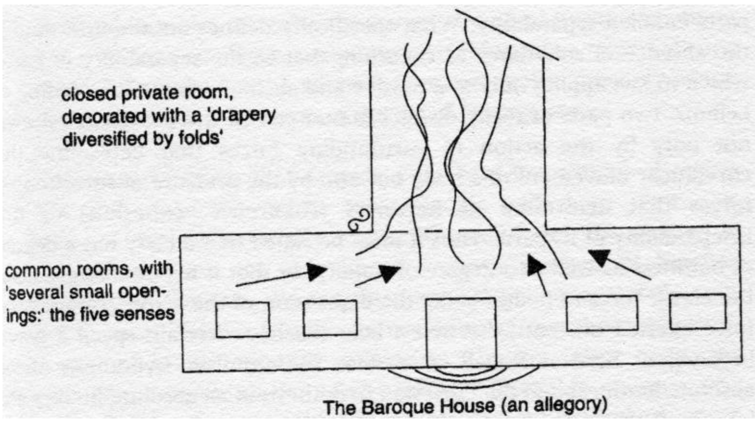
Gilles Deleuze

Seminar on Leibniz and the Baroque -- Leibniz as Baroque Philosopher

Session 2, 4 November 1986: Review and Passage from the Fold to the Infinite Series

Transcribed and translated by Charles J. Stivale (duration 2:39:00)



The Baroque House (an allegory)

Part 1

So, those of you who are kind enough to come today have to be sure that Leibniz interests you, and that you draw the consequences of this, that is, that you are reading some Leibniz. On this point, I'd appreciate it at the next meeting if those of you registered for the course give me a note on which you tell me that you are enrolled at Paris VIII and especially state the *cycle* to which you belong – first, second or third – and specifics about what you are doing this year. Are there any first *cycle* students here? [*Pause*] Three… four, five… That's fine because I need some [*Laughter*] since, you recall, the first part of our course is particularly devoted to students in the first *cycle*. So there you are. So, let's continue. [*Pause*]

So in sum, I would like to be more precise about our goal this year with the condition that this goal might be modest, I mean, something small that might strike you while reading Leibniz. What is immediately striking is a kind of proliferation of principles. One gets the impression, literally, that Leibniz never stops pulling principles out of his sleeve. It's a rather odd impression, this proliferation of principles because, generally, while principles were known in philosophy a long time before Leibniz, philosophy claimed an economy of principles for itself. Leibniz is without doubt the first great philosopher who never stopped adding one principle to another. He pulls them out really in the mode "You want a principle? I've got it here!" And after all, inventing principles is not an insignificant matter.

I am saying that philosophy has always known principles, notably the three logical principles: the principle of identity, the principle of contradiction, the principle of the excluded middle. A is A, principle of identity; A is not non-A, principle of contradiction; A is A or non-A, principle of the excluded middle. And then, perhaps, already at another level, philosophy was familiar with principles distinguished from purely logical principles, that one might call the principles of existence, for example, the principle of causality, the principle of finality.

And about Leibniz, one gets the sense that he never ceased adding on to them. His philosophy is an overflowing invention of principles. This is odd, and why? I am saying that it's an immediate impression from reading him. He never ceases circling around a principle to present it under several forms, or else he ceaselessly adds principles for ones already known. And I would almost say that in Leibniz, principles are teeming so much that they create propositions of a special type, the proposition that enunciates a principle will be implicitly, not explicitly, it will be something like an exclamatory proposition, that is, to which one immediately wants to add an exclamation point. If we take that seriously, does this mean that we could consider the exclamation point as a special sign? Insofar as it's a philosophical sign, one must say that when the philosopher enunciates and multiplies principles is the philosopher exclaiming.

So are there philosophical exclamations, and what would that be, a philosophical exclamation? As a result, we readers, we perpetually get the impression from reading Leibniz that we ourselves are making exclamations, so that, concerning our goal this year, we derive a modest goal from this: to be able to discover, even when Leibniz does not provide us with the expression… There would be two cases: the cases in which Leibniz gives us the explicit expression, and then the other cases where we feel the need, with the possibility of justifying this need, to translate into an expression something that Leibniz does not directly provide us. But our task would be to accumulate the expressions of principles, that is, the great exclamatory expressions that cut through Leibniz's philosophy. As a result, I could assign these expressions for each class, each of our meetings, the goal or the focus being to establish two, three or four of these. At the end of the year, if all goes well, we would have about a hundred, or if things go even better, two hundred exclamatory expressions, that crisscross Leibniz's philosophy, and that we would learn by heart, and would write up in the final meeting.

But why is there this proliferation of principles? Could we consider a hypothesis about why Leibniz's philosophy can be presented as a proliferation of principles and derivatives of principles, axioms, laws, etc.? I believe that our previous meeting gave us a hypothesis on this point. Is it perhaps because he causes the principles to play into the infinite? But what does that mean? If this is right, ah well, we have to say: Leibniz causes the principle of identity to play into the infinite? But what could that meaning, placing the principle of identity in play into the infinite? Once again, the principle of identity is A is A, the thing is what it is. What could this operation be that carries identity into the infinite, and the same for the other principles? But it's perhaps the milieu of infinity that assures this proliferation of principles. I have no reason to answer more precisely since this it the goal of our entire year: To see in what sense… But why is there an introduction into the infinite?

This is where I would like to return to certain things discussed in the last meeting. And indeed, we saw why this presence of infinity at all levels of Leibniz's thought or philosophy. Besides, it's precisely for this reason, the presence of the infinite, which we had as a second hypothesis about Leibniz's philosophy: that it was perhaps *the very manner of a Baroque philosophy*. [*Pause*] It's the very manner of Baroque philosophy or, if you prefer, what does the manner of Baroque philosophy mean? What is the Baroque? The last time, we refused to look for an essence of the Baroque to the extent that such an essence was consisted of discussions and disputes, both useless and without interest, fine, namely, knowing what were the Baroque eras, what were the Baroque genres, etc. And we preferred taking a purely operative viewpoint, telling ourselves that whatever the Baroque might be, what interests us is: what does it create? What does it create that no other form of agency (*instance*) would make? How does one recognize the Baroque? In something that it accomplishes, an operation.[1]

Well then, what is the operation that deserves the name "Baroque"? Our first response was that it's quite simple. It's an operation consisting of creating folds, of folding. Folding is what the Baroque operation is. Under what conditions? Is every fold Baroque ? No, there are folds that don't have these details. But I would say that the Baroque is the fold when the fold goes to infinity. The fold going to infinity -- [*Pause; interruption*] That's it, you really shouldn't press your back on the light switch [*Laughter*] -- The fold going to infinity is the Baroque operation *par excellence*. We saw this the last time. And henceforth, if I said that the fold goes to infinity and that this is what defines the Baroque operation, I already couldn't stop myself, and so much the better. This was the sign that this operation was good. Why? Because immediately a doubling of the fold occurred. The fold going to infinity doubled into two directions: the pleats of matter and the folds in the soul. And the pleats of matter go to infinity just as the folds in the soul go to infinity, such that two texts by Leibniz seemed fundamental to us: a particularly clear text taken from *Système nouveau de la nature* [New System of Nature]. What does he tell us? [*Deleuze looks in his copy*] He tells us, "The organs," the organs of a body, "are differently folded, and or more or less developed"; the organs are differently folded, and or more or less developed.[2] And on the other hand, [there is] the text from the *Monadology*, paragraph 61, in which he tells us, "The soul could not develop suddenly all its pleats for they go in to infinity." Thus, the pleats of matter and folds in the soul, these are the two forms of the fold.

Why does the fold have two forms? This is what is already important, but we can only proceed little by little. At least we recognize a fundamental characteristic of the Baroque, a fundamental characteristic of the Baroque according to Wölfflin and of Baroque architecture, which is *the distinction of two floors*. Everything occurs as if there were a lower floor and an upper floor. If you will, this corresponds to a drawing of …, very schematic… [*Deleuze goes to the board and draws*] of the Baroque church, such as we saw this the last time. There is a lower floor, in which in some ways the mass is enlarged, and there's the floor above.[3] What is this duality? We could say that it's one of matter and movement. However, there is movement in both cases, but on the lower floor, the movement is related to resistance, and on the upper floor, the movement is related to its own spontaneity. We could also say that it's the body and soul, or indeed we could say that the lower floor is the Composite, and the upper floor is the Simple.

For us, the lower floor is that of the pleats of matter that go on to infinity, and the upper floor is that of the folds in the soul that equally go on to infinity. What does this mean? If on the lower floor there are infinite pleats of matter, if above there are infinite folds in the soul – you notice, I am trying not to comment on my small difference, the "of" in pleats *of* matter, and the folds *in* the soul. I mustn't do so until I'm able to discuss it later; I'll mention nonetheless that the two expressions are not symmetrical. In any case, if my two Baroque floors are distributed in this way – [Heinrich] Wölfflin will say mass and movement – I can say that yes, everything is – and that's the Baroque signature – *everything is a labyrinth*.[4] The pleats in matter [*sic*] constitute a labyrinth, and the folds in the soul constitute another labyrinth. The infinity of the fold is decomposed into two labyrinths.

