the mark of the boss, and that, in any case, following it makes my life move in a closed circle; in a circle with an **easiness**[*facilité*], and in a movement which is that of an **inertia**, certainly not of a renewal.

I have pondered upon the meaning of this stubborn persistence of mathematical passion in my life. When I follow it, it does not really fill my life. It gives joys, and it gives satisfactions, but it is not of a nature by itself to give a true fulfilment, a plenitude. Like any purely intellectual activity, intense and lengthy mathematical activity has a rather **mind-numbing** effect. I see this in others, and especially in myself, every time I engage in it again. This activity is so fragmentary, it only uses such a tiny part of our faculties of intuition, of sensitivity, that they become blunted by not being used. For a long time I didn’t realise this, and obviously most of my colleagues don’t realise it any more than I did over the years. It is only since I started meditating, it seems, that I have become aware of this fact. If you pay attention to it, it becomes so obvious - **maths in large doses**

thickens*[épaissit]*. Even after the meditation of two and a half years ago, where the mathematical passion was recognised as a passion indeed*[en effet]*, as an important thing in my life - when I now give myself to this passion, there is still a reservation, a reluctance, feeling that it is not a total gift. I know that the so-called “total gift” is in fact a kind of abdication, it would be followed by 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 in me.

Meditation opens me up to others, it has the power to untie my relationship with them, even though the others remains tied up. But it is very rare that I have the opportunity to communicate with others in any way about the work of meditation, about this or that thing that this work has brought me to know. This is not because these things are “too personal”. As a simplified illustration*[Pour prendre une image imparfaite]*: I can only communicate about maths that interests me at a given moment with a mathematician who has the necessary background*[bagage]*, and who at the same time is also willing to take an interest. It happens that for years I am fascinated by such and such a 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 would find them, and that even if I didn’t find them, it would be a simple matter of luck or circumstance; that the things I am interested in cannot fail to interest some other person, or even a few others, whether in ten years or in a hundred, it doesn’t really matter. This is what gives meaning to my work, even if it is done in solitude. If there were no other mathematicians in the world and there should be none left, I don’t think doing maths would still make sense to me - and I suspect that it is no different for any other mathematician, or any other “researcher” in any sense. This ties in with the observation made earlier, that for me “the mathematical unknown” is what no one knows yet - it is something that does not depend on my person alone, but on a collective reality. **Mathematics is a collective adventure**, which has been continuing for millennia.

In the case of meditation, in order to communicate about it, the question of “baggage” does not arise; at least not at the stage where I am at, and I doubt that it ever will. The only question is that of an interest in the other, which responds to the interest that is in me. It is therefore a curiosity about what is really going on in oneself and in others, beyond the facades in force*[de rigueur]*, which do not hide much as long as one is really interested in seeing what they are covering. But I have learned that the moments when such interest in a person appears, the “moments of truth”, are rare and fleeting. It is not rare, 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 other than “interesting discussions”. They have this baggage that they carry with them, heavier or lighter, which is the so-called “culture”. It is part of the image they have of themselves, and reinforces that image, which they are careful never to examine, just like someone else who is interested in maths, flying saucers or angling. It is not this kind of “baggage”, nor this kind of “interest”, that I meant earlier - the same words here refer to things of a different nature.

To put it another way: **meditation is a solitary adventure**. It is solitary in nature. And not only is the **work** of meditation a solitary work - I think this is true of any work of discovery, even when it is part of a collective work. But the **knowledge** that arises from the work of meditation is “solitary” knowledge, knowledge that

cannot be **shared**[*partagée*], let alone “communicated”; or if it can be shared, it is only in rare moments. It is a work, a knowledge that goes against the grain of the most inveterate consensus, consensus which concerns[*inquiète*] each and everyone. This knowledge is certainly expressed simply, in simple and clear words. When I express it to myself, I learn in the process of expressing, because the expression itself is part of a work, carried by an intense interest. But these same simple and clear words are powerless to communicate meaning to others when they come up against the closed doors of indifference or fear. Even the language of dreams, with its infinite capacities, constantly renewed by a tireless and benevolent Dreamer, cannot get through these doors...

There is no meditation that is not solitary. If there exists a shadow of concern for an approbation by anyone, for confirmation, for encouragement, then there can be no meditation work and no self-discovery. The same is true, it may be said, of any real work of discovery, at the very moment of the work. This is true. But outside of the work itself, the approbation of others, be it a close friend, a colleague, or a whole milieu of which one is a part, is important for the meaning of this work in the life of the person who gives it his all. This approbation, this encouragement are among the most powerful incentives, which makes the “boss” (to use this metaphor) give the green light without reserve for the kid to give it his whole heart. It is above all these that determine the boss’s investment. It has been 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 the work of meditation on the other hand, there is no such incentive. It is a passion of the worker-child which the boss is basically kind enough to more or less tolerate, because **it does not “bring in” anything**. It bears fruit, of course, but it is not the kind of fruit that a boss aspires to. When he is not fooling himself, it is clear that he will not invest in meditation, the boss is gregarious by nature!

Only the child by nature is solitary.

48. Giving and receiving

In speaking yesterday about the solitary essence of meditation, I was touched by the thought that the notes I have been writing for nearly six weeks, which have eventually become a kind of meditation, are nevertheless intended for publication. This has, of course, influenced the form of the meditation in many ways, not least by the need for brevity, as well as discretion. One of the essential aspects of meditation, namely a constant attention to what is going on in me at the very moment of the work, was manifested only very occasionally, and in a superficial way. Surely all this must have influenced the course of the work and its quality. I feel, however, that it has the quality of meditation, above all by the nature of its fruits, by the emergence of a knowledge of myself (in this case, that of a certain **past**) that I had until now evaded. Another aspect is spontaneity, which meant that for none of the nearly fifty “sections” or “paragraphs” into which the reflection spontaneously grouped itself, could I 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 to light new facts, or shed new light on facts hitherto neglected.

The most immediate meaning of this work has been that of a dialogue with myself, therefore of 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 during the course of work. It is for me an essential part of the meaning of this work. If I implied yesterday that the boss surely finds his account in it (he is a master at ‘finding his account’ in everything, or very nearly so!), this in no way means that its meaning is reduced to this - to a late, almost posthumous ‘return’ of the famous three-legged horse! More than once I have also felt that the deep meaning of an act sometimes exceeds the motivations (apparent or hidden) that inspire it. And in this “return to mathematics” I have discerned 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 for such and such a reason.

This “meditation” that I am pursuing in order to offer it to those I have known and loved in the mathematical world - if I feel that it is an important part of this glimpsed meaning, it is not in the expectation that the gift will be well-received. Whether it is welcomed or not does not depend on me, but only on the one to whom it is addressed. I am certainly not indifferent to whether it is well-received. But that is not my responsibility. My only responsibility is to be true in the gift I give, that is, to be myself.

What I know from meditation are the humble and obvious things, things that don’t look like much. They are also the things that I will not find in any book or treatise, no matter how learned, profound, brilliant - the things that no one else can find for me. I questioned a “mist”, I took the trouble to listen to it, I learned a humble truth about a “sporting attitude” and its obvious meaning, in my relation to mathematics as in my relation to others. I could have read “in the text” the Holy Scriptures, the Koran, the Upanishads, and even Plato, Nietzsche, Freud and Jung on top of that, I could have been a prodigy of vast and deep erudition - but all these would have done was only to **take me away** from this truth, a childish, obvious truth. And I could have repeated a hundred times the words of Christ “blessed are those who are like little children, for theirs is the Kingdom of Heaven”, and commented on them finely, while it would have only served to keep me away from the child in me, and from the humble truths that trouble me and which only the child can see. These are **the things**, the best I have to offer.

And I know very well that when such things are spoken and offered, in simple and clear words, they will not be well-received. Receiving is not simply receiving information, with embarrassment or even with interest: “Gee, who would have thought...!” or: “It’s not so surprising after all... “. To receive, oftentimes, is to recognise oneself in the one who offers. It means getting to know oneself through the person of another.

49. The finding 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 the reflection; or rather as an illustration of certain aspects that distinguish “meditation” from any other work of discovery, and especially from mathematical work. I realised, yesterday, that these aspects have a double effect, namely two effects **in opposite directions**: a unique fascination with “the kid”, and a total disinterest in the “boss”. It seems that this double effect is in the nature of things, that it cannot be mitigated at all, by any compromise or arrangement. Whatever is done, when the kid follows his true predilection, the boss is not happy, not at all!

