Gilles Deleuze

Seminar on Leibniz: Philosophy and the Creation of Concepts

Lecture 02, 22 April 1980

Original transcription and augmented version, based on the YouTube,[1] par Charles J. Stivale[2]

Part 1

The last time, as we agreed, we had begun a series of studies on Leibniz that should be conceived as an introduction to a reading -- yours, eventually yours -- of Leibniz. So, to introduce a numerical clarification, I relied on numbering the paragraphs so that everything did not get mixed up. The last time, we created our very simple first paragraph which was a kind of presentation of concepts or of a certain number of Leibniz's principal concepts. Yes, as background to all this, there was a corresponding problem for Leibniz, but obviously much more general: namely, I remind you, what precisely does it mean to do philosophy. Starting from a very simple notion: to do philosophy is to create concepts, just as doing painting is to create lines and colors. Doing philosophy is creating concepts because concepts are not something that pre-exists, not something that is given ready made. In this sense, we must define philosophy through an activity of creation: creation of concepts. And this definition seemed to us perfectly suitable for Leibniz who, in fact, in an apparently fundamentally rationalist philosophy, is engaged in a kind of exuberant creation of unusual concepts of which there are few such examples in the history of philosophy, very few examples.

And in all this first part, in which I tried to cause a certain number of concepts signed Leibniz to emerge, in fact, if once again concepts are the object of a creation, then one must say that these concepts are signed. There is a signature, not that the signature establishes a link between the concept and the individual that creates it, the philosopher who creates it, it's much more: the concepts themselves are signatures. Fine, so, the entire first paragraph caused a certain number of properly Leibnizian concepts to emerge. The two principal ones that we discerned in the course of the previous meeting, and here, I'll won't be taking them up again because you will understand yourself, those who weren't here, these were *inclusion* and *compossibility*. There are all kinds of things that are included in certain things or enveloped in certain things. *Inclusion, envelopment.*[3] Then, the completely different, very bizarre concept of compossibility: there are things which are possible in themselves, but that are not compossible with another. There we are, we discerned all these concepts.

Today, I would like to give a title to this second paragraph, this second inquiry on Leibniz; I would like to give the title, "Substance, World, and Continuity" [*Deleuze repeats this*]. If we manage to state what all that is, we'll then see for the rest. The purpose of this second paragraph, its intention, is to analyze more precisely these two major concepts of Leibniz: Inclusion and Compossibility, what does that mean?

In fact, it's at the point where we ended the last time, we found ourselves faced with two problems, we found ourselves facing two Leibnizian problems. The first is that of inclusion. In what sense? We saw that if a proposition were true, it was necessary in one way or another – but I already insist on this "in one way or another" – in one way or another the predicate or attribute had to be contained or included not – although we could state it like this in a quick way -- not in the subject, but in the notion of the subject. [*Pause*] If a proposition is true, the predicate must be included in the notion of the subject. Let's allow ourselves the freedom to accept that and, as Leibniz says, and if I say at that point Adam sinned, the sin, the sinner, had to be contained or included in the individual notion of Adam. Everything that happens, everything that can be attributed, everything that is predicated – this is a philosophy of predication – everything that is predicated about a subject must be contained in the notion of the subject. Faced with such a strange proposition -- about which I tried the last time to indicate certain reasons why Leibniz supports and proposes this, we'll come back to this later, so for those who weren't here the last time, this is isn't terribly important; you know, we'll come back to them in some ways – here, if one accepts this kind of Leibnizian gamble, one finds oneself immediately faced with problems.

Specifically if any given event that concerns a specific individual notion, for example, Adam, or Caesar -- Caesar crossed the Rubicon, it is necessary that crossing the Rubicon be encompassed, contained, included in the individual notion of Caesar – fine, great, O.K., I suppose, we are quite ready to yes, to support Leibniz. But if we say that, fine, once again, I indeed wish to insist that we cannot stop: if a single thing is contained in the individual notion of Caesar, like "crossing the Rubicon," then it is quite necessary that, from effect to cause and from cause to effect, the totality of the world be included in this individual notion since, in fact, "crossing the Rubicon" itself has a cause that must also be contained in the individual notion, etc. etc., etc., to infinity, both ascending and descending. At that point, the entire Roman empire which, generally speaking, results from the crossing of the Rubicon, the rise of the Roman Empire, as well as all the consequences of the Roman Empire -- in one way or another, all of this must be included in the individual notion of Caesar such that every individual notion will be inflated by the totality of the world that it expresses. It expresses the totality of the world. There we see the proposition becoming stranger and stranger.

And for us, there are always delicious moments in the history of philosophy, and one of the most delicious of these came at the far extreme of reason -- that is, when reason or rationalism, pushed all the way to the end of its consequences, engendered and coincided with a kind of delirium that was a delirium of madness. At that moment, we witness this parade, this kind of procession, a parade, these betrothals, in which the same thing that is the most rational, in which the most rational is pushed to the far end of reason is also delirium, but delirium of the purest madness. Thus, each individual notion – you, me, Caesar, no matter, none… here, at this level, there is no… it's not because this is an historical personage, not us, that's not it – this is valid for every individual notion. If it is true that the predicate is in the notion of the subject, included in the notion of the subject, each individual notion must express the totality of the world, and the totality of the world must be included in each notion. We saw that this led Leibniz to an extraordinary theory that is the first great theory in philosophy, the first great theory of perspective or point of view since each individual notion will be said to express and contain the world; yes, but from a certain point of view which is deeper, notably it is subjectivity that refers to the notion of point of view and not the notion of point of view that refers to subjectivity. This is going to have many consequences on philosophy, starting with the echo that this would have for Nietzsche in the creation of a so-called perspectivist philosophy.

So, so, so, look, so then, the first problem is this: this first problem, [*several unclear words*], fine, in saying that the predicate is contained in the subject, as we saw the last time, we assume that this brought up all sorts of difficulties, specifically: can relations be reduced to predicates, can events be considered as predicates, etc., etc.? But let us accept that anyway. Whether the predicate is contained in the subject, I understand this at the extreme, that is even quickly understood, independently of the question of knowing if it's true or false. But once again, this question is entirely devoid of meaning since truth or falsity has no relation to a system of concepts. So, one first has to understand Leibniz's concepts, and once we've understood them, I believe that there's not chance of going wrong. These are simply a strange set of concepts. We can find Leibniz to be wrong only starting from a set of conceptual coordinates from Leibniz's own concepts, that goes without saying.

So, so, do you understand? To say that a true proposition is one for which the attribute is contained in the subject, we see quite well what that can mean, on what level? We indeed see what that might mean on the level of truths that we are going to call precisely truths of essences. Truths of essences, of the kind, for example, whether they're metaphysical truths, what Leibniz calls metaphysical truths, concerning God, for example, or else to speak about things that will appeal to you more, mathematical truths. If I say 2+2=4, I can imagine -- there is quite a bit to discuss about that -- but I immediately understand what Leibniz meant, always independently of the question of whether he is right or wrong; we already have enough trouble knowing what someone is saying that if, on top of that, we wonder if he is wrong or if he is right, you understand, then there is no end to it, that makes no sense.

So, each of us understand well what the means. 2 + 2 = 4 is an analytical proposition. I remind you that an analytical proposition is a proposition for which the predicate is contained in the subject or in the notion of the subject, specifically it is an identical proposition or is reducible to the identical. *Identity of the predicate with the subject.* In fact, I can demonstrate, Leibniz tells us, I can demonstrate through a series of finite procedures, a finite number of procedures or operations, I can demonstrate that [*Pause*] 4, by virtue of its definition, and 2 + 2, by virtue of their definition, are identical. [*Pause*] Fine. Can I really demonstrate it, and in what way? Leibniz, the great mathematician, tells us that he can prove this. Fine. I do not pose the problem of how, etc. Once again, what interests me is that, generally we understand what that means: the predicate is encompassed in the subject, that means that, as a result of a finite set of operations, I can demonstrate the identity of one and the other.

Leibniz selects an example in a text, a little text called "On Freedom." He proceeds to demonstrate that every number divisible by twelve is by this fact divisible by six. Every duodecimal number, as he says, every duodecimal number is sextuple. Notice that in the logistics of the nineteenth and twentieth centuries, you will again find proofs of this type that, notably, made Russell famous. Leibniz's proof is very convincing: he first demonstrates that every number divisible by twelve, that divisible by twelve – and there, he proves this very well – that divisible by twelve equals, is identical to those divisible by two, multiplied by two, multiplied by three. It's not difficult. Every number divisible by twelve equals divisible by two [multiplied by] three. On the other hand, he proves that the number divisible by six is identical to that divisible by two multiplied by three. It's not easy to prove all that; that takes a lot of time, that takes… [*Deleuze does not finish this*]

In that way, what did he reveal? He revealed an inclusion since two multiplied by three is contained in two multiplied by two multiplied by three. You'll tell me, this is nothing. Fine, this is still an example that helps us understand on the level of mathematical truths that we can say that the corresponding proposition is analytical or identical, that is, the predicate is contained in the subject, namely, I can make – understand what that means; that literally means that I can make into an aggregate, into a series of determinate operations – here, I insist on this, a finite series of determinate operations – [*Pause*] I can demonstrate the identity of the predicate with the subject, or I can – which in the end comes down to the same thing -- cause an inclusion of the predicate in the subject to emerge. And that boils down to the same thing. I can display this inclusion, I can show it. Either I can demonstrate identity, or I can show inclusion.