And still it is necessary that this be true, literally; ah yes. It is so true that Leibniz works through a Baroque philosophy or a Baroque conversion of philosophy. Everyone knows the importance of the labyrinth in Baroque architecture and Baroque thought. Well it is so true that Leibniz presents the entirety of philosophy under the auspices of two labyrinths. And there he calls it… And these two labyrinths no doubt have rapports of resonance or correspondence, of fundamental redoublings one by the other. And to these two labyrinths, Leibniz gives them a name, the lower labyrinth and the upper labyrinth. For the lower one, he doesn't call it the "labyrinth downstairs", he calls it *the labyrinth of the continuous.* For us, this is of enormous interest, even just this expression, one that we have to take literally, the labyrinth of the continuous. That means that the problem of the continuous cannot be adequately posed on the level of the straight line. That's what he found, and it's already a very great discovery. For example, in Descartes, continuity is posed on the level of the straight line. If Leibniz tells us that there is a labyrinth of the continuous, this means the problem of the continuous cannot be settled on the level of the straight line. Ah, but you realize, [with] such a proposition, what does it mean, that the continuous is not settled on the level of the straight line? We are just recording notes at the moment; we are acquiring things. I don't know what this means yet; we cannot know. It's the labyrinth of the continuous: you understand that it's the state of matter insofar as it doesn't cease pleating and unfolding to infinity, insofar as matter admits an infinity of pleats. So there is a labyrinth of the continuous.

The other labyrinth, the labyrinth upstairs, is called *the labyrinth of freedom*. We see in fact here that it concerns the soul. And why he reproaches Descartes is for having understood neither one nor the other of two labyrinths. A particularly clear text in this regard about the two labyrinths is in a small work, *On Liberty*. I will read very quickly: "There are indeed two labyrinths. One concerns the composition of the continuous, the second [concerns] the nature of freedom. They find their source in this same infinity." We cannot say it better. The infinite doubles over into two labyrinths, the labyrinth of the pleats of matter or composition of the continuous, [and] the labyrinth of freedom of the spirit, the freedom of the soul, or the infinite folds of the soul.

And this same distinguished philosopher, this remarkable philosopher that I mentioned above, notably Descartes, not being able to decide either one way or the other, or not wanting to reveal his opinion – and this is quite treacherous! – preferred to cut through this with a blade. In other words, Descartes never understood anything about the labyrinths. Sometimes he considered a straight line and believed that the continuous was on this side. At that moment, considering the continuous on the level of the simple straight line, he confused the continuous with an infinite divisibility of matter, that is, the indefinite. [*Pause*] If he had understood that it wasn't on the level of the straight line that the continuous is situated, he would have seen that the continuous can be resolved or can be composed only on the level of infinitely or actually divided matter. This is precisely all the pleats of matter.

And sometimes for freedom, this time without doubt he did not consider a straight line, but he equally missed the labyrinth because he only held onto two opposite points, the two points that make up a straight line's segment, points that determine a segment of a straight line, specifically one pole, God's prescience, and the other pole, man's freedom. And he said that we could not understand how the two were reconciled, but it was necessary to reconcile them. In other words, on the level of the continuous, he only held onto the straight line, and at the level of liberty, he only grasped both ends of the line. In other words, for the labyrinth of liberty, he maintained only the entry and the exit. So it's catastrophic in a labyrinth only to maintain the entry and the exit, [*Laughter*] since with this only, the entry and the exit, there would be no labyrinth. The labyrinth is what's between the two, that is, the infinity of folds.

So this text is very important for us, one that I did not quote in the previous class, and that determined our entire plan, in the beginning. We are still involved in an introduction to Leibniz's philosophy. The plan that we settled on was, first, the examination of the lower floor or the pleats of matter, and secondly, the examination of the upper floor, or the folds in the soul, with the condition that there be a sufficient reason forcing us to pass from the lower floor to the upper floor. Because after all, why wouldn't the lower floor be enough? Why does… Since already on the lower floor, the floor of matter, the fold is already going to infinity, why must this lower floor be joined to another floor that concerns the folds in the soul? Why wouldn't the lower floor suffice? You understand?

Hence, I have very rapidly summarized since this is what we did at the last meeting. I summarized as quickly as possible what we've acquired concerning the lower floor since we will need this the entire year. That is, those who will be in our meetings will have to have the gift of recall because each time, we will have to hold on to what we have acquired.

And I am saying that the lower floor is defined by this: corresponding to the definition Wölfflin offered of the Baroque,[5] [it's] treatment of matter in bulk [*en masse*]. That's deeply what the Baroque is, not only a manner of treating, its one of the characteristics of the Baroque. First characteristic: *treatment of matter in bulk.* Second characteristic: a *tendency of matter to overflow its frame or its space.* This is also very well detailed by Wölfflin on the level of Baroque architecture.

So good, I am doing what I announced. This is where I find my first exclamatory phrase, my first exclamatory proposition, the grand expression 1: *In bodies, there is something more than extension* [*l'étendue*]. *In matter, there is something more than extension,* exclamation point! We could say it in Latin; this is something quite lovely! It's a constant theme in Leibniz; he constantly says that. I say: let this be our exclamation. So, now we've got one. In fact, if matter overflows its frame or its space, there is something more in matter than the extension it occupies.

Third characteristic, and I would like you to sense that these are linked, and that here again, Wölfflin indicated it very well on the level of Baroque architecture in general: *tendency toward rounding off angles.* Why? Because the masses in which matter is decomposed are essentially soft and, at the limit, fluid. [There's] a tendency toward fluidity in matter as is evident in the treatment of waters in the Baroque. We saw this already, the whole system of fountains, falls, etc. I won't go back over this.

Fourth characteristic: *If mass is essentially soft and, at the limit, fluid, the physics of the body must be a physics of the elastic body*, elasticity being what? [It's] the measure of the degree of fluidity of the body. Hence Leibniz's famous formula, MV2 [*squared*], which is concerned in the communication of movement – this isn't MV, it's MV2. V2 imposes the viewpoint of acceleration, that is, of the demand of small solicitations on movement, the demand of degrees or of what he calls the *conatus*, which implies the assimilation of the body in movement to an elastic body. The Leibnizian model… The model of Leibnizian physics will *the spring* (*le ressort*). And in the last class, we saw how this physics of the elastic body produced a great substitution in the atom relation as hard body on the oblique straight line – the descent of the atom following an oblique straight line – as trajectory. Leibniz's physics substitute for this an elastic body, that is, there is no atom. There is no atom because there is no perfectly hard body. Elastic body on a curvilinear trajectory, this is what already is a first means of rounding off angles according to Wölfflin's expression.

Fifth characteristic: [It's] the natural history of the organic body. The organic body is more than an elastic body. It is endowed with a capacity to fold itself to infinity and henceforth to unfold itself, from which we get expression two: *All organisms [are] in a primary organism; all flies [are] in the first fly,* exclamation point! All fly eggs [are] in the first fly egg. And the organic body is going to be traversed by movements that we can call as well – here, you'll recognize words that were current in the seventeenth century – envelopment-development. The organism envelops its parts to infinity, and its parts are developed. Envelopment-development, or what comes down to the same, involution-evolution; or what also comes down to the same, implication-explication. To implicate is to envelop; to explicate is to develop, such that Leibniz can say that we are never separated from our body, or from a body, in any case. And when we die, it is simply our organic parts that are enveloped to infinity, that is, become infinitely small, but our soul is never separated from a body. To die is to involve; death is the involution of the body.

Hence we get the idea, and this is the second grand exclamatory expression – so now we have two already: *Yes, the organism is a machine, but the machine is infinitely machined!* The machine is infinitely machined: that meant [that] all the parts of the machine are still machines such that the machine can fold itself to infinity. All the machine's parts are still machines such that we must say, yes, the organic body, yes, the organic body is machinic. It's a machine. And in one sense, Descartes was right to say "animal machines". At the same time, Descartes understood nothing. He understood nothing because – this is Leibniz speaking – because he did not see that there is a difference in nature between machine and mechanism. A mechanism, insofar as it is created by man, is a finite machine, that is, it's a machine in which the pieces are not machines going to infinity. A mechanism is a finite machine. An organism, yes, it's a machine, but a machine irreducible to any mechanism. Why? Because it's an infinite machine. It's a machine in which all the pieces are machines, that is, it's a machine that pleats itself to infinity. [*Pause*]

Finally, the final trait [sixth characteristic]: [It's] the natural history, no longer only of the organism, of the organic body, but of the living. Why? Because what explains the organism? What explains the organism's capacity to fold to infinity its own parts and to unfold them? Leibniz's answer will be: it's the diffuse presence, in organic matter, *the diffuse presence of simple animals, of animalcules,* what he sometimes calls spermatic animals. A diffuse presence in organic matter of simple animals, that is, there is always an infinity of simple animals in any portion of inorganic matter, however small that it may be. And he calls upon the microscope that shows the presence of such animalcules everywhere. And it's true, he tells us, you recall, in some very beautiful texts, entirely admirable. It's true! It's true! It's true for the block of marble no less than for the fish pond. Just as in the pond full of fish, where there are fish to infinity, so too in the block of marble, there are animalcules to infinity. There are simple animals to infinity. Why? Because the block of marble seems hard, but no body is absolutely hard. That is, the block of marble is no less fluid, within certain degrees, than the pond. If all bodies are elastic and fluid, the block of marble also responds to this physical nature of the body. There are no fewer simple animals in a portion of marble, however small the portion may be, than there are in a pond. So there are, if you will… He does not say simply [that] the organism includes an infinity of parts that fold themselves in and unfold themselves. He says [that] in inorganic matter, however small it might be, there is an infinity of simple animals.