No doubt this is the meaning of the swinging [*basculement*] that has taken place, which may well wipe out meditation in my life in the coming years (with the exception of “occasional meditations”, as three months ago). I don’t think they will have to be entirely barren years for meditation, any barren than last year. But it’s also true that what I learned there (outside of math) is tiny, if I compare it to what I learned in any of the four years before that. The strange thing is that each of the four long periods of meditation I experienced were times of great fullness, with nothing to suggest that anything in me remained frustrated. Yet if cookers exploded, it was because somewhere there was pressure, and that pressure must not have been there that very day; it must have been present somewhere out of my sight, for weeks or months, while I was intensely and totally absorbed in meditation.

But now I am 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 in full swing by a combination of some events and circumstances), the intensity of the meditation was gradually decreasing from one moment onwards, like a wave that was about to be followed by another one preparing 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-wave, not the ‘mathematics’-wave.

The situation I am trying to capture is no longer, it seems to me, a situation of conflict, but it is becoming apparent that it still contains the germ, the potentiality of conflict. It is now for me perhaps the most visible sign, through its impact on the course of my life, of a **division** within me. This division is none other than the boss-child division.

I cannot put an end to it. All I can do, now that it is well detected, in this manifestation, is to be attentive to it, to follow its signs and its evolution during the months and years that lie ahead. Perhaps this passion for maths, a little unfortunate I must say, will burn itself out (as another passion in me has already burned 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 will not be enough to exhaust it.

50. The weight of a past

It’s been a few days since I finished putting the final touches to “Harvest and Sowing” - after thinking, for more than a month, that I was about to finish in the next few days. Even this time, after putting the “ final touches “, I was not entirely sure if I had indeed finished - there was still one question I had left unanswered. It was “to understand what events or circumstances finally triggered the “changing” in the bets of “the boss”, in favour of mathematics instead of meditation, against considerable forces of inertia. Without any deliberate intention, my thoughts returned with a certain insistence to this question, during the last few days when I had already begun to branch out to others of a completely different order, including mathematical questions (of conformal geometry). I might as well take advantage of this meditative “end of the run [*fin de lancée*]”, to dig a little deeper and leave the place neat and tidy.

Several associations arise, as I try to answer “off the top of my head” why “I’m getting back into maths” (in the sense of a significant and intended long-term investment, of the order of at least a few years). Perhaps the strongest of all relates to the sense of chronic frustration that I have come to feel in my teaching activity over the last six or seven years. There is the growing feeling of being “**underemployed**”, and often even of giving my best to morose students who don’t care about what I have to give.

I see everywhere wonderful things to do and also which need to be done. Often, it is enough to have a derisory baggage to approach them, it is these things themselves that tell us what language needs to be developed in order to understand them, and what tools to acquire in order to dig into them. I can’t help seeing them, simply because of my regular contact with maths (at a very modest level) coming from a teaching activity, even in the periods of my life when my interest in maths is most marginal. Behind each thing you see, no matter how little you look, there are other beautiful things, which, in turn, cover and reveal more things... Whether in maths or elsewhere, wherever you look with genuine interest, you see a richness revealed, a profoundness opened up and which you feel to be inexhaustible. The frustration I am talking about is that of not being able to communicate to my students this feeling of richness - of profoundness - even if only a spark of desire to go around at least what is just within their reach, to give themselves a hearty content during the few months or years which, in any case, they have decided to invest in a so-called “research” activity, for the purpose of preparing for such and such a diploma. Except for two or three of the students I’ve had over the last ten years, it seems that the very idea of “giving themselves a hearty content” frightens them, that they prefer for months and years to stand around and do nothing, or to do some mole’s work of which they know neither ins nor outs, as long as there is a diploma at the end. There is 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 beginnings of my reflection, where I had touched in passing on the deep cause of such blockages. But that is not my purpose here, which is rather to note the state of chronic frustration that these situations, constantly repeated throughout the last seven years of teaching activity, have ended up creating in me.

The obvious way to ‘resolve’ such a frustration, at least insofar as it is that of the ‘mathematician’ in me and not that of the teacher, is to do by myself at least some of those things that I thought I could never see one or other of my students grasping in the very end. This is what I did here and there, whether it was by occasional reflections for a few hours, or even a few days, on the fringes of my teaching activity, or during periods of great mathematical frenzy (which sometimes occurred like real explosions...), which could last for weeks or months. Such occasional and intermittent work could only give rise to a very first rough sketch of a question, and to a very fragmentary vision - rather, it was a clearer vision of a work in prospect, whereas the work itself remains to be done and, to be better perceived, only seems all the more burning. Two months ago I gave an overall sketch of the main themes of which I have begun to take stock to some extent. It is the “Sketch of a Programme”, to which I have already had occasion to allude to, and which will eventually be joined to the present reflection, to constitute together volume 1 of the “Mathematical Reflections”.

It is quite clear that this (‘private’ so to speak) prospecting work alone could not solve my frustration. This feeling of ‘being underemployed’ surely reflected a **desire** (of egoistic origin, I believe, in other words a desire ‘of the boss’) **to take an action**. It is less a question here of an action upon others (say, upon my students, putting them in motion, “communicating something” to them, or helping them to get such and such a diploma that could allow them to apply for such and such a job, etc...) than of an action “as a mathematician”:

contributing to the discovery of such and such an undreamt-of fact, to the blossoming of such and such a theory, etc... This is immediately associated with the observation made earlier that mathematics is a “collective adventure”. If I ask myself about what my dispositions were when I did maths over the last ten years, at a time in my life when the idea would not 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 occurs to me that these were by no means the dispositions of someone who would do something for his own personal pleasure, or driven by an inner need that would concern only himself, without any relationship to others. When I do maths, I believe that somewhere in me it is well understood that this maths is meant to be communicated to others, to be part of a larger thing to which I contribute, a thing that is by no means individual in nature. This ‘thing’ I could call ‘mathematics’, or better ‘our knowledge of mathematical things’. The term “our” here probably refers, in the first place, concretely, to the group of mathematicians whom I know and with whom I have common interests; but there is no doubt that it goes beyond this small group as much as it goes beyond my person. This “our” refers to **our species**, insofar as the latter, through some of its members throughout 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, contemplated on the existence of this “thing” in my life, let alone questioned 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 me 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 have already noted), and this, moreover, for the purpose of being made **available to all**, thus enriching a common “heritage”. In other words, it is the desire to contribute to the enlargement, to the enrichment of this “thing”, or “heritage”, which goes beyond my own person.

In this desire, certainly, the desire to enlarge my person through my works is not absent. In this aspect, I find the craving for “growth”, for enlargement, which is one of the characteristics of the self, of the “boss”; this is its invasive and, in the extreme, destructive aspect (see note 44 § 13.1.1 p. 260). Yet I also realise 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 larger force, which pushes 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 his own person would remain anonymous. This would perhaps be a “sublimated” form of the tendency to enlarge the self, by identification with something beyond it. Unless this kind of force is not of an egoistic nature in itself, but of a more delicate and profound nature, that it expresses a profound need, independent of any conditioning, which attests to the profound link between the life of a person and that of the whole species, a link which is part of the meaning of our individual existence. I do not know, and it is not my purpose here to probe questions of such a vast scope.

Rather, my purpose is to examine (in a more modest way) a concrete situation concerning my own person: thus a situation of frustration, with a partial and provisional outlet through a sporadic mathematical activity. The logic of the situation then was to lead me sooner or later to **communicate** what I found. As until last year I was not prepared to make the large-scale and long-term investment in my mathematical passion that would have been necessary to “exploit”, for the purposes of publication, through detailed “work on pieces”, the mines that I

was uncovering, I was left with the choice of communicating to certain mathematician friends who were sufficiently “in the know” at least those things that I held most dear.

I think that if I had found during the last ten years a mathematician friend who played vis-à-vis me the role of **the interlocutor** and source of information (as it had been the case with Serre to a very large extent, for many years in the 50s and 60s), at the same time as a **relay** to pass on “information” that I could pass on to him (a role that Serre did not have to play in the past, because I took care of it myself!), my desire to “take an action in maths” would have found sufficient satisfaction to resolve my frustration, while being satisfied with an episodic and moderate investment in mathematics of my energy, leaving the largest part of it 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. Amusing coincidence, both times it was to try to “install[*placer*]” (for the purpose of passing on and, who knows, make it developed at the very end!) the same “programme” of homological and homotopical algebra, whose first germs go back to the fifties, and which was perfectly “mature” (according to the firm conviction I had) before the end of the sixties; a programme of which a preliminary development and in the outlines is precisely the theme of this Pursuing Stacks of which I am supposed to be writing the Introduction at this moment! The fact remains that, for reasons that probably differ from one case to another, my attempts to find a “privileged interlocutor” relationship, as it had been (before 1970) with Serre, and then with Deligne, came to nothing. One common factor, however, was the relatively limited availability that I was willing to give to maths. This surely contributed, on the two occasions I have mentioned (in 1975 and 1982), to making the communication lame. In fact, I was mainly trying to “install” something, without worrying too much about making the necessary effort of “(re) bringing myself up to date” to be a satisfactory interlocutor for my correspondent, who was much more “in the know” than I was (to say the least!) for the current techniques in homotopy.