He showed the inclusion when he showed, for example, which is not an identity -- a pure identity, that would be: any number divisible by twelve is divisible by twelve, but you see there, we are in another case of truth of essence: any number divisible by twelve is divisible by six -- this time he does not limit himself at proving an identity, he shows an inclusion resulting from a series of procedures, of limited, finite, well determined operations, one and then another, in this case, there are three. There we are, that's what truths of essence are. I can say that the analysis, the inclusion of the predicate in the subject is proven by analysis and that this analysis responds to the condition of being finite, that is, it only includes a limited number of operations, of well determined operations. Right? You'll tell me… I don't know what you'll tell me, but finally, this is necessary, believe me; trust me on this, saying that it's necessary for me to insist on all that.

But when I say that Adam sinned, or that Caesar crossed the Rubicon, what is that? That no longer refers to a truth of essence, it's specifically dated, Caesar crossed the Rubicon here and now, with reference to existence, since Caesar crossed the Rubicon only if he existed. [*Pause*] Then, this occurs here and now, 2 + 2 = 4, or each thing divisible by twelve is divisible by six, that occurs here and now, in all time and in all places. Thus, there are grounds entirely to distinguish truths of that we'll call of existence, to distinguish them from truths of essence.

The truth of the proposition "Caesar crossed the Rubicon" or "Adam sinned" is not the same type as 2 + 2 = 4. And yet, by virtue of the principles we saw the last time, and we saw that there were strong reasons that pushed Leibniz to say that, no less for truths of existence than for truths of essence, the predicate must be in the subject and included in the notion of the subject; included therefore for all eternity in the notion of the subject, including for all eternity that Adam will sin in a particular place at a particular time. This is a truth of existence. I am saying, no less than for truths of essence, for truths of existence, the predicate must be contained in the subject. Granted, but no less, that does not mean in the same way. And in fact, as we've seen, and this is our problem, here we have the difficulty that we've wanted to isolate, it's what difference, what great initial difference is there between truth of essence and truth of existence? Well, we sense it immediately; we are already capable finally of understanding it, of understanding a first great difference. Namely, for the truths of existence, Leibniz tells us, you know, that even there, the predicate is contained in the subject. The "sinner" must be contained in the individual notion of

Adam, just look: as if the sinner is contained in the individual notion of Adam, it's the entire world that is contained in the individual notion of Adam; if we follow the causes back and if we track down the effects, as it's the entire world, you understand that the proposition "Adam sinned" must be an analytical proposition, namely, the predicate “sinner” is contained in the subject, only in that case, the analysis is infinite. The analysis extends to infinity.

So, we ask ourselves, is Leibniz in the process of trying to pull something on us? We can’t exclude anything. Analysis extends to infinity, what could that even mean? In other words, that seems to mean this: in order to demonstrate the identity of "sinner" and "Adam," or the identity of "who crossed the Rubicon", “crossing the Rubicon,” and "Caesar," this time an infinite series of operations is required. It goes without saying that we aren't capable of that, or it appears that we aren't. Are we capable of making an infinite analysis? Here already we have Leibniz’s answer: yes, any proposition is analytical, only the propositions of existence refer to an infinite analysis. Is this that kind of word? Is a way to get oneself out of this? Really, is that a way of trying to pull something on us? In real life, then, infinite analysis, I’ll never manage that, I can’t. But Leibniz is quite formal: [no], you, us, men, are not able to do so. Thus, in order to situate ourselves in the domain of truths of existence, we have to wait for the experience. Fine, one must wait for the experience, but then why does he present this whole story that he just said about analytical truths, about analytical propositions? So, he adds: yes, but infinite analysis, on the other hand, not only is possible, but created in the understanding of God.

Does it suit us knowing that God, he who is without limits, he who is infinite, can undertake infinite analysis? We're happy, we're happy for him, but at first glance, we’ve reached the point where we ask ourselves, what is he in the process of talking about? I emphasize only that here we have our initial difficulty is: what is infinite analysis? [*Pause*] Any proposition is analytical, only there is an entire domain of our propositions that refers to an infinite analysis. So, what is an infinite analysis? So, we are hopeful: if Leibniz is one of the great creators of differential calculus or of infinitesimal analysis, undoubtedly this is in mathematics, and he always distinguished philosophical truths and mathematical truths, and so it's not a question for us of mixing up everything. But it's impossible to think that, when he discovers a certain idea of infinite analysis in metaphysics, that there aren't certain echoes in relation to a certain type of calculus that he himself invented, notably the calculus of infinitesimal analysis.

So, there is my initial difficulty: when analysis extends to infinity, what is it that… what type or what is the mode of inclusion of the predicate in the subject? In what way is "sinner" contained in the notion of Adam, once it is stated that the identity of sinner and Adam can appear only in an infinite analysis? So, what does infinite analysis mean, then, when it seems that there is analysis only under conditions of a well-determined finitude? How can analysis extend to infinity? [*Pause*] So, there we are. That's a tough problem.

Second problem, second problem: notice that already I just distinguished a first difference between truths of essence and truths of existence. I’ll sum this up: *In truths of essence, the analysis is finite; in truths of existence, the analysis is infinite.* That is not the only one, for there is a second difference. The second difference is between a truth of essence and a truth of existence according to Leibniz, it’s that *a truth of essence is such that its contradictory is impossible*, that is, it is impossible for 2 and 2 not to make 4. Why? For the simple reason that I can prove the identity of 4 and of 2 + 2 through a series of finite procedures. Thus 2 + 2 = 5 can be proven to be contradictory and impossible whereas Adam non sinner, Adam who might not have sinned, I therefore seize the contradictory of sinner, non-sinner. Adam non-sinner, this is possible. The proof is that, following the great criterion of classical logic -- and from this perspective Leibniz remains entirely within classical logic -- I can think nothing when I say 2 + 2 = 5, I cannot think the impossible, no more than I think whatever it might be according to this logic when I say squared circle. I cannot think 2 + 2 = 5, but I can very well think of an Adam who might not have sinned.

Truths of existence are called contingent truths. Caesar could have not crossed the Rubicon. We saw at the last meeting that this was the answer, in this regard, a splendid on from Leibniz, that registers this second difference between truths of existence and truths of essence, and his answer will be, yes, certainly, Adam could have not sinned, Caesar could have not crossed the Rubicon, etc., etc. Adam non-sinner was possible. [*Pause*] Only here it is: this was not compossible with the existing world. An Adam non sinner enveloped another world. This world was possible in itself, it would have been possible, this world was possible, a world in which Adam – understand what Adam means: it means the first man – a world in which the first man might not have sinned is a logically possible world, only it is not compossible with our world. That is, God chose – here we are going to see a very unusual notion by Leibniz, that will be choice – in a Leibnizian perspective, God chose a world such that Adam sinned. In other words, Adam non-sinner implied another world; this world was possible, but it was not compossible with ours.

So, why did God choose this world in which Adam sins and that is the source of all our unhappiness? Well, then, Leibniz goes on to explain it. But what I mean is that, so understand that at this level, the notion of compossibility becomes very strange: what is this relation, what is this relation of compossibility? What is going to make me say that two things are compossible and that two other things are incompossible? For example, if Adam hadn't sinned, that Adam non-sinner belongs to another world than ours, but suddenly Caesar might not have crossed the Rubicon either. You'll tell me, that makes no difference. That would have been another possible world. Both are not compossible. What is this very unusual relation of compossibility?

Understand that perhaps this is the same question as what is infinite analysis, but it does not have the same outline [*aspect*]. And here we can derive a dream from this, we can derive a dream from this, so we can have this dream, we can have it on several levels. Imagine this: you dream, and a kind of wizard is there who makes you enter a palace; are you following me? This palace... – so, I am insisting because, otherwise, you won't listen to me: I am only in the process of relating a famous text by Leibniz for which I'll provide the reference later, a very beautiful text which is the dream of Apollodorus; he invents a dream at random -- here we have Apollodorus going to see a goddess, and this goddess leads him into the palace, and looking more closely, this palace is composed of several palaces. Leibniz loved that, boxes containing boxes. In a really beautiful text what we are going to read, he explained, we'll see, he explained that in the water, there are many fish and that in the fish, there is water, and in the water of these fish, there are little fish of fish. It's always infinite analysis. The image of the labyrinth hounds him. He never stops talking about the labyrinth of continuity, the labyrinth of continuity.

Fine, so there we are, he is led toward a palace, and I realize that this palace is composed of palaces, and it has the form of a pyramid, the point up above, and it is endless. And I notice that each section of the pyramid constitutes a palace. Then, I look closer and, there inside, it's exactly like aquariums piled on each other; I come closer, and in these aquariums, there are thousands of little fish. And I look closer, and this is strange, [*Pause*] in the highest section of my pyramid, closest to the point, I see a character who is doing something. Right underneath, I see the same character who is doing something else in another location. Even underneath him, notice, as if all sorts of theatrical productions were playing, and yet completely different ones were playing simultaneously, in each of the palaces, with characters that have common segments. Where does that come from, these common segments? This is a famous text, a huge book by Leibniz called *Theodicy*, namely, God's justice, divine justice.

And there we are, at each level, you understand, what he means is that at each level, this is a possible world. God chose to bring into existence the extreme world closest to the point of the pyramid. How was he guided in making that choice? We shall see, we must not hurry since this will be a tough problem, what the criteria are for God's choice. But once we've said that he chose a particular world, this world implicated Adam sinner; in another world, either one can imagine Adam sinning, all that is simultaneous; in this version of the dream, everything is simultaneous: there is Adam sinning, but sinning in an entirely different way. [One can] imagine a variant, these are variants, so there, these are very interesting variants, or else one can conceive of not sinning at all. Each time there is a world; all these worlds are unfolding simultaneously. something else. Each of them is possible. They are incompossible with one another, only one can pass into existence.