From this comes the third exclamatory expression, that we saw in the first class, that is one of Leibniz's most beautiful: *certainly, everything is not fish, but there are fish everywhere.*[6] In other words, Leibniz's vitalism is a pluri-vitalism. It's a very special vitalism since, literally, I could transform my third expression into another, equally exclamatory: *matter is not lively* [*vivante*], *but matter is a life pool* [*un vivier*]. All matter is a life pool. Everything is not a fish, but there are fish everywhere, a kind of nautical ballet. And what is the nautical ballet? It's a very important element of the Baroque. Everything is fluid, and the dance of the living in the fluid… [*Deleuze does not complete the sentence*]

There, I have summed up. You see, if you grasp this all together, it's a commentary on matter that is organized in bulk, the masses that are soft and fluid by nature, the elastic body as model for the body and physics, elastic bodies on curves, that is, the elements of folding, the pleats of the organism, and finally the folds of matter around simple animals. Thus, since there is an infinity of simple animals in any portion of matter, the folds of matter, the pleats of matter go to infinity; all that turns around the same idea, notably: it's the pleats of matter that constitute the first [ground] floor of Baroque architecture. [*Pause*] Henceforth, I would say [that] what is this whole floor? [It's] a logic of masses, a logic of soft, elastic or fluid masses, Leibniz's radical opposition to the atom, the hard body. There are no hard bodies in nature. Once again, everything is a life pool. [It's] a logic of masses or aggregates; in other words, a logic of composites, the composite being infinitely composed. Infinite composition of matter, the infinite composition of matter is therefore the pleat.

Fine, and from this the question explodes… We are quite fine on this floor. All is composed, all is composed to infinity. This is a possible position. We are on the first floor, the lower floor. Fine, all is good there, all is fine. We are even cozy and warm in the pleats of matter. At the extreme, we are simple animals around which matter makes an infinity of pleats. We are fish in the pond, all good. What could be better? Obviously. And what is God in all this? God is the great guardian of the life pool. It decides on the moment when each fish folds back up, that is, dies, provided that this fish might unfold. All this is such a satisfying; after all, this is an admirable world.

So why are we forced to connect a second floor to this, or rather the first (upper) floor ? Why are we forced to join it to an upper floor? – And it's here that at our last meeting, I was really obscure on this, and even worse, very confused, because we were already tired from all this. But now, this will become quite simple. In the meantime, we have gotten strong and refreshed, you as well as me. – My answer is that there are two reasons, the first being, natural history, and a reason related to pure physics, that are going to show us that, in fact, when we propose a lower floor with infinite pleats of matter, well then, one has to connect to it another floor, and not at all another floor where everything would be unfolded. On the contrary, one must overlay these pleats of matter with another type of fold. Why?

The first reason, I maintain, is because of natural history. In fact, we saw that organic matter, in its capacity of folding, unfolding to infinity, its own parts which are themselves composed to infinity, implied a position of simple animals in matter, and diffused in inorganic matter. In other words, in scholarly terms borrowed from the history of natural history, I would say: Ovism -- that is, the envelopment of all the eggs in the egg of a given species, the envelopment of all flies in a first fly, all that – ovism is overcome by animalculism, that is, by the idea that organic matter has this capacity of folding itself and unfolding itself to infinity only because there is an infinite diffusion of simple animals in inorganic matter.

But here I find that I am drawn to call upon the Simples. And you already sense Leibniz's grand idea: the Composites imply the Simples. It's true, it's true. The Composites imply the Simples. Only, only, only, well there we are, [*Various sounds of tape changes in the recorders*] only, as composition goes toward infinity. … [*End of tape; the break arrives towards the end of discussion of the "first reason," and picks up toward the start of discussion of the "second reason", already in progress*][7] [46:37]

Part 2

. . . [First proposition] If a body or a point – it's there, the text that I read to you [*in the 28 October meeting*], so obscure, from the answer given to [Pierre] Bayle – Leibniz tells us, if a body or a point were alone in the world, it would follow the tangent. In its movement, it would follow the tangent, that is, it would follow a straight line. [*Pause*] Second proposition: the fact is that the body does not follow a straight line. The elastic body follows a curve or an element of a curve. Third proposition: why? We will say that it's precisely because it is not alone. If it were alone, it would follow a tangent, fine. But it follows the curve, and this is because it's not alone. In other words, *this is the action of converging bodies; it's the action of ambient bodies on it that imposes the curvature of its trajectory*. [*Pause*] Thus, the curve followed by the elastic body would be encompassed by the action of bodies converging on the body considered.

New proposition [4]: But that isn't enough, because just consider: If the curve was explained, if the curvature of the trajectory of the elastic body. … Leibniz offers a simple example; for example, you toss a stone into the air. It goes up, you see – it is a good example of the elastic body, of the spring-loaded body (*corps à resort*); what he means by "all bodies are elastic" is very simple – it goes up and passes through all the degrees, that he will call degrees of lateness (*tardivité*). And then it redescends and passes through a completion of all the degrees of speed. It de-accelerates and it re-accelerates. This is the very case of curved movement of a body called elastic, of a spring-loaded body. It's really an elastic model, the opposite of a model from atomist physics.

So, I think this: if you say that the elastic body follows a curve because the bodies around it exert their action on it and turn it away from the tangent, you are perhaps explaining it all, but by assuming that normal movement would be rectilinear. In fact, exterior bodies can only exert an external causality on the body considered. Henceforth, you say that it is turned from the tangent by the action of exterior bodies. Fine. That suffices to show that you are not taking account of the elastic essence of the body, for from the point of view of the body's elasticity, the curve is not a turning away from the tangent; it's not a detoured tangent. The curve is primary in relation to any rectilinear element. In other words, *there must be spontaneity of the curve*, [*Pause*] and without the spontaneity of the curve, the causality of exterior bodies would not be exerted. A spontaneity of the curve is required to account for this: that the curve is not a derivative of the tangent. [*Pause*]

What is this spontaneity? You will obviously no longer find it, and you will not find it in the physical point or in the elastic body. What is necessary? We cannot escape this. Another point is necessary, hence the obscurity of Leibniz's text as when he tells us, "and the physical point is only the point of view of this other point." It's a thing that we are for the moment unable to understand or comment on, but we have to find it, and perhaps we will find it today to the extent that we will be equipped for commentary: this idea that, henceforth, the point on the curve is only the point of view of another point, one that is endowed with spontaneity, that is, whose curvature expresses spontaneity.

There you are. I am saying it is quite simple: on the level of natural history, [it's] the necessary reference to simple animals; on the level of physics of the elastic body, [it's] the necessary reference to a spontaneity of the curve, [and] both [references] precisely require another floor. The pleats of matter cannot explain… constitute the composition to infinity; they cannot explain the Simple. In other words, the Simple is on the upper floor. How can we avoid a paradox? But there is no reason to avoid one. The Composite is not composed of Simples since it is composed to infinity. In other words, the composite is not simplified. And how to avoid the reciprocal? The Simples are not composed. A floor of Composites to infinity, that is, the Composites that are not simplified, these are the masses, s floor of Simples is not composed.

So fine, the Composites are not simplified; the Simples are not composed. Each is on its own floor. What is going to occur? This is at the start of the *Monadology*, paragraphs 2 and 3. [*Paragraph 2*] "There must be simple substances, because there are composites. A composite thing is just a collection of simple ones that happen to have come together," there you are: There must be simple substances, because there are composites. A composite thing is just a collection of simple ones that happen to have come together." [*Paragraph 3*] "Something that has no parts," that is, where it is simple, "can't be extended, can't have a shape, and can't be split up." In other words, yes, the Composite refers to something simple provided that the Simple does not exist on the same level, on the same floor as the Composite. The Simple is no more composed than the Composite is simplified. Each on its own floor, what is going to occur? The Composites's floor and the Simples's floor: between the two floors, a fold is required. A fold is needed -- So, this gets complicated, but we have no choice -- *It is necessary that a fold separate and bring each of them together, the pleats of matter and the folds in the soul*. [*Pause*] It is necessary that a fold separate and bring each of them together, floor one and floor two. [*Pause*] Everything is folded, everything is fold, everything is… and no doubt it's the fold that separates the two floors and no doubt distributes it onto each of the two floors. [*Pause*]

So this becomes really beautiful. Why? Because this leads us quickly into a question that will complete this first [part of the] study. We tell ourselves, after all, and yes, we have the impression that something there, thanks to Leibniz, something appears to us perhaps concerning philosophy in general. Since… well, what? Either philosophy [is there], or else would it have to be poetry as well? What does that mean? The fold. Each of us believes to know that a recent great philosopher made the fold the armature of his philosophy: Heidegger,[8] and Heidegger never stopped saying that we understand nothing of what I call "being" and what I call "the be-er" (*l'étant*) – this time, not Leibniz's "be-er" (*étant*), not the pond (*étang*), [*Laughter, at the pun*] but the "be-er", that which is – we understand nothing of what I call "being" and "be-er" if we do not see that the essential is the fold that refers them to one another. And it refers them to one another as what? No doubt as the ontology of being and as the phenomenology of "be-er", being as being of the "be-er", the "be-er" as "be-er" of being. The "of" is the fold.