I might consider the “Letter to...” which serves as the first chapter of the Pursuing Stacks (a 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 preoccupations of now. The continuation of the reflection started (or rather, resumed) in this letter was to become (without my ever 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 note (38)). It was more eloquent than any other letter received to date from a fellow mathematician, in making me feel certain attitudes vis-à-vis my modest person, which have become common among my mathematician friends since I left the milieu of which I was a part with them. There is in this letter, coming from someone to whom I had addressed myself as a friend, in a mood[*dispositions*] of warm sympathy, a deliberate intention of derision, which reminded me in a particularly violent way of something of which I had come to realise more and more clearly during the last few years. Previously, I had had the occasion to notice a distancing from my person in the mathematical ‘big world’, and above all, among those who had been my close friends (45). Here it is no longer a question of distancing on the level of persons, but rather of a consensus, in the nature of a fashion and like something taken for granted, among people who are somewhat[*tant soit peu*] “in the know”: that the kind of maths in bundles of thousand pages, and the notions with which I’ve been harping on people’s ears for a decade or two (46)(47), aren’t very serious at all; that there are a lot of confusing things[*bombinage*] there for nothing of much worth, and that, apart from the “general non-sense” spreading around the notion of scheme and étale cohomology (which do have their usefulness sometimes; alas, as one must admit), it is more charitable to forget the rest at least; that those who would nevertheless pretend to still

blow this kind of Grothendieckian trumpet, in spite of having good taste and the obvious canons of seriousness, are to be put in the same bag as their Master, avowed or not, and that they only have themselves to blame if they are treated as they deserve to be...

Surely, the numerous echoes in this vein (which I have just transcribed ‘in plain words’) that have been reaching 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. They have aroused, like a reflex, the desire to throw myself into the fray, to shut up those greenhorns who have understood nothing - a completely idiotic reflex, in short, like that of the bull to whom it is enough to show a piece of red cloth and wave it in front of his nose, for him to immediately get into a frenzy, forgetting the path he was following quietly and which was his own! I nevertheless believe that this reflex is quite epidermal, and that it would not have been enough on its own to make me shake. Besides, and fortunately, doing maths has much more charm than running into a piece of cloth and getting larded on all sides. But doing maths, pursuing against all odds a style of work and an approach to things that are mine, is also a bit of ‘throwing myself into the fray’; it is asserting myself in the face of signs of disdain, of rejection - which come to me, no doubt, in response to the disdain my former friends have felt or grow to feel in me, if not towards them, then at least towards a milieu with which they continue to identify unreservedly. So it is also, to some extent, following the red cloth, instead of following **my** path.

This idea has occurred to me several times in the last few weeks, and perhaps today’s reflection has been directed towards an examination of this aspect in particular. Along the way, another aspect emerged, in which the forces of the ego also have a large part to play, but which does not appear to be a simple combative reflex. Rather, it is a desire within me, the nature of which I cannot yet clearly discern, to give meaning to the mathematical work I have done over the last ten or twelve years, or to see it take on its full meaning; a meaning which (I am firmly convinced) cannot be reduced to that of a private pleasure or a personal adventure. But even if the nature of this desire remains unclear, since I have not taken the time to examine it more closely, this reflection is enough to show me that it is indeed there, in this desire, that the force that weighs on me and forces my hand, so to speak, in favour of a mathematical investment - the force of ‘swinging[*basculement*]’ - is really to be found. It acts just as much, red cloth or not. If it is a sign of an attachment to a past, it is the past of these last ten years, the past “after 1970”, and not the past of things already written in black and white, of things done, those before 1970.

Deep down, I have no concern about these things, about what the future, “the posterity”, will do to them (though it is doubtful that there will even be a posterity...). What interests me in this past is not at all what I did (and the destiny that is or will be its own), but rather what has not been done, in the vast programme that I had before my eyes at that time, and of which only a very small part was realised by efforts of myself and of the friends and students who were sometimes willing to join with me. Without having planned or sought it, this programme itself has been renewed, along with my vision and approach to mathematics. Over the years, the emphasis has shifted both in terms of themes and in terms of my purpose: instead of being the accomplishment of large **tasks** of meticulous foundations, my primary purpose now is to probe the **mysteries** that have fascinated me the most, such as that of “motives”, or that of the “geometrical” description of the Galois group of \overline{Q} over Q . Along the way, of course, I will not be able to refrain from at least sketching some foundations here and there, as I have started to do (among others) in “Long march through Galois theory”, or as I am

currently doing in Pursuing Stacks. The purpose, however, has changed, as has the style in which it is expressed.

To put it another way: in the last ten years I have 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 feel it, is to communicate them, to be taken up, understood, assimilated... But to communicate them, even if only to oneself, is also to deepen them, to develop them to some extent - it's a **work/travail**. I am well aware, of course, that there is 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 to discover the world, when **another** work awaits me that only I can do. It is not in my power, and it is not my role, to regulate the seasons of my life.

NOTES for the first part of Harvest and Sowing*

(1) (Added in March 1984) It is probably wrong to say that my “style” and my “method” of work have not changed, while my style of expression in mathematics has transformed profoundly. Most of the time devoted to “Pursuing Stacks” since last year has been spent on my typewriter typing reflections which are destined to be published practically as they are (with the addition of relatively short notes added later to facilitate reading through cross references, error corrections, etc...). No scissors or glue to laboriously prepare a “definitive” manuscript (which, above all, must not reveal anything about the process which led to it) - this still is a change of “style” and “method”! Unless you dissociate the actual work-mathematical from the work of writing and presenting the results, which is impossible, because this does not reflect the reality of things: mathematical work is indissolubly tied with its writing.

(2) (Added in March 1984) When I reread these last two paragraphs, I had a certain feeling of uneasiness, due to the fact that in writing them, I am referring to others but not myself. Apparently, the thought that my own self might be relevant too did not occur to me while I was writing. I surely have learned nothing, when I have limited myself to putting in black and white (with a certain satisfaction no doubt) things that for years I have perceived in others, and seen confirmed in many ways. In the course of my reflection, I am led to remember that there has been no lack of contemptuous attitudes towards others in my life. It would be strange if the link that I have grasped between contempt for others and contempt for oneself is absent in the case of myself; sound reason (and, I have come to realise, also the experience of similar situations of blindness towards my own personage) tells me that surely this must not be the case! This, for the moment however, this is merely a deduction, the only possible use of which would be to encourage me to see with my own eyes what is 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. There has been no lack of things to look at! This one suddenly appears to me as one of the most crucial, precisely because it is so deeply hidden...†

(3) I am thinking here in particular of the famous conjectures of Mordell, of Tate and of Shafarevich, 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”! It so happens that “the” fundamental conjecture which serves as the keystone of the programme of “Anabelian algebraic geometry”, which is dear to me, is right close to Mordell’s conjecture. (It would even seem that this one is a consequence of that one, which shows that this programme is not a story for serious people...)

(4) Even nowadays, however, one encounters “proofs” of uncertain status. This was the case for many years Grauert’s proof of the finiteness theorem that bears his name, which no one (and there was no shortage of

* The notes to the section 'The weight of a past' (section 50) are not included in this list but form the second part of Harvest and Sowing (notes n°s 44' to 97).

† (August 1984) See, however, the reflection in the last two paragraphs of the note "The Massacre", n° 87

goodwill!) could read. This perplexity was resolved by other, more transparent proofs, some of which went further and took over the original proof. A similar, more extreme situation is the “solution” of the so-called “four-colour problem”, the computational part of which was solved with a computer (and a few million dollars). This is therefore a “proof” that is no longer based on the intimate conviction that comes from understanding a mathematical situation, but on the faith that is placed in a machine that is devoid of the ability to comprehend, and whose structure and operation is unknown to the mathematician using it. Even supposing that the calculation is confirmed by other computers, following other calculation programs, I do not consider the problem of the four colours as closed. It will only have changed its appearance, in the sense that it is no longer a question of looking for a counter-example, but rather a proof (readable, of course!).

(5) This fact is all the more remarkable because until about 1957, I was regarded with a certain reserve by more than one member of the Bourbaki group, which had ended up co-opting me, I believe, with a certain reluctance. A good-natured joke classified me among the “dangerous specialists” (in Functional Analysis). I sometimes sensed in Cartan a more serious unspoken reserve - for some years I must have given him the impression of being someone prone to gratuitous and superficial generalisations. I saw him quite surprised to find in the first (and only) somewhat long essay I wrote for Bourbaki (on the differential formalism on varieties) a somewhat substantial reflection - he hadn’t been very enthusiastic when I offered to do it. (This reflection was useful to me again years later, by developing the formalism of residuals from the point of view of coherent duality.) (This reflection turns out to be useful to me years later, in developing the residue formalism from the point of view of coherent duality). I was most often left out of the Bourbaki congresses, especially during the joint readings of the drafts, being unable to keep up with the readings and discussions at their pace. It is possible that I am not really suited to collaborative work. Nevertheless, this difficulty that I had in integrating myself into the collective work, or the reservations that 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 of exception!). At no time did Cartan lose his equal kindness towards me, marked by cordiality and also by that his own special touch of humour which for me always remains inseparable from his person.