And all of them attempt with all their strength to pass into existence. The vision that Leibniz proposes of the creation of the world by God becomes very stimulating. There are all these worlds that are in God's understanding, and each of which on its own presses forward pretending to pass from the possible into the existent. They have a weight of reality, as a function of their essences. As a function of the essences they contain, they tend to pass into existence. And this is not possible. Why? Because all these worlds are possible, each for itself, but they are not compossible with each other. Hence, existence is like a barricade (*barrage*). A single combination will pass through. Which one? You already sense Leibniz's splendid response: it will be the best one! What does "the best one" mean? Perhaps not the best one by virtue of a moral theory, but by virtue of a theory of games. And it's not by chance that here as well, Leibniz is one of the founders of statistics and of the calculus of games. Fine, so then, all that will get more complicated.

So then, what can we derive from this? What is this relation of compossibility? I just want to point out that a famous author today is Leibnizian. As concerns the question, what is this about then? As I was saying the last time, what does it mean for someone, for example, in 1980 to be able to say "I am Leibnizian", or if he doesn't say it, it's all the same since we all know it. So, what can that mean? What can it mean for someone today to say "I am Hegelian" or "I'm Spinozist"? I think that always means two things, one not very interesting and one very, very interesting. If I return to what I was saying the last time rather quickly about the relation of the philosophical concept with the scream, I said that, to some extent, the concept is precisely in a special relationship with the scream.

So, then, I am saying, there is an uninteresting way to be Leibnizian or to be Spinozist today, almost by job necessity; fine, there are people working on an author, but in fact, that settles nothing. I don't mean that this is bad because working on an author assumes that there are reasons, why this author rather than another, why does this particular one, why does this particular commentator feel at ease commenting about one philosopher rather than another? But there is another way of being or of making use of a philosopher. Fine, these are guys… This time, it's almost non-professional. And what I find amazing for philosophy is when a non-philosopher discovers a kind of familiarity that I can no longer call conceptual, but immediately seizes upon a kind of familiarity between his very own screams and the concepts of the philosopher. He doesn't need to be a philosopher for that. He could be, though; he could be a philosopher. For example, I am thinking of a letter late in Nietzsche's life, Nietzsche who, nonetheless, had read Spinoza early on and who says, in this letter, he says, "I just re-read Spinoza, I can't get over it! I can't get over it! I've finally understood, I've understood. This is my guy. I have never had a relation with a philosopher like the one I have had with Spinoza."

And that interests me all the more when it's from non-philosophers. When a novelist like the British novelist [D.H.] Lawrence expresses in a few words the way Spinoza overwhelmed him completely, there we have something interesting because he doesn't become a philosopher over that, thank God. What did he grasp? What does that mean? When Kleist discovers himself, he stumbles across Kant, he literally can't get over it. What is happening here? What is that kind of communication? I mean that this kind of communication, if it can occur between a great poet or a great literary writer and a philosopher, it can occur as well, it seems to be, between someone without much cultural background (*inculte*) and a philosopher. I believe that Spinoza shook up many readers, for example, with limited cultural background. It's very odd.

So, I am saying, let's consider… since we are talking about Leibniz, what could all this mean? There's an author who is well known today, an Argentinean, named Borges – how is that pronounced in … [French]? [*A student answers him*] Borges? … between the two, it's not pronounced either one way or the other -- anyway, you see that this author is, after all, an extremely learned author who read widely. But having read widely, you see his outlines, there we have him always talking about two things: the book that does not exist [end of the tape: that should be treated as a book that exists, that is going to be written and told as an existing book, and the labyrinth. He has no trouble showing that they are the same thing, that the non-existent book that exist and the labyrinth are the same. And, I am saying something obvious here: throughout his entire works, Borges is fundamentally and deeply Leibnizian. It's true in all his writing, but yet again, I take an example that I refer to you because this gives Borges a [modern] aspect, a kind of police tale.] He loved police stories, Borges, but so did Leibniz. In a book by Borges titled *Ficciones*, you find there is a short story called, a lovely title, "The Garden of Forking Paths," a beautiful text. So, I'll quickly read a few passages; I'll summarize the story: we have a Chinese spy… You'll see, you can, you recall, keep in mind the dream from earlier, the dream from the *Theodicy*, the famous dream from the *Theodicy*.[4]

Well, there you go, this time, it's a Chinese spy working for the Germans. [*Pause*]… -- No, I'm wrong. It's not that one. [*Laughter*]… Is that the one? Ah, no, no, I don't know anymore ... Yes, yes, yes, yes, it's this one. Yes -- So a Chinese spy who works for the Germans. He is pursued by an Irishman who wants to do him in. – You're following me, right? - He knows he's done for.

Why does he know this? You know, we are interested in this because it was foreordained, it was foreordained. Fine. It's inscribed in his individual notion that the Irishman will do him in. He tells himself, "oh well, I can save maybe ten minutes, fifteen minutes, two hours, a day, but that's it." He runs away, and he arrives at a house. Someone opens the door for him and says, "Well, what a coincidence, I'm a Sinologist." So, he comes in, and the Chinese spy says to him, "But, you know, my great ancestor, you must know him, my great Chinese ancestor is the one who is famous both for building a maze that has never been found and for having written an infinite book that's never been found". You see, this is Borges's perpetual theme, the infinite book and the labyrinth, and I'm adding, the infinite book and the labyrinth of continuity. There we are.

So, they talk, they talk, and the Sinologist explains to him, saying, "I've understood what your ancestor wanted to do. No one has found the labyrinth; no one has seen the book, but I've understood this quite well. " [*Deleuze quotes Borges and reads*] "I thought of a maze of mazes, of a sinuous, ever growing labyrinth, which would take in both past and future and would somehow involve the stars" (*Ficciones* p. 94). Fine, we can see, there is no need really to try too hard. This is the same signature; it's signed Borges, but it's signed Leibniz as well; but I can find sentences exactly like that in the *Theodicy*. It is "The Garden of the Forking Paths".

So, what is "The Garden of Forking Paths"? Well, [*Pause; Deleuze prepares to read again*]: "The book is a shapeless mass of contradictory rough drafts. I examined it once upon a time. The hero dies in the third chapter, while in the fourth he is alive" (*Ficciones*, p. 96) [*Pause*] "I received a letter fragment" -- the Sinologist is still speaking; according to this fragment, [which] was written by the old philosopher -- "'I leave to various futures, but not to all, my garden of forking paths.' I had no sooner reader this than I understood. understood almost immediately. 'The Garden of Forking Paths' was the chaotic novel itself [of the old Chinese man]. The phrase 'to various futures'" – "'I leave to various futures, [but not to all], my garden of forking paths'" -- "the phrase ' to various futures, [but not to all]' suggested the idea of the bifurcating in time, not in space. Rereading the whole work confirmed this theory. In all fiction" --- this is the essential passage -- "In all fiction, when a man is faced with alternatives, he chooses one at the expense of others." -- For example, if someone dies, well, he dies; we adopt, we choose this hypothesis. -- "In [the fiction of] the almost unfathomable Ts'ui Pên" -- he is the Chinese ancestor -- "he chooses – simultaneously – all of them" -- he adopts them all simultaneously -- "He thus *creates* various futures, various times which start others that will also in their turn branch out and bifurcate … This is the cause of the contradictions in the novel. Fang, let us say," [*Deleuze repeats to himself*] "Fang, let us say, has a secret. A stranger knocks at his door. Fang makes up his mind to kill him" – in parentheses, this is the same situation as the one the story is in the process of the process of telling -- "Fang makes up his mind to kill him. Naturally, there are various possible outcomes: [*Deleuze says* "colon"] Fang can kill the intruder; the intruder can kill Fang; both can be saved; both can die, and so on, and so on. In [the great] Ts'ui Pên's work, all the possible solutions occur; each one being the point of departure for other bifurcations" (*Ficciones*, p. 98).

Fine. This is absolutely Leibniz's world; the is the world of compossibilities. But is this really so astonishing, after all? The idea of the Chinese philosopher being involved with the labyrinth is an idea of Leibniz's contemporaries, appearing in mid-17th century. There is a famous text by a philosopher contemporary with Leibniz, namely Malebranche that is a discussion with the

Chinese philosopher, with some very odd things in it.[5] Leibniz also quotes Confucius quite often, he quoted him a lot; he's fascinated by the Orient. Whereas Borges imitates all that, he really made a kind of copy that conformed to Leibniz's thought with an essential difference; notice the difference between Borges and Leibniz, and there's only one: for Leibniz – but I'm afraid that it might be Borges who is right – for Leibniz, all the different worlds, all the different worlds in which sometimes Adam is sinning in one way, sometimes sinning in another way, sometimes not sinning at all, etc., this entire infinity of worlds exclude… [*End of the cassette; the following text is from the Web Deleuze recording*] each other, they are incompossible with each other, such that they conserve a very classical principle of disjunction: it's either this world or some other one. Whereas Borges places all these incompossible series in the same world, allowing a multiplication of effects. Leibniz would never have allowed incompossibles to belong to a single world.