And picking up these Heideggerian themes, Merleau-Pointy speaks to us of the fold that constitutes vertical being, the fold that constitutes vertical being. You see, it's not complicated. I am doing this. [*Deleuze folds a sheet of paper*] I am doing philosophy when I do this, [*Pause*] the vertical being, here it's the "be-er". I have folded my sheet, "be-er" and being, vertical being; good, you will say fine, the fold, perhaps it's something that… Only, here we are, we cannot stop; we don't want to stop. We do not stop the fold. For the fold, we are bringing in Heidegger and all that. What I am saying is that in Heidegger, he underwent a very deep experience that we do not stop the fold. That is, the fold swarms in all directions since, on the side of being, what is the double movement, the complementary dual dynamism, of veiling-unveiling? So I am saying some extremely rudimentary things. On the side of ontology, it's this complementarity, this co-penetration of veiling and unveiling, in which we have to take the word "veil" with Heidegger's requirements, that is, in an extremely effective sense of etymology. The veil, really, the veil as substance, the substance of the veil… veil oneself, unveiling, veiling… What is this precisely if not the fold? This time, it's no longer the fold of being and of the "be-er", but a kind of repercussion of the fold of being and of the "be-er" in being itself.

And what is the status of the "be-er"? How does the "be-er" constitute the world. It constitutes the world in a phenomenological form, which is what? Which is – and this is well know, coming straight from Husserl – the envelopment of profiles, [*Pause*] such that the fold of being and of the "be-er" doubles over into being under the form of folds of the veil and into the "be-er" under the form of the envelopment of profiles. I am telling myself that it's not at random that Merleau-Ponty draws on Leibniz in his notes. He says that the only one who understood something before Heidegger, certainly, the only one who understood something was Leibniz. It's strange. And in the end, this tale of the fold… [*Deleuze does not complete the sentence*] because we are too ignorant. I don't mean at all that we shouldn't praise Heidegger, since it goes without saying that Heidegger conceived of the fold in a deeply original way. But I believe that we can say that a discovery by Heidegger was the very position of the fold as operating the most fundamental relationship between being and the "be-er", or if you prefer, of the two floors.

I think that in a certain way, it's a philosophical-poetic idea running through [this]. Poetry has always started from the idea that there is no straight line in the world, that bodies were rubbery or cavernous, that everything is labyrinthine, and what does that mean? Last year [*during the Foucault seminar, possibly 18 March 1986*], we saw this a bit here and there, and it's not the Heideggerians. [Henri] Michaux … Some among you pointed out to me a very beautiful text by Michaux. It's very recent in Michaux, a very lovely collection by Michaux called *Life in Folds*. And this theme from Michaux, owing nothing to Heidegger, consists in explaining in a no doubt splendid poem that we are born with twenty-two folds – it's a Chinese figure, twenty-two, surely; it's a figure loaded with… eh? No? [*Sound of students answering*] It's certainly a figure linked to the waterlily's folds (*plis du nénuphar*), something like that – we are born with twenty-two folds and, Michaux says, when we have undone all our folds, we die. But to console us, he adds, it happens that we die before having undone all our folds. [*Laughter*] What does that mean? It's what we call a premature death about which we must say that he didn't do enough philosophy; he didn't undo all his folds. Only the misunderstanding – and if one does enough philosophy, one knows this is how it is – [is] that the unfolding isn't the opposite of the fold. And moreover, the unfolding is only the conduit corresponding to the fold.

And it's not only Michaux. I am mixing up everything; it's in order to show the extreme variety of this thought. One of you pointed out to me the extent to which this theme is quite profound in [Stéphane] Mallarmé. The theme of the fold appears in a constant dual form in Mallarmé, and it's infinitely more important, it seems to me, than the theme of silence. Moreover, silence is… We cannot understand silence according to Mallarmé if we do not take account of the fold. And the fold is double in Mallarmé. It's the fold of lace work, I would say; it's the fold as phenomenological. There is always the fold of lace work. And then, it's the fold of the book; that is the ontological fold. And the two never cease referring to each other, and there is a beautiful phrase in Mallarmé:[9] "This pleat of somber lace which retains the infinite woven by a thousand," we couldn't say it any better, the fold goes all the way to infinity; the fold is what goes to infinity. "This pleat of somber lace which retains the infinite woven by a thousand, each according to the thread or the prolongation, its secret unknown" – if I understand correctly, this is an ablative absolute – "each according to the thread or the prolongation, its secret unknown, assembles distant interlacings where there sleeps some luxury to take account of – a ghoul, a knot, some foliage – and to present."[10] In my opinion, this is very beautiful; it says everything. At the same time it says that the fold of somber lace work goes beyond toward another, deeper fold, and the folds, all the folds, all the way to infinity. …

As a result, on this level, we again find… We see here exactly where I am. I ask that you grant me the lower floor consisting of this: matter is inseparable from pleats, and the pleats of matters go all the way to infinity, physically, organically, or inorganically. [*Pause*] But there is a reason for which the folds of matter are not enough. There are *reasons* for which the folds of matter are not enough and refer us to folds in the soul. The labyrinth of the continuous refers us to the labyrinth of freedom. Between the two labyrinths, each infinitely pleated into itself, there is a fold. [*Pause; sound of Deleuze turning pages*]

From which follows the second part [*of the class*], the other floor, the upper floor, and I sum up, to come back to it this way. We will have run back through, I assume, I hope, in a new way, in a slightly different way, we will have run back through all that we did the last time, but also moving forward on certain points. I remind you that we began the study of the upper floor, in what form? Well, we just left the material side, I would say, the material data or the physical data. What is this? It's the elastic body on such an irregular curve as possible, the elastic body on an irregular curve. Why irregular? Since the pressure of coexisting bodies varies itself with the variations in the neighborhood. Thus, on the other floor, that is not what we are going to find. On the other floor, we are going to find *the ideal genetic element* of a material given, that is, of the elastic body on its curve. What is the ideal genetic element? This is what is going to furnish the first [upper] floor. You see the difference? On the lower floor, I have the elastic body on a curve; on the upper floor, I ask, what is the genetic element of this materiality of the elastic body on a curve? And our answer, we saw it: this time, it's the point, pure point, let's say, the mathematical point.

But I have hardly said this than problems arise. So we must get hold of this problem then or we will never move forward. But I tell myself that the theory of points in Leibniz is going to be something very interesting since there are all sorts of points. We saw on the lower floor the physical point. The physical point is a rubbery point, an elastic point. And here, on the first [upper] floor, we encounter an entirely different point, no longer the physical point. It's the mathematical point, the point as mathematical point. There we have the ideal generic element. On what? As we saw, on an inflection. And you recall the figure of the inflection – I've lost my chalk, where is it ? Oh, here! – [*Deleuze goes to the board*] Here we have an indubitable figure of inflection; it's the genetic element, a mathematical point on inflection, with the inflection being defined how? By a singularity, a cherished expression in mathematics, specifically, the point of inflection, the point of inflection being defined as a singularity, by this: [*Deleuze indicates the drawing*] it's an intrinsic singularity, that is, independent of a system of coordinates; an intrinsic singularity consisting in what? Well, the tangent to the point of inflection crosses the curve, crosses the inflection.

And how elated we were in the last class to discover [that] this ideal genetic element, the mathematical point on the inflection, was the figure that Paul Klee named the "active line," of which he undertook the genesis of everything he called *forms in movement*. And the active line, that is, the point on the inflection, from Paul Klee seemed to authorize for me every connection between Klee and the Baroque, a connection supported by Paul Klee himself, and allowed us to judge the opposition [of] Klee [and] Kandinsky, in which, to a certain extent, if I dare say, Kandinsky remains in some ways Cartesian, that is, he considers that the point is not spontaneously in movement, and that what is required is an exercise of exterior force to put the point in movement, and the henceforth, this movement is angular, that is, is first rectilinear, horizontal or vertical, but following the oblique. Thus, to Paul Klee's active line that makes a claim on spontaneity of movement, notably the mathematical point on the inflection, is opposed in fact Kandinsky's angular line. There is no basis for establishing a hierarchy, but there is a basis to establish a divergence in this, a difference in inspiration. And yet again, it's very important for us that Klee constantly refers to the Baroque themes.

So, if this is how it is, [*Deleuze goes to the board*], the ideal genetic element, the mathematical point that runs through an inflection, you see? [*He draws on the board*] There, I would say that this is the ideal fold, or *idea-al*, [*a play on the word "idea" in ideal*], or at least that's what I would call the genetic element of the fold. The inflection is the genetic element of the fold. In other words, the genetic element of pleats of matter is the inflections traversed by mathematical points.