(6) My friends in *Survivre et Vivre* (11)

Among these friends, I should probably also count Pierre Samuel, whom I had previously known mainly through Bourbaki, just like Chevalley, and who (like him) played an important role in the *Survivre et Vivre* group. It does not seem to me that Samuel was so much inclined to this illusion of a superiority of the scientist. He contributed a lot, I feel, through the good sense and smiling cheerful mood he brought to the group work, the discussions, the relations with others, and also to gracefully took on the role of the ‘ugly reformist’ in a group inclined towards radical analyses and options. He remained in *Survivre et Vivre* for some time after I withdrew from it, acting as editor of the newsletter under the same name, and he left with good grace (to join *Amis de la Terre*) when he felt that his presence in the group had ceased to be useful.

Samuel was part of the same limited milieu as I was, but that did not prevent him from being one of the friends of those turbulent years from whom I believe I learned something (as bad a student as I was...). These ways of being, just like those of Chevalley, although they hardly resemble each other, were a better antidote for my ‘meritocratic’ inclinations than the most forceful analysis!

It seems to me now that for all the friends of that period from whom I learned something, it was more through their way of being and their sensitivity, which was different from mine, than through explanations, discussions, etc., that the “something” ended up being communicated. I remember especially, in this respect, in addition to Chevalley and Samuel, Denis Guedj (who had a great influence in the Survivre et Vivre group), Daniel Sibony (who kept himself apart from this group, while pursuing its evolution with a half-disdainful, half-sardonic eye), Gordon Edwards (who was a co-actor in the birth of the “movement” in June 1970 in Montreal, and who for years did wonders to maintain an “American edition” of the Survivre et Vivre newsletter, in English), Jean Delord (a physicist about my age, a fine and warm man, who had taken a liking to me and to the survivor microcosmos), 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 the scientists, and especially the mathematicians.

(7) The preceding paragraph is the first in the entire introduction that is heavily crossed out of my original manuscript, and overloaded/*surcharges*/ many times. The description of the incident, the choice of words, came at first in the wrong direction, against the current - a force was obviously pushing to pass over the incident quickly, as if to appease the conscience, to “pass on to serious things”. 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 quite similar to the one 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 mind, its reluctance to separate itself from an erroneous or inadequate vision (but where our person is in no way involved), which plays the role of “resistance”. The resistance is of an active nature, inventive if necessary to succeed in circumvent the issue/*noyer un poisson même sans eau*/, whereas the inertia of which I have spoken is a merely 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 moment by a feeling of relief from a weight, a feeling of **liberation**. It is not just a feeling - it is rather a sharp and grateful perception of what has just happened, which **is** a liberation.

(8) As will become clear in the following, this ambiguity did not in any way “dissipate in the aftermath of the 1970 revival”. There is a move of strategic retreat typical of the ‘me’, which writes off the period ‘before the awakening’, and immediately becomes the demarcation line for a blameless “after”!

(9) This is not entirely true, there is at least one exception among my closest colleagues, as will become apparent later. There has been a typical “laziness” of the memory, which often tends to “pass over” facts that do not “stick/*collent*” with a familiar and long-entrenched view of things.

(10) For example, I have lost count of the number of letters, on mathematical as well as practical and personal matters, sent to colleagues or former students whom I considered friends, but which never received a reply. It seems that this is not just a case of special treatment for me, but a sign of a change of morals, according to echoes in the same direction. (These, to be sure, concern cases where the person sending a mathematical letter was not known to the recipient, a prominent mathematician...)

(11) Aldo Andreotti, Ionel Bucur (14)

Of course, it is not impossible that I may have forgotten something - and my particularly “nerdy” disposition at the time would hardly have encouraged talking to me about such things, nor would it have led me to remember any such conversation that might 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 discussed (even without calling it by that name...), and it must be just as exceptional today, especially in the “beautiful world”.

Of my many friends in that world, apart from Chevalley, who must have been aware of this atmosphere of fear at least during the sixties, the only other one who I think 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 think). We remained very close until the “great turning point” in 1970, when I left the milieu we had been in and lost sight of them a bit. Aldo had a very lively sensitivity, which had not been blunted by his dealings with mathematics and with “nerds” like me. There was in him a gift of spontaneous sympathy for those he approached. This set him apart from all the other friends I knew in the mathematical community, or even outside it. With him, friendship always took precedence over common mathematical interests (of which there was no shortage), and he is one of the few mathematicians with whom I spoke a little about my life, and he about his. His father, like mine, was Jewish, and he 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 focused on the person, not on mathematical “potential” or reputation. He was one of the most engaging people I have ever had the good fortune to meet.

This evocation of Aldo brings to mind the memory of Ionel Bucur, who also passed away unexpectedly and before his time, and, like Aldo, was (I believe) missed even more as a friend whom one loved to meet again than as a partner in mathematical discussions. One sensed in him a kindness, alongside an uncommon modesty, a propensity to constantly step aside. It is 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 the idea did not occur to him to challenge responsibilities that he was far from coveting, but which his colleagues or the political authorities placed on his shoulders, which were robust I must say. He was the son of peasants (something that must have played a role in a country where the “class criterion” is important), and had good senses and simplicity. Surely he must have been aware of the fear that surrounds the man of fame, but surely it must also have seemed to him as a matter of course, as the natural attribute of a position of power. But I don’t think 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 echos I have received is well consistent with this.

(12) The word “next day/[*lendemain*]” here is to be taken literally, not as a metaphor.

(13) It is clear that the above description has no other pretension than to try to restore, as best I can, in concrete words, what this “fog” of memory conveys to me, which has not been condensed in any case that is even remotely precise and of which I could have given a somewhat “realistic” or “objective” description here. It would be a distortion of my point to suggest that colleagues who are reluctant to sit in the front row, or who do not have starring or eminent status, are necessarily bound to be distressed 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 colloquia or seminars. What is unreservedly true is that the status of ‘eminence’ creates a barrier, a gap vis-à-vis those without a similar status, and that this gap rarely disappears, even only in the space of a discussion. I would add that the subjective distinction (which seems to me to be very real) between the “front rows” and the “swamp” can in no way be reduced to sociological factors (social position, posts, titles, etc.) or even “status” or reputation, but that it also reflects psychological particularities of temperament or dispositions which are more delicate to identify. 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 have already talked about, I felt that I was “one of them”, although I was the only one who knew it, and I wasn’t even sure in the beginning that I would continue to do mathematics. Today I would be more inclined to sit in the back rows (on the rare occasions when the question arises).

(14) One might think that this contradicts the assertion that there is no chief, but this is not the case. It seems to me that for the elders of Bourbaki Weil was seen as the soul of the group, but never as a “chief”. When he was there and when he liked it, he became the “leader of the game” as I said, but he didn’t make the law. When he was in a bad mood he could block the discussion on a subject he disliked, even if it meant taking up the subject again at another meeting when Weil was not there, or even the next day when he was no longer obstructing. Decisions were taken unanimously by the members present, and it was by no means excluded (nor even rare) that one person was in the right against the unanimity of all the others. This principle may seem absurd for a group work. The extraordinary thing is that it worked!

(15) I did not have the impression that this ‘allergy’ to the Bourbaki style gave rise to communication difficulties between these mathematicians and myself or other Bourbaki members or supporters[*sympathisants*], as would have been the case if the spirit of the group had been that of a chapel, of the elite within elite. 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 1960s that I remember one of my friends referring to certain mathematicians whose work he was not interested in as “[*emmerdeur*]”. When it came to things about which I knew virtually nothing, I tended to take such assessments at face value, impressed by such offhand confidence - until I discovered that such an “[*emmerdeur*]” was an original and profound mind, which my brilliant friend had not been pleased with. It seems to me that among some Bourbaki members, an attitude of modesty (or at least reservation) in front of the work of others, when one is ignorant of this work or understands it imperfectly, has been eroded first, while still a “mathematical instinct” remained, a instinct that makes one feel a rich substance or a solid work, without having to refer to a name of reputation or fame. From the echoes that reach me here and

there[*de loin en loin*], it seems to me that both modesty and instinct have become rare things today in what used to be my mathematical milieu.