Part 2

Why? I am just stating – *end of Web Deleuze text*] our two difficulties: the first one is: "what is an infinite analysis?", and the second is how do our two labyrinths, the labyrinth of infinite analysis and the labyrinth of compossibility, "what is this relationship of incompossibility?" since, once again, most of the commentators on Leibniz, to my knowledge in any case, in the long run attempt, in a more or less complicated way, to link compossibility in a simple principle of contradiction. They conclude finally that there would be a contradiction between Adam non sinner and our world. But Leibniz's evidence (*la lettre*) already appears to us, the evidence of what he is writing, such that this would not be possible. It's not possible since, once again, Adam non sinner is not contradictory, is not contradictory in itself and the relation of compossibility is absolutely irreducible to the simple relation of logical possibility. So, trying to discover a simple logical contradiction would be once again to situate truths of existence within truths of essence. Here, I don't think one can… Henceforth it's going to be very difficult to define compossibility.

So, we are still remaining within this paragraph on substance, the world, and continuity, I would like to ask the question, what is infinite analysis? I ask you here, today I am asking you to remain extremely patient. All this will then become clearer because I am returning to a topic I mentioned at the last meeting, namely: one has to be extremely wary of Leibniz's texts because these texts are always adapted to correspondents, to a given audience, and if I again take up his dream, I must change it, and a variant of the dream, even within the same world, would result in levels of clarity or obscurity such that the world might be presented from one point of view or another. As a result, for Leibniz's texts, we have to know, once again, to whom he addresses them in order to be able to judge them.

Here is a first kind of text by Leibniz in which he tells us that, in any proposition, the predicate is contained in the subject. Only it is contained either in act -- actually -- or virtually. The predicate is always contained in the notion of the subject, but this inherence, this inclusion, this inherence is either actual or virtual. Notice that we would like to say that all this works fine. Let us agree that in a proposition of existence of the type Adam sinned, Caesar crossed the Rubicon, the inclusion is only virtual, specifically sinner is contained in the notion of Adam, but is only virtually contained. Fine.

Second kind of text: the infinite analysis in which sinner is contained in the notion of Adam is an indefinite analysis, [*Pause*] it's indefinite, that is, I can move back from sinner to another term, then to another term, etc., exactly as if I then have "Adam sinned" would be of the type 1 = 1/2 + 1/4 + 1/8, etc., etc., etc., etc., to infinity. This would result in a certain status: I would say that infinite analysis is virtual analysis, an analysis that goes toward the indefinite. There are texts by Leibniz saying that, notably in the *Discourse on Metaphysics*, but in the *Discourse on Metaphysics*, Leibniz presents and proposes the totality of his system for use by people with little philosophical background.

I choose another text that thus seems to contradict the first. In a text reserved for a more use, the text, "On Freedom," Leibniz uses the word "virtual," but quite strangely; it's not regarding – and here I am committed to this text because it allows us at least to denounce false interpretations – for he uses the word "virtual", but he does not use this word regarding truths of existence; he uses it regarding truths of essence. This text is already sufficient for me to say that it is not possible for the distinction truths of essence-truths of existence to be reduced to saying that in truths of existence, inclusion would only be virtual, since virtual inclusion is one case of truths of essence. In fact, you recall that truths of essence refer to two cases, there are two cases of truths of essence: the pure and simple identity in which we demonstrate the identity of the predicate and the subject, and the discovery of an inclusion of the type – I've given an example -- every number divisible by 12 is divisible by 6; I demonstrate or show the inclusion of 2 multiplied by 2 multiplied by 3… no, 2 multiplied by 2 within 2 multiplied by 2 multiplied by 3, I demonstrate the inclusion in the wake of an operation, a series of finite operation. And it is for the latter case that Leibniz says: I have discovered a virtual identity. Thus, it is not enough to say that infinite analysis is virtual.

Can we say that this is an indefinite analysis? No, because an indefinite analysis would be the same as saying that it's an analysis that is infinite only through my lack of knowledge, that is, I cannot reach the end of it. Henceforth, God himself then, God with his understanding, the understanding of God, God would reach the end. Is that it, that it does not have a limited consciousness, isn't subordinate to limited conditions of consciousness? Is that what Leibniz meant? The answer is formal: here again, no, it's not possible for Leibniz to mean that because the indefinite never existed in his thinking. I believe that here, there are notions that are incompatible, anachronistic. Indefinite is not one of Leibniz's gimmicks [*trucs*]. Nothing in Leibniz's texts can be interpreted starting from the notion of the indefinite. [*Pause*]

What is the indefinite, rigorously defined? What differences are there between *indefinite* and *infinite*? The indefinite is the fact – I am providing a very weighty definition, it seems to me, but that attempts to be rigorous – it's the fact that I must always pass from one term to another term, always, without stopping, but without the following term at which I arrive pre-existing. It is my own procedure that consists in causing creation. If I say 1 = 1/4 + 1/8, etc. .., we must not believe that this "etc." pre-exists, it's my procedure that makes it appear each time, that is, the indefinite exists in a procedure through which I never stop pushing back the limit that I confront. Nothing pre-exists. It's what Kant will express later; to my knowledge, Kant will be the first philosopher to give a status to the indefinite, and this status will be precisely that the indefinite refers to an aggregate that is not separable from the successive synthesis that runs through it, it's not separable from the successive synthesis that runs through it, that is, the terms of the indefinite series do not pre-exist the synthesis that goes from one term to another. Fine.

Leibniz is not familiar with that, and moreover, to him, the indefinite seems purely conventional or symbolic – why? Because if there is something… If we try to say, what creates the family resemblance of 17th century philosophers, there is an author who stated this quite well when he devoted himself… He didn't spend much time on it, but it was [Maurice] Merleau-Ponty. Merleau-Ponty has a beautiful expression; He wrote a small text on 17th century classical philosophies, so-called classical philosophies,[6] and he tried to characterize them in a lively way, and said that what is so incredible in these philosophers, and about which this was kept entirely, completely secret, is an innocent way of thinking starting from and as a function of the infinite. That's what the classical century is, an innocent way of thinking starting from the infinite. I would ask, why does this phrase by Merleau-Ponty seem very, very intelligent? Because this is much more intelligent than to tell us that it's an era in which philosophy is still confused with theology, because it's stupid to say that. One must say that if philosophy is still confused with theology in the 17th century, it's precisely because philosophy is not separable at that time from an innocent way of thinking as a function of infinity.

And what is the infinite? What differences are there between the infinite and the indefinite? It's this: the indefinite is virtual; in fact, the following term does not exist prior to my procedure having constituted it. It's of the virtual. What does that mean? *The infinite is actual, there is no infinite except in act.* So, there can be all sorts of infinites. Think of Pascal. [*Deleuze makes a brief, indistinct comment aside*] It's a century that, precisely due to having an innocent way of thinking as a function of the infinite, will not stop distinguishing orders of infinities, and the thought of orders of infinity is fundamental throughout the 17th century. And they'll have to wait a long time; It will fall back on our heads, this thought, it will fall back onto us at the end of the 19th and 20th centuries precisely with the theory of so-called infinite aggregates. With infinite sets, we rediscover something that worked, but from the bottom – we discover it on other bases, fine – but something is discovered that works in the depths of at the basis of classical philosophy, notably the distinction of orders of infinities.

And who are the great names in this research on orders of infinites? These are some great names in Classical philosophy, this obviously includes Pascal, it's obviously Pascal. It's Spinoza with a fundamental text that is the famous letter on infinity in which he distinguished all sorts of orders of infinity,[7] and it's Leibniz who would subordinate an entire mathematical apparatus to the analysis of the infinite and orders of infinities. Specifically, in what sense can we say that an order of infinities is greater than another? What does that mean, an infinite that is greater than another infinite, etc., etc.? An innocent way of thinking starting from the infinite, but not at all in a confused way since all sorts of distinctions are introduced.

And I am saying, Leibniz's analysis, in the case of truths of existence, it's obviously infinite. It is not indefinite. Thus, when he uses the words virtual, when he uses more of them, there is a formal text, there is a formal text that supports this interpretation that I am trying to sketch, it's a text taken from "On Freedom" in which Leibniz says exactly this: "When it is a matter of analyzing the inclusion of the predicate sinner in the individual notion Adam, [*Pause*] God certainly" – here, I'm quoting by heart, almost by heart, from Leibniz – "God certainly sees, not the end of the resolution, but the end that does not take place." Thus, in other words, even for God there is no end to this analysis.

So, you will tell me that it's indefinite even for God? No, it's not indefinite since all the terms of the analysis are given. If it were indefinite, all the terms would not be given, they would be given little by little, they would be given in a way that I pass from a to b, from b to c, etc. They would not be given in a pre-existing manner. In other words, in an infinite analysis, we reach what result? You have a passage of infinitely small elements one to another, you pass from an infinitely small element to another infinitely small element, the infinity of infinitely small elements being given. Of such an infinity, we will say that it is actual, not virtual, since the totality of infinitely small elements is given. You will say to me, well then, we can then reach the end! No, by its nature, you cannot reach the end since it's an infinite aggregate. The totality of elements is given, and you pass from one element to another, and thus you have an infinite aggregate of infinitely small elements. You pass from one element to another: you perform an infinite analysis, that is, an analysis without end, neither for you nor for God.

So, in what way does this analysis… and what do you see if you perform this analysis if you ar God? Let us assume that there is only God that can do it, you make yourself the indefinite because your understanding is limited, but as for God, he makes infinity. He does not see the end of the analysis since there is no end of the analysis, but he performs the analysis. Furthermore, all the elements of the analysis are given to him in an actual infinity. You see? So that means that sinner is connected to Adam. Notice how simple this becomes. Sinner is an element; I am calling sinner an element. It is connected to the individual notion of Adam by an infinity of other elements actually given. Fine, agreed, it's precisely the entire existing world, specifically all this whole compossible world that has passed into existence. So, we are reaching something here; have just a bit more patience, and everything will become quite clear.