But what can we draw from an inflection? Well precisely, it's a genetic element because lots of things can be drawn from it. And I was telling you, according to a young philosopher who has undertaken some very astonishing work, there is an entire variation of the genesis of forms, what Klee called forms in movement. So, according to Bernard Cache,[11] we saw that last time that, starting from the inflexion, there emerges an engendering of forms through symmetry – I won't go back over this, I am only summarizing – through symmetry, through prolonging curvature – you remember? – the Baroque theme. The ogive was a transformation through symmetry, through prolonging the curvature, through rotations, which gave us the starfish figure, through orthogonal sliding – that yielded a kind of unhooking – [*Deleuze returns to the board, then sits down*] through rupture or, if you prefer – but this is too complicated, but that doesn't matter – through oblique cuts, with the very question that I am quickly posing here – but this is of little interest; these are hypotheses; you can create geneses yourself of families of curves or families of forms: isn't there a passage, a point of view from one genetic method of inflection, if one proceeds or goes all the way to the oblique cut here [*Deleuze traces on the board*] that develops an effect of rupture in the inflection? Don't we arrive at a genesis of the hyperbole? See, the hyperbole is a very special figure. It's this curve constituted from two pieces with one going downward and the other upward, and with one getting infinitely closer to one of the two axes without ever reaching it, and the other approaching the other axis, with a kind of gap in the middle, that is, at the intersection of both axes that is represented by zero, for one simple reason: that there is no division possible by zero. So, we would go all the way to the genesis of the hyperbole. Fine.

Immediately, if I am proposing to you this engendering, according to Bernard Cache, that immediately reminds us of the idea of a possible conjuncture with something known and greatly discussed today, with catastrophe theories by [René] Thom.[12] Thom's catastrophe theory proposes for us an interesting genesis, so is there something troubling in it? It's just that in all Thom's books, you find a drawing; I am going to show it to you from afar because it is quite lovely, this drawing, but finally, we won't comment on it because we'd get… You wouldn't see anything, but it's just to say that it's beautiful. And on this serialization of catastrophes, I am reading…. What's bothersome is a small weakness, that can always be corrected… It's just that he doesn't speak about the fold. He provides a minimum of simples that are the straight line. But secondly, in this genesis, this catastrophic genesis, what is the second, that is, the true genetic element? I swear that I am not twisting this: it's what he calls "the fold". It's written down, ok? [*Laughter*] "The fold." And then, from the fold, he is going to derive – I am offering this just to inspire curiosity in some of you; you can take it or leave it, or just take what suits you – the genesis then yields the pucker or gather (*la fronce*) – this is kind of like something from Mallarmé – the fold yields the pucker or gather. After the gather comes the dovetail (*queue d'aronde*) which is an extremely interesting form. After the dovetail comes the butterfly; after that, the hyperbolic umbilical, the hyperbole; then, the elliptical umbilical; then, the parabolic umbilical – hyperbole, ellipsis, parabola. So hold on to this because we will certainly encounter this theme in Leibniz.

Fine. All that I am saying is that you might see in what way I can say that the ideal genetic element is the mathematical point on an inflection, on any inflection whatsoever, and from this genetic element are derived all kinds of forms in movement. But, but, but, but – consider the consequence that seems to me enormous: it's that we are tending toward *a radical revision of the status of the notion of object*. It's a genesis of the object. Well, the object is going to emerge by taking on a form that it has never had in philosophy, and we must give all glory to Leibniz for having done so. In other words, what does the object become? It becomes entirely mobile insofar as it describes a series of inflections. In other words, the object is affected by a fundamental curvature, entirely mobile insofar as it describes a series of inflections. Why do I say a series of inflections? Well the series of inflections is all the figures that result from the primitive inflection, that result through symmetry, through prolonging, rotation, the oblique cut, etc. In other words, it's the mobile form insofar as it describes a family of curves. That's what the object is.

The object is the mobile form or point insofar as it describes a family of curves, but what constitutes a family of curves? It's precisely the parameters that frame these curves, and the possibility of passing from one of these curves to the other through an operation that is always an operation of fold. What are these parameters? The parameters defining the curves, well, these are relations of proportion, intervals. You have seen this; for example, typically, I marked the formation of an interval starting from that inflection, [*Deleuze points to the board*] whatever you like. So, *the object is inseparable from the movement through which it describes a family of curves*. That's the object's constitutive curvature. In other words however, Leibniz invents lots of words, but here, he didn't need to invent a word. It's odd, but we can substitute for him. So we are saying that there is not an object. What is necessary? The object in Leibniz's work is *an objectile*, as one might say projectile.[13] It's an objectile. [*Laughter*] Well, it's not really that funny; it's necessary, you understand? A somewhat bizarre word is needed to take account of this, that he creates a strange conception out of the object…. Fine. [*Pause*] That's the first point. I organize it under the headings: *genetic values of inflection* and *engendering of forms.*

A second, much more delicate points remain, and here I need all of your patience. I don't make mathematical allusions very often because I read it in a very rudimentary and imprecise way, so it's not that important. But today, I need certain things from mathematics since the second point on this upper floor would be: how is the inflection, you see, about which I can say that in itself, as genetic element, how is it an inflection with variable curvature, and not an inflection with constant curvature? It's an inflection with variable curvature. Perhaps if you sense a bit what he [Leibniz] is in the process of placing into the concept of spontaneity, it's that spontaneity is already the active line, as Paul Klee said, and [Leibniz] will say the spontaneous line. You see, we had to go beyond the collaboration of the body, the action of bodies on a body, going toward an idea of spontaneity, inflection as spontaneity of the mobile form or the mathematical point.

What I would like to show is how the inflection with variable curvature, such as it is suitable to define it, is inseparable and can only be thought in relation with infinite series. Understand that it's very important to see the logical progression of our work. By defining inflection on the first [upper] floor, I am giving myself the ideal fold, the fold from above. And now, I have to prove that the fold from above no less than the pleats down below, that the fold up above goes to infinity. I would have shown, if I mange to do so, something that isn't easy: that the curvature of the fold, inflection, necessarily results in the infinite series. Eh? If we manage to show this, that would be perfect, unexpected, that is, you will be very pleased. [*Pause*] So there we are… It's hot here, we're dying… So, my question is…. Are there any questions? They need to be crystal clear… Yes?

A student: [*Nearly inaudible question; it concerns the spontaneity of points*]

Deleuze: Yes, yes, yes, I am going to tell you: if the semi-circle doesn't turn all alone, that's because it's a semi-circle, that is, a constant curve. On the other hand, if you take a curve with variable curvature, its path indeed expresses a mode of spontaneity. Why? In one sense, this is quite good because it places us exactly where we need to be because there will be an infinite series and the relation of inflection to the infinite series is going to be an expression of spontaneity. But the circle is a finite figure; there is no infinite series to draw from it except in something the circle possesses. But the circle itself as a figure with constant curvature, there is no reason to seek the slightest spontaneity there. So there's no problem. Never… It's not… Leibniz would say, but mathematics of the circle, geometry of the circle is worth absolutely no more than the geometry of the straight line. All that is the same. It's Cartesian geometry.

There's a great physicist-mathematician-astronomer, whatever you like, that introduced the direct study of curvatures into mathematics, named [Christiaan] Huygens. His relations to the Baroque are fundamental. Huygens's physics is really Baroque physics. And, I will limit myself to one very simple criterion for why it's Baroque. As all the manuals of the history of physics say, it's Huygens who introduced curvatures into physics, [*Pause; sounds of cassettes being changed*] and as a function of the study of curvatures, this introduces infinite series. And in the case of figures of the circle type, a kind of curve with constant curvature, they are expressible finally through proportions in a straight line, still leaving us to see if there isn't something in the circle that goes precisely beyond… In this case, there is no basis for seeking spontaneity. You can only find spontaneity starting from the active line and what it offers. In the end, this is what I am going to try to explain.

Do you want to take a little break? But please, no smoking, ok? … You can go outside to smoke… Yes? … Yes, yes, yes?

Georges Comtesse: It seems to me that the points, the theory of points, the substantial points in Leibniz, which he proposed, are perhaps not simply physical points which concern the law of divisibility, therefore the influence of [*unclear word*] of bodies, and perhaps not simply mathematical points which are nevertheless exact points, as Leibniz says, and even real [*some unclear words*], but perhaps that the substantial points of life, of the monadic substance, in Leibniz can be called metaphysical points.

Deleuze: Yes, he did do that, and here you are getting too far ahead of me. You need to save your comment for when we get there. At that point… For the moment, I have not said the word "monad" once.

Comtesse: In that case, if we're talking about metaphysical points, perhaps there is not only one metaphysical point, concerning precisely the mathematical point of bodies, but perhaps there are two… There is necessarily [*unclear words*] of the curve's movement, but there is also the indivisible unity of elastic bodies that is a second metaphysical element of the body.