(16) Truth be told, many of the Bourbaki members probably had microcosmoses ‘of their own’, of varying sizes, apart from or beyond the Bourbakian microcosmos. But it is perhaps no coincidence that in my own case, such a microcosmos was formed around me only after I had ceased to be part of Bourbaki, and all my energy was invested in tasks that were personal to me.

(17) It was mainly outside the scientific milieu that I found warm responses, and an effective help, to the action I had embarked upon. Apart from the friendly support of Alain Lascoux and Roger Godement, I must note here above all that of Jean Dieudonné, who came to Montpellier to the hearing in the Correctional Court, to add his warm testimony to others in favour of a lost cause.

(18) I believe that this lack of discernment was not due to negligence on my part on these two occasions, but rather due to a lack of maturity, to ignorance. It was only about ten years later that I started to pay attention to the mechanisms of blockage, both in my own person and in those close to me or in students, and to measure the immense role they play in everyone’s life, not only at school or university. Of course, I regret for not having the discernment of greater maturity on these two occasions, but not for expressing my impressions clearly, well founded or not. When I noticed in such a case of working without seriousness, the act of pointing these things out as what they are seems to me necessary and beneficial. If, in yet another case, the conclusion I drew was hasty and unfounded, I was not the only one to be held responsible. The student thus shaken had the choice of either learning from it (which is perhaps what happened the first time), or of being discouraged, and perhaps then of changing profession (which is not necessarily a bad thing either!).

(19) Jesus and the twelve apostles (25)

From 1970 till today one student, Yves Ladegaillerie, has written and passed a thesis with me. The students of the first period are P. Berthelot, M. Demazure, J. Giraud. Mrs. M. Hakim, Mrs. Hoang Xuan Sinh. L. Illusie, P. Jouanolou. M. Raynaud, Mrs. M. Raynaud, N. Saavedra, J.L. Verdier. (Six of them completed their thesis work after 1970, therefore at a time when my mathematical availability was very limited.) Among these students, Michel Raynaud takes a special place, having found by himself the essential questions and notions which are the subject of his thesis work, which he moreover developed in an entirely independent way; my role as “thesis director” properly speaking was thus limited to reading the finished thesis, to setting up the jury[*jury*] and being part of it.

When it was for me to propose a subject, I was careful to limit myself to those to which I had a sufficiently strong relation to feel able, if necessary, to support the student’s work. A notable exception was the work of Mme. Michèle Raynaud on local and global Lefschetz theorems for the fundamental group, formulated in terms of 1-stacks on suitable étale sites. This question seemed to me (and indeed turned out to be) difficult, and I had no idea of the proof for the conjectures I was proposing (which could hardly be doubted). This work continued

in the early 1970s, and Mrs. Raynaud (as was previously the case for her husband) developed a delicate and original method without any assistance from me or elsewhere. This excellent work opens the question of an extension of Mrs. Raynaud's results to the case of n -stacks, which seems to me to represent the natural culmination, in the context of schemes, of theorems of the "weak Lefschetz" type. The formulation of the relevant conjecture here (which can hardly be doubted either) does however make essential use of the notion of n -stacks, the pursuit of which is supposed to be the main object of the present work*, as its name "Pursuing Stacks" indicates. We shall no doubt return to it in due course.

Another rather special case is that of Mrs. Sinh, whom I had first met in Hanoi in December 1967, on the occasion of a month-long course-seminar that I gave at the evacuated Hanoi University. The following year I proposed her the thesis topic. She worked under the particularly difficult wartime conditions, her contact with me being limited to an episodic correspondence. She was able to come to France in 1974/75 (on the occasion of the international congress of mathematicians in Vancouver), and to pass her thesis in Paris (before a jury headed by Cartan, and including Schwartz, Deny, Zisman and me.)

Finally, I must mention Pierre Deligne and Carlos Contou-Carrère, both of whom were somewhat of a student, the former around 1965-68, the latter around 1974-76. Both of them obviously had (and still have) unusual abilities/[*moyens*], which they used in very different ways and with very different fortunes too. Before coming to Bures, Deligne had been a student of Tits (in Belgium) - I doubt that he was a student of anyone in mathematics, in the usual sense of the term. Contou-Carrère had been a student of Santalo (in Argentina), and for a while of Thom! (more or less). Both had the prominence as a mathematician at the time when connections were established, except that Contou-Carrère lacked method and [*métier*].

My mathematical role with Deligne was limited to bringing him up to date, in a minor way, on the little I knew about algebraic geometry, which he learned as if he had always known it, and along the way, to raising questions to which he usually found answers, on the spot or in the next few days. These were the first works of Deligne that I knew. Those after 1970 (for him as well as for my 'official students') are known to me only through very scattered and distant echoes†.

My role with Contou-Carrère, according to what he himself says at the beginning of his thesis, was limited to introducing him to the language of schemes. In any case, I only followed from a distance the work he prepared as a doctorat d'état thesis in recent years, on a most current subject which is beyond my competence. It was after some misadventures in the wide world that Contou-Carrère was finally led recently, in extremis and (it now appears to me) unwillingly, to call upon my services to act as thesis director and to set up a jury. (This exposed him to the risk of appearing as a student of Grothendieck "after 1970", in a hypothesis that this can lead to serious disadvantages/[*inconvenients*]...). I have done this task as best I could, and it is likely that this is the last time I will have performed this function (at the level of a doctorat d'état thesis). I am all the more pleased, in this rather special circumstance, with the friendly assistance of Jean Giraud, who also took a month

* It should in fact be volume 3 of *Réflexions Mathématiques*, not the present volume 1 Harvest and Sowing - see Introduction, p.(v).

† Notably, I had the chance to look through some offprints by Berthelot and Deligne, which they were kind enough to send me.

or two out of his time to do a thorough reading of the voluminous manuscript, of which he made a detailed and warm report.

(20) It reminds me of the subject Monique Hakim took, which was not much more engaging really, 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.

(21) Perhaps it would be more accurate to say that for my temperament, it is the necessary **maturity** that 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 aspect of maturity is precisely a “yin-yang” balance with a “feminine” (or “yin”) dominance.

(Added later.) Even more than maturity, I see that it is a certain **generosity** that I have lacked in my teaching life up to now - a generosity that is expressed in a more delicate way than by availability of time and energy, and which is more essential. This lack did not manifest itself in a visible way (by an accumulation of situations of failure, let's say) in my first period of teaching, probably mainly because it was compensated 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, it seems to me that this lack is at least one of the reasons, and the one in any case that implicates me most directly, for the overall failure that I observe in my teaching at the research level (from the level of DEA onwards). See on this subject “Sketch of a programme “, par.8, and par.9 “Assessment of a teaching activity “, where the feeling of frustration on which this activity has left me for the last seven or eight years shows clear*.

(22) Perhaps not for much longer, since I have decided to apply for admission to the Centre National de la Recherche Scientifique, and thus put an end to a teaching activity in the academic community, which for some years has become more and more problematic.

(22') Even after 1970, when my interest in maths became sporadic and marginal in my life, I don't think there was any occasion when I recused myself when a student called on me to work with him. I can even say that, apart from a couple of 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 hardly cared about maths at all, except on the days when I went to the College. So the kind of availability I had to my pre-1970 students, and the extreme demand for work which was a main sign of it, would have made no sense to most of my later students, who were doing maths without conviction, as if by a continual effort they had to put on themselves...

* Compare also the note (23iv), added later.

(23) The Child and the master (26)

The term “transmit” here does not really correspond to the reality of things, which reminds me of a more modest attitude. This rigour is not something that can be transmitted, but at most to awaken or encourage while it is ignored or discouraged from a very young age, by the family environment as well as by the school and university. As far back as I can remember, this rigour has been present in my quests, those of an intellectual nature at least, and I do not think that it was transmitted to me by my parents, and even less by teachers, at school or among my mathematician seniors. It seems to me to be one of the attributes of **the innocence**, and thus one of the things that are given to everyone at birth. This innocence very early on “causes a lot of trouble[*en voit des vertes et des pas mûres*]”, which means that it is obliged to plunge more or less deeply, and that often there is hardly a trace of it in the rest of life. In my case, for reasons that I have not yet thought of probing into, a certain innocence has survived at the relatively benign level of intellectual curiosity, whereas everywhere else it has plunged deep, unseen and unknown! Perhaps the secret, or rather the mystery, of “teaching” in the full sense of the word, is to regain contact with this seemingly vanished innocence. But there is no question of finding this contact in the student, if it is not already present or found in the person of the teacher himself. And what is then ‘transmitted’ by the teacher to the student is by no means this rigour or innocence (innate in both), but a respect, a tacit revaluation of this commonly rejected thing.