So, follow me: what does that mean, "I'm performing the analysis"? I pass from what to what? I pass from Adam sinner to Eve temptress – this is another element -- from Eve temptress to the evil serpent, to the apple, fine, all these are my elements. Well, well, well, good. It's an infinite analysis, and it's this infinite analysis that shows the inclusion of sinner in the individual notion Adam. It appears we're not moving forward. What does that mean, the infinitely small element? Why is sin an infinitely small element? Why is the apple an infinitely small element? Why is crossing the Rubicon an infinitely small element? You understand? What does that mean, an infinitely small element? There are no infinitely small elements. So, what does that mean, an infinitely small element? An infinitely small element means obviously -- we don't need to say it, we've understood everything -- it means an infinitely small relation between two elements. It is a question of relations, not a question of elements.

In other words, an infinitely small relation between elements, what can that be? What have we achieved in saying that it is not a question of infinitely small elements, but of infinitely small relations between two elements? And you understand that if I speak to someone who has no idea, for example, of differential calculus, you can tell him it's infinitely small elements. Leibniz was right. If it's someone who has a very vague knowledge, I can tell him, oh well, no, you understand, right? Notice, I'm creating simultaneity here as well. Ah, no for you, you have to, you must not understand an infinitely small element; you have to understand infinitely small relations between elements, between finite elements. If it's someone who is very knowledgeable in differential calculus, I can perhaps tell him something else.

So, where have we reached? Infinite analysis that goes on to demonstrate the inclusion of the predicate in the subject at the level of truths of existence, does not proceed by the demonstration of an identity. It does not proceed by… so here, we have reached something: it does not proceed by the demonstration of an identity, even a virtual one. That's not it. Leibniz expresses himself in this way so that he can get away when someone doesn't understand what he means. But, then, in another drawer, he has another expression to give you: so, what is it? Identity governs truths of essence, but does not govern truths of existence; all the time he says the opposite, but that has no importance. Ask yourself to whom he says it. So then, what is it? What interests him at the level of truths of existence is not identity of the predicate and the subject, it's rather that one passes from one predicate to another, from one to another, and again on from one to another, etc.... from the point of view of an infinite analysis, that is, from the maximum of continuity.
In other words, it's identity that governs truths of essence, but it's continuity that governs truths of existence.

And what is the world, a world? A world is defined by its continuity. What separates two incompossible worlds? It's the fact that there is discontinuity between the two worlds. What defines a compossible world? It's the continuity of which it is capable. What defines the best of worlds? It's the most continuous world, and God chooses. The criterion of God's choice will be continuity, namely, of all the worlds incompossible with each other and possible in themselves, God will cause to pass into existence the one that realizes the maximum of continuity. Fine. Why is Adam's sin included in the world that has the maximum of continuity? We have to believe that Adam's sin is a formidable connection, that it's a connection that assures continuities of series. Why, for example, is there a direct connection between Adam's sin and the Incarnation and the Redemption by Christ? So, here, there are something like series that are going to begin to fit into each other across the differences of time and space; there are series that are going to interlock very, very strangely.

In other words, in the case of truths of essence, I demonstrated an identity in which I revealed an inclusion; in the case of truths of existence, I am going to witness a continuity assured by the infinitely small relations between two elements. Two elements will be in continuity when I will be able to assign an infinitely small relation between these two elements. You will ask me, how are you going to do that, assign an infinitely small relation between two elements? What does that mean then, an infinitely small relation? One has to… I have passed from the idea of an infinitely small element to the infinitely small relation between two elements, [but] that's not adequate, an infinitely small relation. We must not abandon Leibniz. What does that mean, an infinitely small relation between two elements? It doesn't mean anything. A greater effort is required.

That means, let's assume, that means a difference; since there are two elements, there is a difference between the two elements: between Adam's sin and Eve's temptation, there is a difference, granted, there is a difference. Only, there we are, what is the formula of the continuity? What is continuity? Continuity would be, and we could define it as the act of a difference in so far as it tends to disappear. *Continuity is an evanescent difference* (*différence évanouissante*). Notice, this is a new concept from Leibniz, the evanescent difference.

What does it mean that there is continuity between the seduction by Eve and Adam's sin? It means that the difference between the two is an evanescent difference, a difference that tends to disappear. So, you'll tell me, that's not working out so well; we're reconnected with what? Here, there is a new concept, evanescent difference. So I would say that, for the moment, before the final effort that we have to furnish today, that *truths of essence are governed by the principle of identity, truths* [*of existence*, omitted in French transcript] *are governed by the law of continuity, or evanescent differences,* and that comes down to the same. Thus between sinner and Adam, you will never be able to demonstrate a logical identity, but you will be able to demonstrate -- and the word demonstration will change meaning --, you will be able to demonstrate a continuity, that is, one or several evanescent differences. [*Pause*] If we succeed in understanding this just a small bit, we succeed in everything. We have succeeded in approaching the first problem, what infinite analysis is. An infinite analysis is an analysis of the continuity (*continu*) operating through evanescent differences. [*Pause*]

Having considered this, retain all of it in a corner of your mind, and what remains is: what does this mean, continuity, evanescent differences? All of you sense that, in fact, this refers to a certain symbolic, a symbolic of differential calculus or of infinitesimal analysis. But it's at the same time – here, this is precisely the case of a creation taking place twice, simultaneously – it's at the same time that Newton and Leibniz bring forth differential calculus. And the interpretation of differential calculus by the categories of evanescent differences is Leibniz's very own. In Newton's works, the interpretation of calculus, whereas both of them, truly here, invent it at the same time, the logical and theoretical armature is very different in Leibniz's works from Newton's, and the theme of the infinitely tiny difference conceived as… or at least, the differential conceived as evanescent difference, this is properly belonging to Leibniz, and Leibniz is enormously committed to this, and there is a great polemic between Newtonians and Leibniz.

So, our question here becomes narrower: what is this tale of evanescent difference? -- Does anyone have any chalk? I feel an urgent need for chalk, a little nub of chalk [*Inaudible replies*] There is some there? Ah good, good, good. I was hoping at the same time that you'd say there wasn't any! [*Laughter*]… And does anyone have an eraser? [*Various noises*] If there's no eraser, I cannot… Ah good, we have everything. -- So, listen up. You see this small symbol – I am speaking here really for those people who… You don't need to know anything, at all, at all, at all. So here is this little symbol that you have encountered in the dictionary. [*Pause; Deleuze speaks to someone nearby him*] Well, no, I'm in favor; I'm in favor; if you've all had enough and are leaving, I'd prefer that you do so all at once, in a group… [*A student:* How about a break? Five minutes?] You are tired, before… So, I am staying up here like this… [*Laughter*]

A minute more before we rest; I am simply saying, what does differential calculus mean, this calculus that pretends to handle the infinitely small? You will say to me: today, today, today, what's going on? Differential equations today are fundamental. There is no physics without differential equations. Even physics as a science, it existed to some extent in the seventeenth century, and from the Middle Ages, because there were antecedents of differential calculus; there was a kind of equivalent, there was calculations through exhaustion. But scientific physics only came to exist through calculation through exhaustion and through differential calculus. Today, there are so many problems because – oh, there aren't any more, I really don't know -- Mathematically, today, differential calculus has purged itself of any consideration of the infinite, quite simple, but this occurred quite late, this occurred at the end of the 19th century, the kind of axiomatic status of differential calculus in which it is absolutely no longer a question of the infinite. But that occurred at the same time, and that's not so useful for me because, since mathematics discovers the problem of the infinite in set theory, one cannot say that this is entirely resolved.

But if I place myself at the time of Leibniz, what's that like? How is differential calculus useful? To understand this well, there are some things that one must at all costs know, because even if you know nothing in mathematics, put yourself in the place of a mathematician – it's very difficult for him -- what is he going to do when he finds himself faced with the magnitude and quantities of different powers, and equations whose variables are to different powers, I mean an equation of the ax2 + y type? Ax2 + y, [*Deleuze draws with the chalk*] you have a quantity to the second power and a quantity to the first power. How does one compare them? It's rather hard. All of you know the story of commensurables and non-commensurable quantities. Then, in the 17th century, the quantities of different powers received a neighboring term, incomparable quantities. How does one compare a quantity at the second power with a quantity at the first power? There's no way to do it. The whole theory of equations collides in the 17th century with this problem that is a most fundamental one, even in the simplest algebra: what is differential calculus good for? Why did he invent it? What were they doing, these inventors, Newton, Leibniz?

Differential calculus allows you to proceed directly to compare quantities raised to different powers. Moreover, it is used only for that. There is no differential calculus applies to quantities at the same power. Differential calculus – there is no need to understand anything of this in order to recall this and even to intuit this -- differential calculus finds its level of application when you are faced with incomparables, that is, faced with quantities raised to different powers. Why? You have… I come back to my example, ax2+y; let us assume that by various means, you extract delta x and delta y, dx and dy. dx is the differential of x, dy is the differential of y. You see? What is that? We will define it verbally, conventionally; we will say that dx or dy is the infinitely small quantity assumed to be added or subtracted from x or from y. Now there is an invention! The infinitely small quantity, that is, it's the smallest variation of the quantity considered. And whatever you say, if you say, ah good, so it's the ten millionth, it's still even smaller. As we say, it is unassignable; one must not try to assign it, it's unassignable. By convention, it's unassignable. You'll ask me, so what is that, dx = what? Well, dx = 0; dy = what? dx = 0 in x, in relation to x; it's the smallest quantity, right, from which x might vary, and that equals 0. dy = 0 in relation to y. Understand?