Deleuze: On this, fine, agreed, but here, you are asking me, if I understand your problem correctly, it's that I don't want to introduce the idea of metaphysical point or monad without having shown in what ways it would be necessary, and for the moment, we don't have the elements for showing this necessity. [*Interruption of the recording*] [96:00]

Part 3

… [*Deleuze reacts to a comment made during the pause*] We are dealing with a very precise type of problem, and don't take my comments badly. It's as if you were drawing me out and taking me back to a huge problem, and by huge problem, I understand it as a false problem. I mean, the topic: are there relations at once of physics and metaphysics? Fine, this problem is know by virtue of a particularly stupid schema that we were taught at the time of the *baccalauréat* indicating that there was a time when philosophy was unified with the sciences, and then little by little, the sciences got separated from philosophy, a schema that is inept and historically false. The sciences have always been quite distinct from philosophy, from metaphysics, whatever you want, [and] there have always been relations [between them]. And then we are told that today, the sciences have won their autonomy, that they no longer have anything to do with metaphysics, a second equally false proposition. There is not a single physicist who can distinguish what is philosophical or scientific in his work, whether it's Einstein or any of the great contemporary [*unclear word*], whether they are working on the physical cosmogony. In any case, everyone who counts in physics collides with problems of a philosophical nature. The idea that at one moment, there would be a kind of metaphysical-scientific accord and that now this no longer exists – and this isn't directed at you, ok? It's directed at this idea still hanging around everywhere – we absolutely have to get beyond this. If you take the Greeks, however far back you go, they never confused philosophy and physics. Those that were assigned… No doubt, each philosopher had his extremely complex approximation of this; once we admit that the philosophical plane and the plane of knowledge known as scientific are distinct, what is the relation between the two? How do they intersect? A second aspect of the question: has this changed today? It suffices to consider the discourse of a contemporary physicist to realize that it absolutely has not changed. We can at most say that relations are not the same; the relations have evolved at the same time that new forms of relation have been discovered.

Thus, you mustn't draw me back into this, you understand? The relation maintained by Leibniz between metaphysics and physics is a kind of … If I had started from this point, by details like that, but excuse me, for me, I would have, in my view created a disappointing course because this is an indeterminate question. In this, I am not actually wondering… On the contrary, we are almost in the process of distributing… For example, you sense well that with the entire lower floor for Leibniz, as I have pointed out adequately, he connect it to physics and natural history, and I don't know yet what relation it [the floor] has with metaphysics since I don't know what metaphysics is according to Leibniz. You sense perhaps that on the upper floor, mathematics is involved there, and there are also metaphysics. I don't know about the relations; we will know them at the end of the year if we have a basis for it. But if you want me to apply a pre-existing schema onto… Starting off by saying the physics-metaphysics relations at that era, I am saying that we are undertaking a false problem because we are going to get stuck within a completely and radically false schema, I mean, doubly false. We are told, on one hand, that at some point in the past, philosophy and science were more or less mixed up together, and this is historically false. So, I cannot take up a problem that I judge doubly false. There you are. Excuse me, the violence of my answer was not directed at all at you, but at your schemas that seem to weigh on you, to weigh you down.

So there you are, I ask you, and for the last time, we will do a bit of math, but basic math. I ask you for your complete attention, and there are some here who already were here two years ago. I recall that, from an entirely different perspective, I approached this aspect. So, this will be easy for some among you, but also for everyone. You see, my problem is – for the moment, my problem is quite localized within this first (upper) floor – my problem is, first, I tried to explain what was the ideal/idea-al fold, specifically this history of the mathematical point on the inflection and the family of curves that derive from it; and my second point is: how do we pass from the fold to the infinite series? There you are. It's uniquely this segment; if I manage to finish this today, we will be so tired out that… There, this is what you must not lose; whatever I might say, you have to hold on to this problem.

For I am going to begin by something that, apparently, is very far from this. Why would the continuous simply be rectilinear? Why can't the continuous be presented under the simple form of a straight line? Well, if you take… At first glance, the continuous can be perfectly represented under the form of a straight line; why? Because what is the law of the straight line? It's that, between two points, however close they may be, you can always insert a point. -- Is this good? When you have a problem, let me know. -- Henceforth, if you hear this expression clearly, on a straight line, between two points and however close they may be, I can insert a point; it comes out straight. Between two points on a straight line, however close they might be, I can always insert an infinite number of points. Since I can insert one of them, but between the one I inserted and the original point, I can insert another, to infinity. So, between two points on a straight line, I can insert an infinite number of points. This comes down to saying that the series of points, on a straight line, is compact, as we say, and convergent, compact because I can always insert an infinite number of points between two points, convergent because the distances between the two points fall below any length, however small it might be. So I would say that the series of points on a straight line is compact and convergent. [*Pause*]

Problem: is this an adequate definition of the continuous? [*Pause*] I am moving ahead. Between two points, however close they may be, I can always insert a third point, an intermediary point, to infinity. Why? As pure possibility because this point that I inserted between two points, can I consider it as the center of an inflection, as a point of inflection, the inflection going from A to B? The point C, intermediary between A and B, would be the center of an inflection, going from A to B. Eh? [*Pause*] At the point I've reached here, I am blocked. I say, yes, it's possible, but it's not necessary. You immediately understand my problem? Is there something that forces me to introduce inflections? Certainly, I can introduce it there by saying, [given] every point inserted between two points, [and] there is no point on the straight line that cannot be considered to be inserted between two point – every point on the straight line is a point of inflection. So the inflection… [*Pause*] From point A to point B, and the inserted point being [point] C, the center of an inflection, such that, at the extreme, I would compose my straight line from an infinity of inflections. But there is no necessity. I can always say this as one says something else; it's what we call an arbitrary hypothesis.

I return to my straight line as a convergent and compact series of points. I can make it correspond to the series of so-called rational numbers, that is, whole numbers and fractional numbers. The series of rational numbers is itself compact and convergent. Henceforth, I can express any number in the form of an infinite series. [*Pause*] Example: I take a segment of a straight line equal to 2, that is, divided by 2…. Where's my [chalk]? Ah! [*Deleuze gets up*] Oh là là là là là là. [*He goes to the board and begins writing*] There. [*Pause*] So, I'm calling each of these: A-C equals 1, C-D equals 1, and A-B equals 2. Is this ok? [*Laughter*] I divide C-D, [and] I can still insert a point; I divide C-D into 2; I divide B-D into to; I divide A-B into 2; etc. etc. [*He sits back down*] I now have an infinite series, apparently. This infinite series, I would say, 2 equaling 1, plus ½, plus ¼ , plus 1/8, to infinity. Are you following me? Certain commentators, whose names I won't say since… They consider that this is an example of infinite series corresponding to Leibniz. I say that this is an absolute misstatement. Why? Because *it's not necessary; I am not forced to express 2 in this form of infinite series*. I can always do it if that amuses me or if I have other reasons, but I have no reason for doing so at the moment. I can equally express 2 in the form of 2 equals 1 plus 1 plus 0 plus 0 plus 0, to infinity, which would be a series called periodic starting from its third term. So, there is no necessity for expressing 2 in the form of an infinite series.

An irreducible fraction: can I … I can express it in the form of an infinite suite since, in fact, for example, for 7/3 (seven divided by three), I would have 2.333333 to infinity. I can… Is this necessary? No, since 7/3 means a relation such that the same unit is encompassed seven times in a dimension (*grandeur*) A and three times in a dimension B. That the fraction might be irreducible changes nothing in the matter; there is what is known as… Between two dimensions, between two lengths, 7 and 3, there is an *adequate common part* (*partie adéquate commune*), that is, there is a part that is common to two dimensions, a part that in one case is encompassed seven times, and in the other case is encompassed three times. Ok? There is an adequate common part.

So, you can always express your irreducible fractional number in the form of an infinite series. You can do so; you don't have to do so. It's not necessary. This is what you have to understand because when, in while yet, we directly consider problems of the infinite in Leibniz, we will bump back into all of… a very important point for the history of philosophy and of mathematics combined, and that still has not changed. Here to come back to my earlier comment: as concerns the problem of the infinite, mathematicians necessarily find themselves in the situation of doing philosophy, whether they want to or not. Well – what did I want to say? – When we are confronted with this problem of the infinite, we will see a thesis through which Hegel, in his *Logics*, was violently opposed to Leibniz, and says: the series is a false infinite; the form of the series is not adequate for the infinite; it indicates a false infinite. Fine. Must we think that Leibniz wasn't aware of this? Quite often, we realize that philosophers have so fully foreseen objections that will be made to them later, right, that it becomes quite discouraging for those who like to make objections, simply if one reads them. So it's not against Hegel because yet again, Hegel, he didn't care; he gave his reasons for thinking that …, [*Deleuze does not complete the sentence*] but some reasons interior to his system. So it's not about Leibniz that he is talking; it's about Hegel through the objections of one philosopher or another. He is just clarifying these things, that's all.

But never did Leibniz consider that sequences of the kind 1 plus ½ plus ¼ plus 1/8 etc. really constituted an infinite series. For we can develop 2 in this way: I can develop two in this form, a pseudo-infinite form. But it's not necessary. It's not indispensable. I can just as well say and demonstrate that 2 equals 1 plus 1 since Leibniz demonstrated it in a completely, a very lengthy manner; it's a very difficult and very interesting demonstration. You understand?

So here's where we are. I mean, sense that we are uniquely here: the straight line furnishes me with compact and convergent series, nonetheless assimilable to the compact and convergent series of rational numbers, that is, whole numbers and fractions. However, it does not provide the occasion for necessarily thinking of the infinite series. [*Pause*] We could just as well say, yes, fine, an indefinite sequence is sufficient. But an infinite series and an indefinite sequence are not the same.