(23’) However, for the past seven or eight years there has been another chronic “source of frustration” in my life as a mathematician, but one that has expressed itself much more quietly over the years. It ended up becoming apparent through an effect of repetition, of obstinate accumulation of the same type of “frustrating” situation in my teaching activity, and finally bursting into a sort of “enough!”, making me practically put an end to any activity in the so-called “research direction”. 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 least I describe this frustration and examine the role it played in my ‘return to maths’ (cf. par. 50. “The weight of a past”).

(23’’) The fear of playing (29)

This student had been working with me on a DEA ‘stage work’ for a whole year, and remained ‘contracted’ in his working relationship with me until the end. It was a frankly friendly relationship, marked by a mutual sympathy that could not be doubted. There was, however, this “stage fright”; this fear, the real cause of which was surely not the fear of my person, although it took on the appearance of one. I might not even have noticed it, if the student had not told me himself, probably to ‘explain’ more or less the reason for an almost complete blockage in his work during the year.

As happened with other students who, like him, had initially taken to a certain geometrical approach, the blockage appeared as soon as it was a question of doing a “work on pieces”, that is, to put statements in black and white, or just grasping the meaning and significance of those that I was providing and proposing to admit as the foundations of a language, as ‘rules of the game’. The ‘school’ reflexes almost always push the student confronted with a situation where he is supposed to ‘do research’, to adopt as a ‘given’, both vague and imperative, the implicit ‘rules of the game’ which are transmitted by the Master, and which it is above all not a

question of trying to make explicit, and even less of understanding. The concrete form that these implicit rules take are the ‘recipes’ of semantics or calculation, on the model of, say, the books of moles [*livres de taupe*] (or any other common teaching book). The student further expects the master to do a job of the form “demonstrate that”, which has been the only form of mathematical “thinking” he has encountered in his past experience. (I do not believe that the dispositions of most professional mathematicians, and of other scientists as well, are essentially different - except that the “master” is replaced by the “consensus” which sets the rules of the game at the moment and is considered as immutably given. This consensus also determines the ‘problems’ to be solved, between which each person feels free to choose as he or she pleases, even allowing him or herself to modify them in the course of his or her work, or even to invent new ones...). I have noticed that my entirely different attitude towards mathematical materials (that they need to be probed) and therefore also towards the students, almost certainly triggers a disarray, one of the signs of which is anxiety. Like all anxiety, this will tend to take on a visage, to project itself onto an external ‘reason’, plausible or not. One of the most common visages of anguish is precisely the fear.

Such difficulties did not arise in the early period of my teaching, except perhaps in the two cases where a ‘teacher-student’ relationship did not continue beyond a few weeks, and perhaps (I cannot say) in the case of the ‘sad student’, who perhaps felt ‘riveted’ to a subject which did not inspire him at all, even though he had every opportunity to change. In the case of the student (whom I have also mentioned) who remained afflicted by stage fright for a long time, it is clear that the reason for this was 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. Most of my students from 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 the first-year students that the anxiety I mentioned least interfered with the work of thinking. For many of these students, the astonishment at a different approach did not provoke anxiety or closure, but on the contrary openness and enthusiasm for doing interesting things, for once! From my observations, the effect of a few years of College on the student’s creative disposition is radical and devastating. It is a strange thing that in this respect the effect of the long years of lycée seems relatively harmless. Perhaps the reason is that the College years are at an age when the creativity innate in us **must** ultimately be expressed in personal work, or else it will be lost forever, at least at the level of creative work of an intellectual nature. It is surely by a healthy instinct that during my years as a student (also at the University of Montpellier) I practically abstained from setting foot in the classes, devoting almost all my energy to personal mathematical reflection.

(23’’) The two brothers (29)

The antagonism in this student took the form, from the outset, of a ‘class antagonism’: I was the ‘boss’ who had ‘power of life and death’ over his mathematical future, which I could decide at my pleasure... Of course, what happened could only confirm this vision, as I soon ended my (now painful) responsibilities towards this student. This put him in a delicate situation, in these times when it is not so easy to find a “boss”, especially when the subject is already chosen. In the other student, frustrated in his legitimate expectations, the antagonism took a similar form. I was felt to be the tyrannical ‘mandarin’, who could not tolerate any contradiction from those (students or lower-ranking colleagues) whom he regarded as his subordinates.

Such a 'class attitude' never manifested itself, if at all, in the relationship to my students of the first period. The obvious reason was that in the pre-1970 situation 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'. The figures speak for themselves: the eleven pupils who began working with me before 1970 were given lectureships on completion of their work, whereas none of the twenty or so students who worked more or less under my direction were given such a post. It is true that only two of them were motivated enough to do a doctorat d'état thesis (which worked excellently for both of them).

It is therefore not surprising that in this second period, certain ambivalences (whose deep origin remained hidden) took the form of class antagonism, of distrust (presented and felt as 'visceral') towards the 'boss'. For one of those who had more or less been like a pupil, friendly relations continued for about ten years without any apparently antagonistic episode, and yet marked by this same ambiguity, expressed by an attitude of mistrust, held 'in reserve' behind a manifest sympathy. I was actually never misled by this "mistrust" in command, which appeared to me above all as a reason that this friend thinks good to give himself, so as not to venture outside the well-defined domain he has chosen as his own, in his professional life as in his life altogether - something he is free to do without anyone (except himself at most!) asking him to answer for it...

These three cases are the only ones in my teaching experience where a certain ambivalence in the relationship between a student (or someone who is more or less a student) and myself was expressed in a 'class attitude'. Such an attitude appears particularly ambiguous when it manifests itself between colleagues within an academic 'body' where they both enjoy exorbitant privileges compared to the situation of the common mortals, privileges which make differences in rank (and salary) appear relatively insignificant... I have noticed, moreover, 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 the day before he was still complaining to others.

I detect a similar ambiguity in most, if not all, of the conflict situations I have witnessed within the mathematical world (and often outside it as well). Those who are 'established', whether or not their rank matches their expectations (justified or not), enjoy quite incredible privileges, which no other profession or career can offer. Those who are not established aspire to the same security and privileges (which does not necessarily prevent them from being interested in maths itself, and from sometimes doing beautiful things). In these times of tight competition for position and when the not-established is often treated as a slob, I have more than once felt the connivance between the one who enjoys humiliating and the one who is humiliated - and who swallows and crashes. 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 crashed himself and invested the others who have this power and use at pleasure. The one who takes pleasure in humiliating is also the one who takes his revenge and compensates (without ever wiping it out...) for a long humiliation he suffered and since a time long 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.

(23iv) The failure of teaching (1) (31)

Since these lines were written, I have had the opportunity to speak with two of my former pupils from after 1970, to try to examine with them the reason for the failure of my teaching at the research level at the

University of Montpellier. They told me that my tendency to underestimate the difficulty they might have in assimilating the techniques, which are familiar to me but not to them, had a discouraging effect on them, as they constantly felt they were falling short of the expectation I had of them. Moreover (and this seems to me to be of even greater significance), they sometimes felt frustrated when I “gave the game away” by giving them a statement in the form I had up my sleeves, instead of letting them discover it by their own means, at a time when they were already very close to it. After that, all they had to do was the ‘exercise’ (about which they were not passionate otherwise) of proving the statement in question. This is where the “lack of generosity” in me comes in, which I had noted in an earlier note (note 21), without elaborating on it. It is such disappointments, above all, that represent my personal contribution to the disappearance of interest in research in both of us, after an excellent start.

I realise 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 pupils who came to me at that time were motivated enough to find a charm even in a ‘long exercise’, which was an opportunity to learn the profession and a multitude of things along the way; and also, from a start-up statement which I was ‘giving the game away’, to come up with a whole bunch of others by their own means which went far beyond the first one. When I changed my place of teaching, I made the necessary adjustment in the choice of themes of thinking that I proposed to my new pupils, by choosing mathematical objects that could be grasped by an immediate intuition, independently of any technical baggage. But this indispensable adjustment was in itself insufficient, because of differences in **dispositions** (in my new pupils compared to those of yesteryear), even more important than a mere difference in **baggage**. This is in line with the observation made earlier (beginning of par.25) about a certain inadequacy in me for the role of the “master”, which emerged much more strongly in my second period as a teacher than in the first.

(23v) A particularly striking sign of this difference occurred in the ‘stranger episode’, which I have already talked about (section 24). While I received expressions of sympathy from many people who were complete strangers to me, I do not recall any of my pre-1970 students thinking of expressing such sympathy, let alone offering me any help in the action I was engaged in. On the other hand, it seems to me that there was no one of my students or ex-students from the second period did not express their sympathy and solidarity with me, and several of them were actively involved in the campaign I was conducting at local level. Beyond this restricted circle, the case of the 1945 ordinance also created a certain emotion among many students of the College who knew me at most by name, and a good number of them came to the Palais de Justice on the day of my citation, to show their solidarity. This last circumstance suggests, moreover, that the difference I found between the attitudes of my ‘before’ and ‘after’ 1970 students may express less the difference in the **relationship** between them and me than a difference in **mentalities**. Clearly, my ‘before’ students had become important personages, and it takes a lot for important persons to consent to be affected... But the episode of my departure from the IHES in 1970 and my involvement in militant action seems to show that there is more to it than that. This 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 engaging in. I think they must have been uncomfortable with it, all of them without exception. This again points to a difference in mentality, but which cannot be blamed solely on the difference in social status.