The notion of evanescent difference is beginning to take shape. It's a variation or a difference, dx or dy; it is smaller than any given or attributable [*donnable*] quantity. It's the evanescent difference, smaller than any attributable quantity. There we are, it's a mathematical symbol; fine, they have other symbols. In a sense, it's crazy, in a sense it's operational. It's operational for what since it's equal to 0? Here is what is formidable in the symbolism of differential calculus: dx=0 in relation to x, the smallest difference, the smallest increase of which the quantity x or the unassignable quantity y might be capable, inferior to any given quantity; it's infinitely small.

Fine, agreed, dx = 0 in relation to an x, dy = 0 in relation to a y; only, miracle! dy over dx is not equal to zero, and furthermore: dy over dx has a perfectly expressible finite quantity. These are relative, uniquely relative. dx is nothing in relation to y, dy is nothing in relation to y, but then dy/dx is something. A stupefying, admirable, and great mathematical discovery. Good, why is that? How is this something? It’s surely something because you recall the example that we started from, ax2 + y, ax2 + by, let’s say, ax2 + by + c, for example, you have two powers from which you have two incomparable quantities: y2 and x. If you consider the differential relation, this is why the differential has no sense; there are only differential relations. The differential, by its nature, is dx or dy, it’s 0, completely unassignable. But the relation dy over dx is not 0; it is determined, it is determinable. [*Pause*]

So, the relation dy over dx gives you the means to compare two incomparable quantities that were raised to different powers since it operates a depotentialization, as is said, a depotentialization of quantities. [*Pause*] So, it gives you a direct means to confront incomparable quantities raised to different powers. From that moment on, all mathematics, all algebra, all physics will be inscribed in the symbolism of differential calculus.[8] There are no equations in physics that are not a differential equation. It’s with differential calculus, it’s odd, it’s with differential calculus, which is the most artificial symbolism that exists, because it consists in putting zeros into relation, it consists in putting absolute zeros into relation in such a way that the relation of these absolute zeros is undetermined and is distinguished from zero.

Well then, well then, when you have access to such a marvel, it’s very odd because a completely artificial symbol, dx or dy, is precisely made possible, this kind of co-penetration of physical reality and mathematical calculus. That is, we cannot get out of this simply by saying that it’s a simple convention. For it’s in the conditions of this convention that the physical reality and mathematical calculus, each of them, become adequate to the point that phenomena of heat, phenomena of heat when they are discovered in the 19th century, can only be so within a set of differential equations.

There we are, so we reach the final point, the simplest: we have to show how this works. Fortunately, there is a small text by Leibniz – not difficult for us, so we can understand everything – called, taken from Leibniz’s *Mathematical Writings* – so I have preferred choosing a text which was not philosophical – it’s three page, a small three-page note called “Justification of the calculus of infinitesimals” – that is, differential calculus -- “Justification of the calculus of infinitesimals through the calculus of ordinary algebra.” So here, I have to explain [this] to you because you will understand everything. It’s not that this is the basis of differential calculus; it’s indeed the case that Leibniz would like to show that differential calculus, well then, in a certain way, it inevitably already had functioned before being discovered, and that it couldn't occur otherwise, that couldn’t occur otherwise even at the level of the most ordinary algebra.

So how will he show this? -- You want a bit of a break before this effort, or else…? A little break?... [*Someone asks a reference question*] What? oh, là, là, *Mathematical Writings*, vol. IV, p. 104, Gerhardt edition, the grand Leibniz edition; it's obviously created by a German. It encompasses a great number of volume, and it's the Gerhardt edition [*Deleuze spells out the name*]… So, it's *Mathematical Writings*, vol. IV, p. 104 … [*Noises from the students*], 104. Fine, let's take a small break. [*Interruption of the recording*][9]

And so, and so,… [*Sound of chairs and students*] [*Deleuze's voice is heard at a distance from his chair, situated in front of the blackboard; hence, there is a pause, several indistinct comments between Deleuze and some students*] So, you see, you see, you understand… Here is a straight line [*Laughter*] which is perpendicular to the ground; I name it – I have to maintain the same letters he uses; this is his drawing – I name it X, ok? A-X. I assign two points that I name large A and large X. This isn't very complicated… [*Some indistinct comments by Deleuze*] There we are, I have two points, I've assigned two points. I consider another straight line… [*Pause*] that I call – what does he say? – well yes, it's E=Y; I assign two points E and Y, [*Some indistinct comments by Deleuze*] [*Pause*] From the E-Y line, I draw starting from a point that I name precisely [*indistinct word*] a perpendicular line, to A-X; the same thing, [*Pause*] I draw the perpendicular line, to A-X; you see? [*Pause*] Understood? [*Some indistinct comments by Deleuze*] I call E-A [*Pause*], I call E-A, yes, I call the point of encounter of two straight lines, I call it large C, I call it C, the segment A-C.

I call … [*Some indistinct comments by Deleuze*] I call X, the segment A-X. There we have all I have, I am writing C-E. I am quite aware that the two triangles – a rectangle, [*indistinct word*], a perpendicular, a right angle – that these two triangles are the similar. So, I can write C-E = [*indistinct word*] [*Laughter*]… small y. So, [*Deleuze talks to himself while adding letters to the drawing*] So, C-X, this is X minus C… I mean, X minus C over y [*Deleuze repeats this formula*], X minus C over y = C over [*indistinct word*] by virtue of the similarity of the two triangles.

So, it's quite simple. Assume now that E-Y is displaced while remaining parallel to itself [*Deleuze repeats this phrase*] [*Pause*] What's going to occur? It's easy: I can say as well that large E and large C tend to coincide in A, or that small e and small c tend to diminish more and more. [*Pause*] There we are. At the extreme, at the extreme, I no longer have anything but that figure: E has fallen into A… E, X, Y… e and c have diminished to infinity; large E and large C coincide in A. At that point, what happens? What happens is that c has diminished to infinity to the point that C coincides with A; in other words, X minus C = X, in this case. [*Pause*] When E and C coincide with A, I can write X minus C = X… [*End of the cassette*] [92:54]

Part 3

… [*Deleuze talks to himself at the board, indistinctly*] [*Pause*] C = 0, E = 0. So, I can write 0 over 0 = X over Y. [*Pause*] And nonetheless, these are not absolute zeros, as he says. Why? Because if they were absolute zeros, then x would be equal to y, and x is not equal to y, neither in one case, nor in the other, since it would be contrary to the very givens of the construction of the problem. You have the point in the rectangle, x is not equal to y. To the extent that, for this case, you can write x over y = c over e, c and e are zeros. Like he says in his language, these are nothings, but they are not absolute nothings; they are nothings respectively; specifically, these are nothings, but that conserve the relational difference. Thus, c does not become equal to e since it remains proportional to x over y, and x is not equal to y. Fine, it's quite simple. It's what is called a justification, if you will, conforming to the title, it's a justification of the old differential calculus, and the interest of this very simple text is that it's a justification through the easiest or most ordinary algebra, that is, this justification puts nothing into question about the specificity of differential calculus.

So, the text is quite beautiful; I'll read it slowly since you have already understood: [*As Deleuze reads, he comments on nearly each of the opening sentences*]: "Thus, in the present case," – so in the present case, that is, if the line, if the oblique tends toward A in its displacement – "So in the present case, there will be x minus c = x." – So, it coincides in A, and you have x minus c = x since c has cancelled itself – "You have x minus c = x; let us assume that this case" -- where there is a single triangle -- "is included under the general rule" -- where there were two triangles, you see? This is a pure supposition; that's how it was, a conventional hypothesis -- "let us assume that this case is included under the general rule, and nonetheless c and e" – small c and small e – "will not at all be absolute nothings [*Deleuze repeats these words*] since together they maintain the reason of [large] Cx to [large] Xy" – that is, the reason of Cx, that is x [*indistinct word*] to y – "or that which is between the entire sine or radius and between the tangent that corresponds to the angle in c" – this is more difficult [*here, Deleuze reads quite rapidly*] "We have assumed this angle always to remain the same. For if [small] c and [small] e were absolutely nothings in this calculus reduced to the case of coincidence of points [large] C, [large] E and [large] A, as one nothing has the same value as the other, then c and e would be equal" – if small c and small e, listen closely, as a function of the figure, if small c and small e were absolutely nothings in this reduced calculation for the case of coincidence of the points [large] C, [large] E and [large] A – "once it's stated that one nothing equals the other" – one nothing equals another nothing – "small e would equal, and the equation or analogy x over y = C over E would make x over y = 0 over 0 = 1, that is, we would have x = y which would be totally absurd since we have" – on this point, some water has fallen on my page, so I no longer know what we have, so I can't read – "So, so, small c and small e…" – again, there's a cut; that's how manuscripts are, what can you do? [*Deleuze makes several noises to himself while looking to find a spot to continue reading*]

Here we are: "So we find in algebraic calculus the traces of the transcendent calculus of differences (i.e. differential calculus), and its same singularities that some scholars have fretted about, and even algebraic calculus could not do without it if it must conserve its advantages of which one of the most considerable is the generality that it must maintain so that it can encompass all cases." – And the text goes on. In the end, it's not going to furnish many explanations. -- "It's exactly in this way that I can consider that rest [*repos*] is an infinitely small movement" – rest is an infinitely small movement – "or that the circle is the limit of an infinite series of polygons the sides of which increase to infinity."