So there we have the first point. From this point explodes this question: can the continuous legitimately be presented by a straight line? Take note of this: if the continuous can legitimately be presented by a straight line, the expression "labyrinth of the continuous" would become unintelligible. We have to believe that Leibniz had reasons for thinking that the continuous cannot be represented by a straight line, but what reason could he have? [There's] a reason already famous in the mathematics of his era, but a reason from which he is going to derive all its consequences, and this reveals all of Leibniz's innovation: not discovering the reason but deriving from it all its consequences. What is it? It's that although the straight line presents itself as a compact and convergent series of all rational numbers, this straight line is full of holes – there's the painful revelation – and holes that cannot be seen, but that can easily be demonstrated. [*Pause*] Let's do so: we have to do so, otherwise… I'd like to avoid it… Let's prove this. [*Deleuze goes to the board*] Let's consider a segment of a straight line that we assume is equal to 1, the unit – it matters little if I consider it as small *n* or the unit, since it changes nothing in the reasoning – I take my segment [*He writes on the board*] that [*Pause*] I consider -- the segment, being any segment of a straight line – as a compact and convergent series of whole and fractional numbers, since I can insert between each point on the straight line, etc. Fine, I am saying [that] this segment seems continuous, and yet it is full of holes. The reason is, and nothing opposes this, that it's possible for me to construct – the drawing is not very pretty… oo là là [*Laughter*] … This isn't so bad? – You see, I am constructing an isosceles triangle, that is, A-C equals C-B, rectangle, an isosceles right triangle. You see.

It's nearly done, but we still have the hardest part. You know that there is a famous theorem [*Deleuze writes on the board; he refers to the Pythagorean theorem*] that is A-B squared, the square of the hypotenuse, is equal to the square of the two other sides, that is, A-B squared equals A-C squared plus C-B squared. As C-B equals A-C, I am saying that A-B squared equals 2-AC-2. Ok? That's all, that's all, I swear. [*Laughter*] A-B squared equals 2-AC-2 equals 1. Yes? One final effort. You take a compass; you put the point on A, and you trace a radius for A-C [*Deleuze writes on the board*] This circle is going to cut A-B at a point D. A-C equals A-D, eh? Because these are two radii of the circle. So, according to the famous theorem, A-B2 equals 2-AC2 equals 2-AD2 equals, by hypothesis, 1, and that A-O squared equals 1. Ok? Your suffering has come to an end? If 2-AD2 equals 1, A-D2 equals one half; if A-D2 equals one half, A-D equals the root of one half. This point is on the line A-B, and you already know the conclusion, the terrible conclusion: *There is no whole number, nor any fractional number, whose square would be equal to one half.* There is no whole number, nor any fractional number, whose square would be equal to one hal, which can be proven besides. We are proving that if there were such a whole or fractional number, it would have to be both even and odd.

What does this mean? You recognized it, however little you may recall this. It's what is called an irrational number, the root of 2, the root of one half, etc. What does irrational number mean? We especially must not confuse this with an irreducible fraction. This is where I am taking a giant step. 7 divided by 3: when you say seven thirds, as we say, that just doesn't seem right. It goes to infinity, but as is said, it's the false infinite. Why? Because there is the adequate common part; there is a length that presents seven units and a length that presents three units, whereas between the hypotenuse [*Deleuze writes on the board*] A-B and the side of the triangle A-C, there is no adequate common part. That is, you will find no subdivision of A-C that is contained a number of times in A-C and a number of times in A-B. There is no adequate common part that would allow you to offer a fraction of the 7/3 type, and with all the more reason of the 6/3 type, which is reducible to a whole number. There is no whole number or fractional number in A-D square that is equal to one half.

Fine. You have here an irrational number that belongs neither to whole numbers, nor to fractional numbers. In other words, it's indeed a point. I can show it now thanks to the demonstration. Thanks to the preceding demonstration, I can show it on A. And, when I have defined my straight line through the compact and convergent series of whole and fractional numbers, that is, rational numbers, I believe myself to have reached the continuous or the power of the continuous, and in fact, I found myself faced with a structure full of wholes. Why full? Well, understand, earlier, I stated Leibniz's exclamatory expression, everything is not living, but there is life everywhere. I can revive the expression and say – and this delights me and renders me joyful, at first glance it's not clear why, but… even I don't see why, [*Laughter*] but it puts me into a state of absolute satisfaction – we must say, an exclamatory expression: *every number is not irrational, but there are irrational numbers everywhere*. And here, I believe myself to be absolutely faithful to Leibniz's thought. Just as the pond isn't fish, but is full of fish, so to the series of whole and fractional numbers, and obviously not irrational numbers, there are irrational numbers everywhere in this series. Why are they everywhere? [*Deleuze goes to the board*] It's because however close are the two points you locate on a straight line, you can always construct your isosceles right triangle and discover between them, however small might be the portion of the straight line, a point that is not encompassed in the series of corresponding whole or fractional numbers. You understand? If you understand, then that's marvelous.

You see where I want to go. Only the irrational number – and here, I believe it correct as well, because as I am saying that it's satisfying for the mind, that it gives me satisfaction, but furthermore it has to be true – *only the irrational number founds the necessity of an infinite series*. [*Pause*] The other numbers can always be – they can – that is, they refer to a simple possibility of an infinite series, but they can be developed differently. The infinite does not impose itself on the series. Ah, but when the irrational number take the stage, well then, yes, the irrational number cannot be developed otherwise than by an infinite series. It is the source (*fontaine*) of infinite series. We must call the irrational number the source of the infinite series, and this is indeed what Leibniz did. Still we have to find an infinite series for each rational number received or located into an example.

And, in a tiny text in his mathematical works, a very beautiful little text, you find Leibniz's demonstration. You know that *pi* is an irrational number. Find the infinite series of *pi*. Is it 3.1416, etc.? No, that's not a series ; there is no law of the series. Leibniz's genius is to have demonstrated that *pi* over 4 equals 1 minus 1/3 plus 1/5 minus 1/7 plus 1/9, to infinity, which is called an alternate infinite series, in which we alternate additions and subtractions. 1 minus 1/3 plus 1/5 minus 1/7 plus 1/9, it was necessary to wait long after Leibniz for the rigorous proof that *pi* over 4 was itself an irrational number, but Leibniz suspected as much.

So there you have my entire thematic. I'm saying that *infinite series can be said exactly to exist only when the development cannot occur in another form*. [*Pause*] Henceforth, the only irrational numbers are in this case. They are what imposes the infinite series since they cannot be developed otherwise. Contrary to a number of the type 2, that can be developed in the form of a pseudo-infinite series (2 equals 1 plus 1), it's when I have no choice, when the infinite series can exist only when the infinite series is necessarily established. And this case is satisfied when the limit is a rational number.

Good, so then we have everything we wanted. Why? How has the irrational number been introduced onto the straight line? I hold everything here. If you have understood, you have grasped me completely. The dizziness of infinite mathematics opens before you because, listen well, how have you caused your hole to appear on the straight line which nonetheless is compact and seemed so full? You caused it to appear only by introducing curvature, that is, by having an arc of a circle cut through the line. [*Pause*] Otherwise, you could never have been able to show the holes in the appearance of the rectilinear continuity. [*Pause*] So it's therefore necessarily the element of curvature that introduces infinite series. Eh? It enters into an infinite series since, however small might be the section considered [*Deleuze goes to the board*] – I come back to my little figure; those in the back don't see it, it's so small, you see? -- however small might be the section considered, and even smaller than this one, and even smaller than this one, etc., I could still construct a triangle, eh, whatsit, an isosceles right triangle [*Students help him with the term*] through which or starting from which I will trace a circle, which is a manner of rounding off the angle. And it's by rounding off the angle in the construction triangle that I unveil the invisible stroke in my segment, and I can say that it's the curvature that introduces the infinite series and that establishes its necessity. Henceforth, I would say, there you have why the continuous is not a straight line, but a labyrinth. An infinite series of inflection, an infinite series of curvature, an infinite series of folds, such is the irrational number. I go from the fold to the infinite series. Eh? [*Pause*]

Henceforth, I would say, in what sense can we speak of Baroque mathematics? I would say that Baroque mathematics… that we can call Baroque mathematics to be mathematics that are distinguished from classical arithmetic, which is an arithmetic of the rational number, and from classical geometry which is a geometry of the straight line and indirectly of the curve. Founded by Huygens to the extent that he introduced the study of curvatures, we will call Baroque mathematics to be mathematics defined by and as an arithmetic of the irrational number and as a geometry of inflections. In this sense and under these conditions, the word Baroque can be applied to mathematics, and we will conclude that yes, however little we have said about it, Leibniz's mathematics are Baroque mathematics and, through this, they oppose Descartes's mathematics. For when Leibniz himself tries to distinguish his conception of mathematics from Descartes's, he says this:… [2:19:20]

[*There is a change of tape recorder, with lowered audio quality, but also a jump backward on the tape, i.e. a repetition of the preceding 2 1/2 minutes. The tape picks up here, at 2:21:33*]

Part 4

… Descartes only considers algebraic equations and left aside equations of another nature known as transcendent, assigning them to the simple domain of the mechanical. And what are transcendent equations? Leibniz, on the other hand, declares that the mathematics he is creating must directly treat the transcendents. And, what is a transcendent equation such as it was defined by mathematicians of this era? The transcendent equation is the equation that corresponds to a curve engendered by two independent movements the relation of which cannot be exactly measured, that is, that cannot be measured either by a whole number or by a fractional number.