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

(25) Ethical consensus - and the control of information (32)

Apart from the conversation with Dieudonné, I cannot recall a single conversation in which I was a participant or witness, in my life as a mathematician, where the ethics of the profession, the "rules of the game" in the relations between members of the profession, were discussed. (I exclude here the discussions about the collaboration of scientists with the military apparatus, which took place in the early 1970s around the "Survivre et Vivre" movement. They were not really about the relations of mathematicians with each other. Many of my friends in Survivre et Vivre, including Chevalley and Guedj, felt that my emphasis 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 the very kind I am examining in the present reflection). These things were never discussed between students and me. The tacit consensus was limited, I believe, to this one rule, not to present other people's ideas as one's own, when one is aware of it. This is a consensus, it seems to me, that has existed since antiquity and has not been contested in all scientific milieus 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 the scientific world today, men in positions of prestige and power have discretionary control over scientific information. This control is no longer tempered, in the milieu I knew, by a consensus such as the one Dieudonné spoke of, which perhaps never existed outside the restricted group for which he was the spokesman. The scientist in a position of power receives practically all the information he deems useful to receive (and often even more), and he has the power, for a large part of this information, to prevent its publication while keeping the benefit of the information and rejecting it as "uninteresting", "more or less well known", "trivial", etc... I will return to this situation in note (27).

(26) The "founding members" of Bourbaki are Henri Cartan, Claude Chevalley, Jean Delsarte, Jean Dieudonné. André Weil. They are all still alive, except for Delsarte who died before his time in the 1950s, at a time when the ethics of the profession were still generally respected.

In rereading the text, I was tempted to delete this passage, in which I may give the impression that I am issuing certificates of "probity" (or non-probity) that the persons concerned have no need of, and also that it is not my responsibility to issue. The reservation that this passage may arouse is surely justified. I have kept it, however, for the sake of the authenticity of the testimony, and because this passage does indeed convey my feelings, even if they are out of place.

(27) The "snobbery of the young", or the defenders of purity (33)

Ronnie Brown shared with me a reflection of J.H.C. Whitehead (of whom he was a student), speaking of the "snobbery of the young, which says: a theorem is trivial because its proof is trivial". Many of my former friends

would benefit from meditating on these words. This “snobbery” is by no means limited to young people today, and I know more than one prestigious mathematician who practices it routinely. I am particularly sensitive to it, because the best I have done in mathematics (and elsewhere too...), the notions and structures I have introduced which seem to me to be the most fruitful, and the essential properties I have been able to derive from them by patient and obstinate work, all fall under this qualification of being “trivial”. (None of these things would have had much chance of being accepted for a CR note these days, if the author were not already a celebrity!) My ambition as a mathematician throughout my life, or rather my passion and joy, has always been to **find the obvious things**, and this is my only ambition also in the present book (including this introductory chapter...). The decisive thing is often 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 summarises and contains a situation that had not been seen or understood; if it is proved, it does not matter whether the proof is trivial or not, which is entirely incidental, or even whether a hasty and provisional proof turns out to be false. The snobbery of which Whitehead speaks is that of the jaded wine-lover who does not deign to enjoy a wine until he is sure that it has cost a lot of money. More than once in recent years, taken over by my former passion, I have offered the best I had, only to have it rejected by such smugness. I have felt a pain that remains alive, a joy that has been dashed - but I am not going onto the streets for all that, and I was not trying, fortunately for me, to put in a paper of my own.

The snobbery of which Whitehead speaks is an abuse of power and a dishonesty, not only an insensitivity or a closing to the beauty of things, when it is exercised by a man of power against a researcher at his mercy, whose ideas he is free to assimilate and use, while blocking their publication on the pretext that they are “obvious” or “trivial”, and therefore “without interest”. I am not even thinking here of the extreme situation of plagiarism in the common sense of the term, which must still be very rare in the mathematical milieu. 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 does not seem to me to be very different either. It is simply more comfortable, as it is accompanied by a feeling of infinite superiority over others, and by the good conscience and intimate satisfaction of the one who poses as an intransigent defender the intangible purity of mathematics.

(28) While writing the previous pages, I was initially divided between the desire to ‘get it off my chest’, and a concern for reservation or discretion. So I had remained in the “more-or-less”, which was surely the main reason for my discomfort, for the feeling that “I was not learning anything”. Since the lines noting this discomfort were written, I have twice rewritten those pages that had left me feeling discontented inside, getting more clearly engaged with them and to the bottom of things. In the process I did indeed “learn something”, and I also believe that I managed to put my finger on something important, which goes well beyond the case in question as well as my own person.

(29) I am referring here to an intense and long-term investment in mathematics, or in another 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 confront ourselves against a reticent substance and in the process also to renew and enrich our sense of identity with something truly personal to us - such an unfolding may well be an important step in an inner journey, in a process of maturation.

(30) For some years now, it is my children who have taken over the relay, of teaching a student who is sometimes reticent about the mysteries of human existence...

(31) I am thinking here of the “yang” form of the desire to know - that which probes, discovers, and names what appears... It is the **naming** that makes the awareness that has appeared irreversible, ineffaceable (even if it is later buried, forgotten, ceases to be active...). The “yin”, “feminine” form of the desire for knowing is in an openness, a receptivity, in a silent welcoming of a knowledge appearing in deeper layers of our being, where thought has no access. The appearance of such an openness, and of a sudden awareness that for a time erases all traces of conflict, comes as a grace again, one that touches deeply even though its visible effect is perhaps ephemeral. I suspect, however, that this wordless awareness which comes to us in this way, at certain rare moments in our lives, is equally ineffaceable, and its effect continues even beyond the memory we may have of it.

(32) One hundred irons in the fire, or: no point in drying up! (36)

When I was still doing Functional Analysis, that is, up until 1954, I sometimes persisted in a question that I could not resolve, even though I had no more ideas and was content to go round in circles of old ideas which, obviously, no longer ‘bites’. It was at least like this throughout a whole year, for the ‘approximation problem’ in topological vector spaces in particular, which was to be solved only some twenty years later by methods of a totally different kind, which could not but escape me at the point I was. 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 maths became painful for me! It took this experience to make me realise that there is no point in ‘drying up’ - that once a piece of work has come to a standstill, and as soon as the standstill is perceived, you have to move on to something else - even if it means coming back to the unfinished question at a more convenient time. This moment almost always comes soon - the question matures, without my pretending to touch it, by the mere virtue of working hard on questions that may seem to have nothing to do with it. I am sure that if I persisted then on the problem, I would not achieve anything 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 work on only one of them at a time, but by a kind of miracle that is constantly renewed, the work I do on one also benefits all the others, which are waiting for their time. So it has been, 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 the reflection continued...

(33) This does not mean that the moments in the work when paper (or the blackboard, which is a variant of it!) is absent, are not important in the mathematical work. This is especially true in the ‘sensitive moments’ when a new intuition has just appeared, when it is a question of ‘getting to know’ it in a more global, more intuitive way than by ‘working on pieces’, which this informal stage of thinking prepares. In my case, this kind of reflection is mostly done in bed or while taking a walk, and it seems to me that it represents a relatively small part of the total time spent on the work. The same observations apply to meditation work as I have practised it so far.

(34) The powerless embrace (37)

The word “embrace” is by no means a mere metaphor for me, and the language here reflects a deep identity. It may be said, not without reason, that it is not true then that an 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 the wonder is certainly absent, while it happens that a being is procreated in the raped woman. Surely the child born of such an embrace cannot fail to bear the mark of this, which will be part of the “package” that it inherits and which is up to it to undertake; this does not prevent a new being from being conceived and born, from being **created**, a sign of **power**. And it is also true that it happens that a mathematician whom I have seen full of self-importance, finds and proves beautiful theorems, signs of an embrace that has not lacked strength! But it is also true that if the life of such a mathematician is smothered by his smugness (as was the case to some extent in my own life, at a certain time), then the fruits of these embraces with mathematics are not a benefit to him or to anyone else. And the same can be said of the father as of the mother of the child born of rape. When I speak of “powerless embrace”, I mean above all the powerlessness to engender **renewal** in the one who, while he is only creating a **product**, believes he is creating something outside himself, without deep resonance in himself; a product which, far from liberating him, from creating harmony in him, binds him more closely to the fatuity in 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 a “creativity” which is in fact only an unrestrained **productivity**.