What is there to compare in all these examples? We have to consider the case in which there is a single triangle as the extreme case of – so here, this becomes very, very important – as the extreme case of two similar triangles opposed at the vertex. So, in this regard, the text is crystal clear. What Leibniz demonstrated in this text – he does not say it formally, but this seems obvious to me – what he demonstrated in this text is how and in what circumstances a triangle can be considered as the extreme case of two similar triangles opposed at the vertex. Perhaps you sense that here, we are perhaps in the process of giving to "virtual" the sense that we were looking for in order to arrange the aggregate of Leibniz's texts. I could say that in the case of my second figure in which there is only one triangle, the other triangle is there, but it is only there virtually. It's there virtually since a contains virtually e and c distinct from a. Why do e and c remain distinct from a when they no longer exist? e and c remain distinct from a for a very simple reason: it's that they intervene in a relation with it, continue to exist when the terms have vanished. [*Pause*] It's in this same way that rest will be considered as a special case of a movement, specifically an infinitely small movement. In my second figure, xy, I would say, the triangle… I would say – I am both choosing terms that exist there from Leibniz, but borrowing from another text – I would say that it's not at all the triangle large C, large E, large A; it's not at all the case that the triangle has disappeared in the common sense of the word, but we have to say both that it has become unassignable, -- this is odd, this notion of unassignable -- and however that it is perfectly determined since in this case, c=0, e=0, but c/e is not equal to zero. c/e is a perfectly determined relation equal to x/y. Thus, it is determinable and determined, but it is unassignable. Likewise, rest is a perfectly determined movement, but it's an unassignable movement. Likewise, the circle is an unassignable polygon, yet perfectly determined.

You see what virtual means, once again. I would say, virtual no longer means at all the indefinite, and in this, all Leibniz's texts can be revived [*récupérés*]. He undertook a diabolical operation: he took the word virtual, without saying anything -- it's his right – without saying anything, he gave it a new meaning, completely rigorous, only he will not say it, he wouldn't say it in his texts. That no longer meant going toward the indefinite; rather, it meant unassignable, yet also determined. And that seems to me a conception of the *virtual* that is both quite new and very rigorous. Yet the technique and concepts were required so that this rather mysterious expression might acquire a meaning at the beginning: unassignable yet determined. And once again, it's unassignable since c became equal to zero, and since e became equal to zero. So, it's unassignable. And yet it's completely determined since c over e, specifically 0 over 0 is not equal to zero, nor to 1, it's equal to x over y. You see? Here I find moreover that he really had a professor-like genius, because in fact, proof that he won his bet, he was able, for example, to succeed in explaining to someone who never did anything but elementary algebra what differential calculus is. He assumed no a priori notion of differential calculus, and differential calculus, let me emphasize, would be something quite different, something quite different to manipulate.

And what do I draw from this for myself? All that we needed, we didn't need much more, was that the idea that there is a continuity in the world, that nonetheless takes on a starkly more concrete sense. It is no longer a matter of simply saying -- and here, it seems that there are too many commentators on Leibniz who make more theological pronouncements than Leibniz requires: they are content to say, well yes, infinite analysis is in God's understanding. -- And it is true, it is true according to the letter of his texts, this is within God's understanding. But it happens we have the artifice, with differential calculus, it happens that we have the artifice not to make ourselves equal to God's understanding -- that's impossible of course -- but differential calculus gives us an artifice so that we can operate a well-founded approximation of what happens in God's understanding. What happens in God's understanding so that we can approach it thanks to this symbolism of differential calculus, since after all, God also operates by the symbolic, not the same way, but it operates through symbols? certainly. Well, this approximation of continuity is what? It's so the maximum of continuity is assured when a case is given, the extreme case or [*Pause*]… the extreme case or the contrary can be considered from a certain point of view as included in the case first defined.

You define the movement, it matters little, you define the polygon, it matters little, you consider the extreme case or the contrary: rest, the circle that is stripped of any angle. Continuity is the institution of the path according to which, or following which the extrinsic case -- rest contrary to movement, the circle contrary to the polygon, whatever you want – the extrinsic case can be – so here, everything should become clear for you as if in a bolt of lightning – I would say, literally, there is continuity when the extrinsic case can be considered as included in the notion of the intrinsic case. He simply just showed how and why. You find exactly the expression of predication: the predicate is included in the subject.

The extrinsic case, once again, understand well. I call "general, intrinsic case" the concept of movement that encompasses all movements. In relation to this first case, I call "extrinsic case" rest or the circle in relation to all the polygons, or the unique triangle in relation to all the triangles combined. I undertake to construct a differential concept that implies precisely all the differential symbolism, I undertake to construct a concept that both corresponds to the general intrinsic case and which still includes the extrinsic case. I would say here, if I succeed in that, I can say that in all truth, rest is an infinitely small movement, just as I say that my unique triangle is the opposition of two similar triangles opposed at the vertex, simply, by which one of the two triangles has become unassignable. At that moment, there is continuity from the circle to the polygon and from the polygon to the circle, there is continuity from rest to movement, there is continuity from two similar triangles opposed at the vertex to a single triangle.

A parenthesis: all geometry, and here, believe me, especially since, as regards the State, I don't know if you recall, I referred to this, I didn't spend much time on it, I should have done so because it would be… When during the 19th century, in the mid-19th century, a very great mathematician named [Jean-Victor] Poncelet will produce, will preside over projective geometry in its most modern sense, he is directly Leibnizian.[10] Projective geometry is entirely based precisely on what is called, what Poncelet an his contemporaries called an axiom of continuity according to which, quite simply, if you take, for example, an arc of a circle cut at two points by a right angle, if you cause the right angle to recede, there is a moment at which it no longer touches the arc of the circle except at one point, it's the tangent, and a moment at which it leaves the circle, no longer touching it at any point. Poncelet's axiom of continuity claims the possibility, once again, of treating the case of the tangent as an extreme case, specifically it's not that one of the points has disappeared; it's that both points are still there, but virtual, and when they all leave, it's not that the two points have disappeared, they are still there, but both are virtual. This is the axiom of continuity that precisely allows any system of projection, any so-called projective system. Fine, here, mathematics will emerge from this, they will maintain that integrally -- it's a very formidable kind of technique.

Here, they have acquired the means -- but you see therefore the point at which we can almost complete our difficult problem; it's funny anyhow. Well, I don't know if you are going to be able to sense this, but there is something desperately comical in all that, but that will not bother

Leibniz at all, not at all. It seems to me, there again, that commentators, they get blocked by… but it's wrong for me to say this, in any case, I really don't know, it's very odd, very, very odd. – For from the start, we sink into a domain in which it's a question of showing that the truths of existence are not the same thing as truths of essence or mathematical truths. And to show it, either it's with very general propositions full of genius in Leibniz's works, but that leave us like that, God's understanding, infinite analysis, and then what does that amount to? And finally, when it's a question of showing in what way truths of existence are irreducible to mathematical truths, when it's a question of showing it concretely, all that is convincing in what Leibniz says is mathematical. It's funny, no? [*Silence, suppressed laughter*]

So, what does he have? But you understand, if you understand this, you will have understood how, what he would reply. There we are, a professional objector would say to Leibniz – everything had been said to him besides; what Leibniz had to endure! – an objector would arrive and say to him, oh, but Leibniz, are you losing it? (*ça ne va pas*, *la tête?*) You announce to us, you talk to us of the irreducibility of truths of existence, and you can define this irreducibility concretely only by using purely mathematical notions. So, here's what would Leibniz answer. He would reply – this would depend on his mood – [*Laughter*] he would reply, understand well, because this is normal because it's quite difficult: here we have Leibniz saying often, in all sorts of texts, people have always had me saying that differential calculus designated a reality. He states, I never said that; differential calculus is a convention; simply, as he says, it's a well-established convention. It's a notion that's already not convenient. So, Leibniz is enormously committed – and here, all Leibniz's texts have been quite precise on this -- differential calculus being only a symbolic system, and not describing a reality, but describing a way of treating reality.

What does that mean, a well-established convention? It's not in relation to reality that it's a convention, but in relation to mathematics. I mean, that's the misinterpretation not to make. First of all, convention. Differential calculus is a convention, it's symbolism, but in relation to what? It's symbolism in relation to mathematical reality, not at all in relation to real reality. It's in relation to mathematical truth that the differential system, that differential calculus is a fiction. He also used the expression "well-established fiction." It's a well-established fiction in relation to the mathematical reality. In other words, differential calculus mobilizes concepts that cannot be justified from the point of view of classical algebra, that's obvious, or from the point of view of arithmetic, that's obvious. Quantities that are not nothing and that equal zero, it's arithmetical nonsense. So, it has neither arithmetic reality, nor algebraic reality. It's a fiction.

So, in my opinion, it does not mean at all that differential calculus does not designate anything real; he would have said so. It means that differential calculus is irreducible to mathematical reality. It's therefore a fiction in this sense, but precisely in so far as it's a fiction, it can cause us to think of what exists [*l'existant*], insofar as it's a fiction in relation to mathematical reality. It can cause us to think of what is irreducible to mathematical reality, namely what exists [*l'existant*] in its reality. In other words, differential calculus is a kind of union of mathematics and what exists [*l'existant*], specifically it's the symbolic of what exists [*l'existant*], and it's because it's a well-established fiction in relation to mathematical truth that it is henceforth a basic and real means of exploration of the reality of existence. [*Pause*] Henceforth, you see what the word "evanescent" means, since it was my point of [departure]. "Evanescent difference" is when the relation continues whereas the terms of the relation have disappeared. The relation c over e whereas large C and large E have disappeared, that is, coincide with A. You have therefore constructed a continuity through differential calculus.