You see? The continuous is not rectilinear. The continuous is a labyrinth because only the fold or the inflection takes account of the necessity of infinite series. If I define the continuous in a rectilinear manner, this would be a continuous still full of holes. I cannot define the continuous on the level of the straight line. [This is] another way of showing that it's a means of rounding of angles, a theme ever-present in the entire Baroque. Just as I created the connection with [René] Thom, I remind you that in modern mathematics, a theme has met with great attention, a topic from a mathematician, a very interesting author names [Benoit] Mandelbrot, [*Deleuze spells out the name*] concerning what he calls fractal objects, fractal objects. Here I'm going very, very quickly; I am giving you a grotesque presentation of this, given how rudimentary this has been. You'll see what its link is to what we were just discussing.

Having drawn a segment – I've lost my chalk; ah, here it is. [*Deleuze goes to the board*] [*Pause*] You will see how beautiful this is. – I take a segment. It's not wavy like that one. It's straight. [*Here, given the change of recorder, part of this development at the board is inaudible*] I take a segment, and I divide into… like that, I divide it into three. This assumes [*inaudible words*] … I construct a trilateral triangle. Ok? There, I have my first straight line. I took the central segment, and I constructed my trilateral triangle. And here, I'll do the same thing, and here as well. I'll divide this into three, and I construct the trilateral triangle. [*Pause*] Here, I'll do the same thing, here the same thing, here the same thing. [*Laughter*] At the extreme, what do I have? At the extreme, as Mandelbrot shows this so well, I have a very special kind of curve in which all the angles are erased. I have an infinitely open curve, that is, that fills up the entire plane. As Mandelbrot said, it's exactly the operation that occurs on a map when you increase the scale. If you extend the scale toward the scale named real, well then, each time you are going to construct onto a cape a cape, and on the cape, another cape, etc., to infinity. At the extreme, you will have an open curve that occupies the entire plane. Insofar as it's an open curve, it has no surface and yet it occupies the entire plane. As Mandelbrot said, it's very strange; it has dimensions at the intermediary of 1 and 2. In fact, in mathematics, calculations are logarithms, for logarithms, for those of you who know what these are, logarithms are connected to operations through which angles are rounded, and logarithms are very important in the mathematics of the seventeenth century, in all of Baroque mathematics. Logarithms must be linked to infinite series first of all. At the extreme, there is this curve that Mandelbrot discusses, a curve with the dimension logarithm 4 over logarithm 3; appreciate that logarithm 4 over logarithm 3 is an irrational number. Or rather, we have no basis for admiring this since there is an infinite series and there are irrational numbers at the limit of the infinite series.

I can do the opposite, and instead of adding capes infinitely to the figure – this is what Mandelbrot says cleverly, noting that: How does one measure the coasts? How does one measure a country's coasts? Well, you take a scale that allows you to define the capes and bays, and if you change the scale, you will perpetually have other capes on your cap or other bays in your bay. You can just as well subtract bays as add capes. You will arrive at the same coast, with the dimension 1.2, neither in the dimension 1, nor in the dimension 2, but it will be intermediary between a line and a surface. These are great, yet beautiful mysteries. At the extreme, you have this curve; it no longer has any tangents. As Mandelbrot says, it's the infinitely cavernous body, or the infinitely spongy body. Hey! The infinitely elastic body, that suits us quite well.

So we rediscover [this], and it's about this that I would like you to reflect between now and the next class. What I believe to have done, I hope… I know that this has been difficult, and you have endured this very well. But that's it now. This will be… We have finished with math, I dare say. What I want you to retain is the purely logical linkages: How did we go from the fold to the infinite series? That is, why can't the continuous be rectilinear, but necessarily a labyrinth? Answer: the rectilinear continuous is only an apparition full of holes, these holes being marked by irrational numbers which themselves imply curvatures, elements of curvatures, such that they are the source of infinite series. [*Pause*] What we have shown, if you will, is that we had to go from the fold as inflection to the infinite series through the intermediary of the irrational number.

What's left for us to do in order to complete this first floor, the upper floor? The second part of what I would like to demonstrate is that this time, it is not enough to go from the fold as inflection of the infinite series. We have to go from the infinite series to inclusion, which is quite a simple idea, to wit: folding, folding, it's quite lovely. We fold, we fold to infinity. That's what we have just shown: if you fold, you fold to infinity. Thus, the fold is the expression of the infinite. So, this is what you must dream about: the fold is infinite. The fold is the form of the infinite. [*Pause*]

Fine, the fold is the form of the infinite, but why do we fold? Here I would like to say the most banal thing in the world, and it's really great. One cannot do philosophy without going astray (*fauter*), and then I don't know how to say it, from the greatest paradox to the most enormous banality, and it's by seeking support from an enormous banality that we can again move back to something astonishing. At this point, we are strong in speaking to others, that is, to non-philosophers. What would you have us do? If you lean toward this banality, you have to go all the way, that is, all the way to the other side of the banality which is a nonsensical paradox. So, we discover the enormous banality immediately: what is the use of folding? Why do we fold? So this seems obvious to me, and this is a spatial intuition worrying Leibniz. He cannot do away with it: *when you fold something, it's to place it inside*. You fold a piece of paper to put it inside an envelope. Folding is for putting inside, and this is the only way to put it inside. In other words, we go from the fold to inclusion. Inclusion is the final cause of the fold. I fold to place within. I want to make a package, so I fold. I fold the newspaper to put it in my pocket. I fold my handkerchief; it's no stronger than that. The fold goes beyond itself toward inclusion, you see? So the two operations are: from the fold to the infinite series, from the infinite series to inclusion.

If the continuous is a labyrinth, in the end it's because it is inside. It's inside what? It's inside the soul such that, I would say, we pass continually from the labyrinth of the continuous to the labyrinth of freedom. The labyrinth of the continuous is: the continuous is not rectilinear; it implies the infinite series of inflections or the infinite series of the fold. The labyrinth of freedom is: what is the use of folding? It's for placing with the soul so that each soul has within it an infinity of folds that it cannot unfold all at once. And what does it mean to be a soul? O how this becomes so twisted, how twisted this is. It means having twenty-two, forty, two thousand, an infinity of folds. And the pleats of matters are there only because they find their reason most profoundly in the final inclusions of the folds in the soul. Orthodoxy was greatly suspicious of Leibniz. This soul full of folds indeed appeared suspect, especially when we see what Leibniz will derive from his soul full of folds, and you see that he found that Descartes's soul was truly too rectilinear. [*Pause*]

Fine, I am launching a great appeal. I would really like that for the next time, which will be in a little while now since next Tuesday is the 11 November, so we have to… That comes at a good moment because you will need all that time to reflect. I would truly like for you to review all this because I am ready to start over, I don't care, if it's not entirely clear, because I would like… What I did here is the tale of the fold-infinite series-irrational [number]; how these three notions are connected, and how from this we conclude that the continuous cannot be rectilinear, but is indeed a labyrinth. If you haven't understood this, we will start over… Yes?

A student: [*Inaudible question*]

Deleuze: At the same level; I am saying that on this point, Leibniz can create a very original conception of the pleating onto oneself by virtue of all this. If you will, he is going to complicate all the ready-made expressions and understand them in a completely new direction, in Leibniz's thought. [*End of the recording*] [2:39:02]

Notes

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[1] In an essay from the late 1960s (but not published until 1972, Deleuze used the same construction, "A quoi reconnaît-on le structuralisme?" in *L'Ile Déserte et autres textes* (Minuit 2002); "How Do We Recognize Structuralism?" in *Desert Islands and Other Texts* (Semiotext(e) 2004).
[2] In fact, this reference does not appear in the October 28 session.
[3] This drawing is labeled "The Baroque House (an allegory)" in *The Fold*, p. 5; *Le Pli*, p. 7. See the drawing reproduced at the top of this translation.
[4] On the importance of the labyrinth, cf. *The Fold*, p. 3; *Le Pli*, p. 5.
[5] In *Renaissance et la Baroque*.
[6] See this expression and the corresponding development in *The Fold*, p. 9; *Le Pli*, p.14]
[7] Deleuze suggests in *The Fold*, "the primary reason for an upper floor is the following: there are souls on the lower floor, some of whom are chosen to become reasonable, thus to change their levels", p. 12.
[8] See *The Fold*, p. 10; *Le Pli*, pp. 15-16.
[9] Deleuze pages through a Mallarmé text, from the "Divigations" collection, from the text "L'action restreinte".
[10] "Limited Action," Mary Ann Caws translation, 1982; in the French transcript, Deleuze omits "—and to present".
[11] On transformations according to Cache, cf. *The Fold*, pp. 15-17; *Le Pli*, pp. 21-23]
[12] On transformations according to Thom, cf. *The Fold*, pp. 16-17; *Le Pli*, pp. 22-23.
[13] On the objectile as term, borrowed from Bernard Cache, cf. *The Fold*, pp. 19-20; *Le Pli*, pp. 26-27.