I have also had ample opportunities to realise that smugness, the inability to wonder, is in nature a true blindness, a blockage of a natural sensitivity and flair; if not a total and permanent blockage, then at least a manifest one in certain situations. It is 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 schoolboy! On other occasions he will perform prodigies of technical virtuosity. I doubt, however, that he is still 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 is surely no coincidence, with the prodigious increase in mathematical production over the last twenty years, and the bewildering profusion of new results which overwhelm the mathematician who would simply like to ‘keep up to date’ a bit, that there has hardly been (as far as I can judge from the echoes that reach me here and there) any real **renewal**, any large-scale transformation (and not only by accumulation) of any of the major themes of reflection with which I have been somewhat familiar. The renewal is not a quantitative thing, its investment cannot be measured in quantities, in the number of mathematician-days devoted to such and such a subject by such and such a “level” of mathematicians. A million mathematician-days is powerless to give birth to something as childish as the zero, which has renewed our perception of number. Only innocence has this power, a visible sign of which is the wonder...

(35) This “gift” is no one’s privilege, we are all born with it. When it seems to be absent in me, it is because I have driven it out myself, and it is up to me to welcome it back again. In me or in others, this “gift” expresses itself in different ways, sometimes less communicative, less irresistible perhaps, but it is no less present, though I cannot say whether it is less effective[*agissant*].

(36) Such a delicate sensitivity to beauty seems to me to be intimately linked to something I have had occasion to refer to as “demand” (towards oneself) or “rigour” (in the full sense of the word), which I described as an “attention to something delicate in ourselves”, an attention to a quality of understanding of the things 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 particular “beauty” of that thing.

(37) It is hardly necessary to add, I think, that this long-term work has revealed, one day after another, much more than the ‘result’ I have just delivered in lapidary form. It is no different for a work of meditation than for a mathematical work motivated by a particular question that one intended to examine. Very often the twists and turns of the journey 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’.

(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 readable by this friend of yesteryear, and by two or three others (especially Ronnie Brown) whom I thought might be interested. This letter, by the way, never received a reply, nor was it read by the addressee, who almost a year later (when I asked him if he had received it) expressed sincere astonishment that I should have thought even for a moment that he could read it, given the kind of mathematics that was to be expected of me...

(39) This is the period, among others, of the “Long march through Galois theory”, which is discussed in “Sketch of a Programme” (par. 3: “Number fields associated to a dessin d’enfant”).

(40) The visit (45)

The work on this dream is the subject of a long letter in English, to a friend and colleague who had dropped by my house the day before. Some of the materials used by the Dreamer, to bring this strikingly realistic dream out of seemingly nothingness were obviously borrowed from this short episode of a visit from a dear friend whom I had not seen for nearly ten years. Also, on the first day of work and against my past experience, I thought I could conclude that the dream that had come to me was about my friend, more than it was about me - that it was **he** who should have had the dream and not me! This was a way of evading the message of the dream, which (I should have known from my past experience) was not about anyone but me. I finally realised this in the night that followed the first, superficial phase of the work, which I took up again the next day in the same letter. I have not received, since that memorable letter, any sign of life from this friend, who was 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), and of which I no longer have a written record. I was particularly struck by this episode, among many others that show how any

sign of work that goes beyond a certain facade, and which brings to light simple facts, but which we generally tend to ignore - how any such work inspires unease and fear in others. I will come back to this later (see par. 47, “The solitary adventure”).

(41) Krishnamurti, or liberation turned into hindrance (45)

It would be inaccurate to say that the only thing I took away from this reading was a certain vocabulary, and a propensity to make it my own and to finally substitute it, as it were, for reality. If reading the first book of Krishnamurti's that I had in my hands struck me so much (and even then I only had the time to read a few chapters), it was because what he was saying totally overturned a number of things that were self-evident to me, and which I immediately realised were **commonplaces** that had always been part of the air I had been breathing. At the same time, this reading drew my attention, for the first time, to facts of great significance, 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 which until then had been incomprehensible and therefore (without my realising it until I discovered meditation five or six years later) generating anxiety. I could immediately see the reality of this flight all around me. This unravelled some of my anxieties, but did not change anything essential, because I could only see this reality in others, while thinking (taking it for granted) that it did not exist in myself, that 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 not at all curious about myself or others. This “key” can only **open doors** in the hands of the one who has the desire to enter. In my hands it had become an exorcism and a pose.

It was at the beginning of 1974 that for the first time I realised that the destruction in my life, which was following me step by step, could not only come **from** others, that there was something **in me** which attracted it, fed it, perpetuated it. It was a moment of humility and openness, conducive to renewal. This remained peripheral and ephemeral, because of the lack of in-depth **work**. This “something in me” still remained vague. I could see clearly that it was the lack of love, but the very idea of a work that would identify more closely where and how there had been a lack of love in me, how it manifested itself, what were its concrete effects, etc...- such an idea could not come to me from any of the milieux or people I had known up to that point, nor from Krishnamurti. (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 as a grace from the Holy Spirit.

Yet the humble truth that I had just learned at the end of a wave had given rise to a powerful wave of new energy, comparable to that which was to carry my first venture into meditation two and a half years later. This energy then did not remain entirely unused. A few months later, when! I was immobilised 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 from my mother. I realised very clearly that this vision had failed, that it was incapable of accounting for the reality of relationships between people, and of fostering personal development 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 has, however, made tangible and irreversible an awareness that was born a few

months before, and which remained at first vague and elusive. No book or other person in the world could have given me this awareness.

To have the quality of a meditation, this reflection lacked above all the look at my own person and my **vision of myself**, not only at my vision of the world, at a system of axioms where I was not really “in the flesh”. And also missing was a look at myself at **the instant**, the very moment of reflection (which was less than a real work); a look that would have made me detect nothing more than a borrowed style, a certain complacency in the literary aspect of these notes, a lack of spontaneity, of authenticity. However inadequate it may be, and relatively limited in its immediate effects on my relations with others, this reflection nevertheless appears to me as a stage, probably necessary given the starting point, towards the more profound renewal that was to take place two years later. It was then that I finally discovered meditation - and discovered that first unsuspected fact: **that there were things to discover about my own self** - things that almost completely determined the course of my life and the nature of my relationships with others...

(42) The salutary tear-away[*arrache*] (45)

“The striking event” in question was the discovery, at the end of 1969, that the institution I felt part of was partly financed by funds from the Ministry of the Armed Forces, something that was incompatible with my basic axioms (and still is today). This event was the first in a whole chain of others (each more revealing than the last!) which resulted in my departure from the IHES (Institut des Hautes Etudes Scientifiques), and from one thing to another a radical change of my milieu 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 audience in the scientific world, Dieudonné through the publication of the “Publications Mathématiques” (the first volume of which appeared in 1959, the year after the foundation of the IHES by Léon Motchane), and I through the “Séminaires de Géométrie Algébrique”. In those early years, the existence of the IHES was very precarious, with uncertain financing (through the generosity of a few companies acting as patrons) and with only a room lent (with visible ill humour) by the Thiers Foundation in Paris for the days of my seminar*. I felt a bit like a ‘scientific’ co-founder, with Dieudonné, of the institution to which I belonged, and I intended to end my days there! I had ended up identifying strongly with the IHES, and my departure (as a consequence of my colleagues’ indifference) was experienced as a sort of uprooting from another ‘home’, before proving to be a liberation.

With hindsight, I realise that there must have been a need for renewal in me already, I can’t say since when. It is surely not a simple coincidence that the year before I left IHES, there was a sudden swinging[*basculement*] in my investment of energy, leaving the tasks that the day before were still burning in my hands, and the questions that fascinated me the most, to launch myself (under the influence of a biologist friend, Mircea Dumitrescu) into biology. I was embarking on it in the provisions of a long-term investment within the IHES (which was in accordance with the multidisciplinary vocation of this institution). Surely this was only an outlet for the need for

* 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) does not say a word about those difficult beginnings, perhaps unworthy of the solemnity of the occasion, which was celebrated with great pomp last year.)

a much deeper 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 of these, 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, as well as my ex-colleagues at IHES, were finally entitled to all my gratitude!

(43) “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. I refrained from doing so, mainly because I realised later on that the form was afflicted by a deliberate intention to “be poetic”, so that its overall conception was too contrived, and many passages lacked spontaneity, to the point of being stiff and bloated at times. This form, bombastic at times, was a reflection of my disposition, where it was decidedly the “boss” that often led the dance - clumsily, of course...

(44) It goes without saying that I am ignoring here the possibility, which is by no means improbable to say the least, of the unexpected eruption of an atomic war or some other such rejoicing, which would put an abrupt end once and for all to the collective game called “Mathematics”, and to many other things...