And here, Leibniz becomes much stronger in order to tell us: there we are, understand that in God's understanding – here then, he can really recreate theology with [*indistinct word*] – he can tell us, understand, in God's understanding, between the predicate sinner and the notion of Adam, well, there is a continuity. There is a continuity by evanescent difference to the point that when it created the world, God was only doing calculus [*ne fait que calculer*]. And what a calculus! Obviously not an arithmetical calculus, [Leibniz] has no need to say this. So, on this point, he will oscillate as well; he will oscillate between two explanations.

In short, God created the world by calculating. There is a famous expression by Leibniz, in Latin; in Latin it's prettier; it's much prettier, but in French, you prefer it in French, it's not so bad: God calculates, the world is created; God calculates, the world is created. There were are, admire the necessity of [*indistinct word*] entirely new in philosophy if you sufficiently like philosophy. The idea as God as player – and this is painful in the texts sometimes because there are too many mixtures (*mélanges*) -- the idea of God as player [*joueur*] can be found everywhere. If you say, "God created the world by playing/gambling", everyone says that. It's not very interesting, fine; one can always say it, but that's been said constantly. And it doesn't even mean the same thing. When someone tells you, "the world is on one of God's games", "God created the world by playing/gambling", you must not let him/her go, someone offering to you such an important secret. You must not let him/her go; you have to ask, "but which game?" Games do not resemble one another.

There is a famous text by Heraclitus; so here, we can still discuss this because when it's small segments of sentences, then it is a question of the child player who really constitutes the world. He plays, at what? What do the Greeks and Greek children play? What do they play? So, there are editions that say, "backgammon" (*au tric-trac*); there are other editions of Heraclitus that say "at palace", "palace", it's another game, fine. They can say that, but Leibniz would not say that. What is he saying when he says "God…" – What time is it? [*A student answers*] One o'clock? Oh, là, là! You must be beat! Well, I'm almost done – Leibniz wouldn't say that.

When he gives his explanation of games, he chooses two explanations. – You are going to see why this concludes our work today – He proposes… He had found lots of stuff (*trucs*) in an area, a small, yet completely complicated area of mathematics. The area of mathematics is the problems of paving, sitting astride mathematics and architecture. The problems of paving are not insignificant, these problems; this ought to be of interest to everyone, the problems of paving. A surface being given, with what shape is one to fill it completely? Moreover, then, there's a more complicated problem: if you take a rectangular surface and you want to tile it with circles, you do not fill it completely. With squares, do you fill it completely? That depends on the measurement. With rectangles? With equal or unequal rectangles? The problem gets more complicated: if you suppose two shapes, which of them combine to fill a space completely? If you want to pave with circles, with which other shape will you fill in the empty spaces? That's very interesting; one can plan these things ahead, there are formulae, there are lots and lots of things. Or you agree not to fill everything; you see that it's quite connected to the problem of continuity. But, if you decide not to fill it all, in what cases and with which shapes and which combination of different shapes will you succeed in filling the maximum possible? That puts incommensurables into play and puts incomparables into play, all that. That's [Leibniz's] passion, the problems of paving.[11]

When Leibniz says that God causes to exist and chooses the best of possible worlds, we have seen what he was in the process of… There, we will see that later because it's so complicated, but already we have, we're getting ahead; we understand Leibniz before he has spoken now because what is he in the process of saying, the best of possible worlds? That was the crisis of Leibnizianism, that was the reversal, the generalized anti-Leibnizianism of the 18th century. They could not stand the tale of the best of possible worlds. Voltaire and all them were correct, Voltaire was right. That is, they had arrived with a philosophical requirement that obviously was not fulfilled by Leibniz, notably from the political point of view. So, they could not forgive Leibniz.

But Leibniz, if one launches oneself into a pious approach, what did Leibniz mean by the world that exists is the best of possible worlds? He meant something very simple: as there are several worlds possible, they are simply not compossible with each other; God chooses the best, and the best is what? It's not the one in which suffering is the least. Rationalist optimism is at the same time an infinite cruelty, it's not at all a world in which no one suffers; it's the world that realizes the maximum of continuities. It's obvious, it's obvious that the circle, if I dare use a non-human metaphor, it's obvious that the circle suffers when it is no more than an affection of the polygon. This is even a word from mathematicians, an "affection". When rest is no more than an affection of movement, imagine the suffering of rest. Simply it's the best of worlds because it the one that realizes the maximum of continuity. Other worlds were possible, but they would have realized less continuity. This world is the most beautiful, the best, the most beautiful, the best, yes, the best and the most beautiful, the most harmonious, etc., uniquely under the weight of this pitiless phrase: because it realizes the most continuity possible. So, if that occurs at the price of your flesh and blood, it matters little.

And what complicates everything is that, as God is not only just, that is, pursuing the maximum of continuity, but as he is at the same time quite capricious [*d'une coquetterie*], he wants to vary the world. So, in reality, it's the world that realizes the maximum of continuity, but God hides this, it hides this continuity. It shelters it [the continuity]. He shoves a segment that should be in continuity with that other one, well, the segment should be in continuity, that he places elsewhere. Why? To hide his tracks. We run no risk of making sense of this, ourselves, but this occurs at our expense (*sur notre dos*), this best of worlds. You see? Obviously, the 18th century does not receive Leibniz's story very favorably at all. But, in fact, it's the world of continuity. So, you see, the problems of paving express quite well this choice of the best world: the best of worlds will be the one in which shapes and forms will fill the maximum of space-time while leaving the least emptiness.

Second explanation by Leibniz, and there he is even stronger still: the chess game. Such that between Heraclitus's phrase that alludes to a Greek game and Leibniz's allusion to chess, there is all the difference that there is between the two games at the same moment in which the common formula "God plays" could make us believe that it's a kind of beatitude. For how does Leibniz conceive of chess? Very simple: the chess board is a space, the pieces are notions. What is the best move in chess, or the best combination of moves? You know, in all chess problems, you have bifurcations, as the other [Borges] would say, "The Garden of Forking Paths." Well, the best move or combination of moves is the one that results in a determinate number of pieces with determinate values holding or occupying the maximum space, the total space being contained on the chess board. One has to place the bishop, the knight, the… Queen, one's pawns in such a way that they command the maximum space, so that the other is… [*Deleuze does not finish this thought*]

And in the end, what doesn't work in all that? Why are these only metaphors? Here as well there is a kind of principle of continuity: the maximum of continuity. What does not work well in these two metaphors, as much in the metaphor of paving as in the metaphor of chess? In both cases, you have reference to a receptacle. The two things are presented as if the possible worlds were competing to be embodied in a determinate receptacle. In the case of paving, it's the surface to be paved; in the case of chess, it's the chess board. But in the conditions of the creation of the world, there is no a priori receptacle.

We have to say, therefore, that the world that passes into existence is the one that realizes in itself the maximum of continuity, that is, which contains the greatest quantity of reality or of essence. I cannot speak of existence since there will come into existence the world that contains not the greatest quantity of existence, but the greatest quantity of essence from the point of view of continuity. And, in fact, continuity is precisely the means of obtaining the maximum quantity of reality. Do you understand?

So, there you have a very, very beautiful vision, as philosophy. In this second paragraph, I believe that I have answered the first question, namely, what is infinite analysis? I have not yet answered the question: what is compossibility. There we are. [2:08:04]

Notes

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[1] Cf. https://www.youtube.com/watch?v=LzJQNX6W53s

[2] We have to indicate that this translation is based on a transcript that we have completely transformed from the text that has been available for some twenty years on Web Deleuze, since we have scrupulously followed here, without edits or unforeseen omissions, the audio recording available on several platforms (YouTube, Web Deleuze, Paris 8, and here on The Deleuze Seminars). We have therefore expanded the text of this second session on Leibniz by approximately *forty minutes*, that is, in addition to the approximate equivalent of about eighty minutes contained on the earlier transcript. We have benefitted, however, from Web Deleuze's alternate transcription in order to fill in two specific gaps that occurred when the recording was interrupted for cassette changes, at the end of parts 1 and 2.

[3] Part II of *The Fold. Leibniz and the Baroque* (*Le Pli*) is entitled, "Inclusions", composed of chapters 4, "Sufficient Reason," 5 "Incompossibility, Individuality, Liberty," and 6 "What Is an Event?"

[4] In the session on Leibniz that takes place on 27 January 1987, Deleuze provides a detailed elaboration both of the example taken from the *Theodicy*, and the one taken from *Ficciones* by Borges.

[5] See session 5, 6 January 1987, in the second Leibniz seminar for a brief development of Malebranche's conversation.

[6] It is not entirely clear to which text by Merleau-Ponty Deleuze is referring here, perhaps one of the essays collected under the title *Eloge de la philosophie, Leçon inaugurale faite au Collège de France le jeudi 15 janvier 1953* (Paris: Éditions Gallimard, 1953).

[7] Concerning this letter, see the session on Spinoza, 20 January 1981, as well as the 10 February 1981 session, and also, by Deleuze, see also *Spinoza: Practical Philosophy*, pp. 78-79

[8] In the Web Deleuze transcript, one finds here the following notation: "Explanation by Deleuze on differential calculus, about 45 seconds".

[9] In the Web Deleuze transcript, one finds here the notation: "Explanation by Deleuze who draws on the board, with chalk: construction of triangles. 85:30 to 93:30". This text, disconnected as some parts are, is reproduced here.

[10] See also the discussion of projective geometry and of Poncelet during the preceding seminar 9, 26 February 1980.

[11] Deleuze returns to this same subject, of paving, during the eighth session on Leibniz in the second seminar, 27 January 1987.