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Does Science Think?

Does science think? First of all, what exactly are we dealing with? To begin with, I would say that the very title of my paper only constitutes one of the terms of the dilemma, whose second term is expressed in the inverse question, namely: Does science not think? Everyone who knows some philosophy of science knows that this is not a dilemma that preoccupies science itself, and even less so mathematised science. Rather, we are dealing with a dilemma which preoccupies philosophy in its relations with science; a dilemma which, as I would like to show, also divides it, as is shown by the different responses to the question of knowing whether science does or does not think. Now, the main thesis that I would like to propose here is that this dilemma has today become the problem of *science itself*. The question of knowing whether science does or does not think has today become a question that involves science itself. What I mean by this is nothing but the following: it is for strictly scientific reasons that science is today faced with the task of affirming itself as a domain of thought.

1.

I will begin by briefly sketching two philosophical positions that in some sense prepare or sound out the terrain or which explicitly formulate the thesis according to which science does not think. We are dealing with, of course, the respective positions of Edmund Husserl and Martin Heidegger. It goes without saying that any claim to an exhaustive analysis of this approach would also need to take into account other epistemological reflections, for instance those developed in the context of the Frankfurt School. This is precisely to the extent that, for Max Horkheimer, Theodor Wiesengrund Adorno or Alfred Schmidt, just as for Edmund Husserl and Martin Heidegger, science is the domain of non-thought.

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In his last great work, *Die Krisis der europäischen Wissenschaften und die transzendente Phänomenologie*¹, Husserl evokes the radical crisis of modern Europe, a crisis which, according to him, concerns its foundations, such as they were laid in the seventeenth century. The name of Galileo plays a key role here, but in a peculiar manner, because, according to Husserl, it marks the foundation of modern science with ambiguity. In order to express the ambiguity of Galileo's role, Husserl turns to the play of words allowed by the German term *Entdeckung*, discovery. In effect, following Husserl, Galileo is one of the greatest innovators of the modern era, he is an *Entdecker*, that is, if I translate this term literally, the one who discovers, who reveals. Now, according to Husserl, at the same time as he discovers, Galileo also covers, he hides something. In effect, he is, to quote Husserl, both a "discovering and a concealing genius" ("*ein entdeckender und verdeckender Genius*").²

Having formulated "the completely new idea of *mathematical natural science*", that is having posed the basis for a *mathematisation of nature*, Galileo, according to Husserl's reading, introduces a decisive break in the history of science, as signaled by the transformation of nature into a "*mathematical manifold*".³ In the wake of the mathematical formalisation of nature carried out by Galileo, the sensible world is transformed into an infinite totality of objects that are ideal but nevertheless objectively determinable. Therefore, thanks to the Galilean invention, the entirety of infinite nature has become an applied mathematics, or more precisely, to quote Husserl: "mathematics is the true being in itself" of nature, all nature is submitted to quantification and calculation.⁴

Now, the price to be paid for the mathematical formalisation of nature – and it is here that Husserl evokes the dissimulating aspect of Galileo – is what Husserl calls the *emptying of meaning*. This emptying concerns above all the original meaning of mathematised scientific knowledge. In other words, what is forgotten are the primordial roots of scientific knowledge in practical life. Now, ever since Galileo, mathematical idealisation becomes, so to speak, its own end. Experimental science becomes *techne*, a simple know-how in order to obtain

¹ Cf. Edmund Husserl, *The Crisis of European Sciences and Transcendental Phenomenology* [Crisis]. Trans. David Carr. Evanston, IL: Northwestern University Press, 1970.

² *Ibid.*, p. 53.

³ *Crisis*, pp. 22–23.

⁴ *Ibid.*, p. 54.

results through the technique of calculation measurement. This is how the envelope of mathematical symbols not only covers the sensible world, but passes itself off as this world itself.

We touch here on the fundamental dimension of the emptying of meaning that accompanies the formation of modern science. What Galileo, according to Husserl, dissimulates is, in the final analysis, nothing other than the *life-world*, the *Lebenswelt*, that is the original soil of the practical and theoretical life of man, the soil that gives meaning to every human activity and on the basis of which we always already know the world and ourselves within it.

Hence, if we follow Husserl, the “*original sin*” of the break that marks the advent of modern science is twofold: First, the mathematisation of nature, to the extent that it is inseparable from measurement and quantification, presents the objectivated world of beings such as it constructs it as the only true world. But second, science covers over, or worse, cancels out, meaning. The presupposition of the Husserlian doctrine of science is thus the equation *between thought and meaning*: there is thought where there is meaning. Following Husserl’s path, a conclusion imposes itself, namely: science does not think. Science does not think to the precise extent that it annihilates meaning.

M. Heidegger, as is well known, reprises and radicalises the Husserlian thesis on science. Like Husserl, Heidegger affirms that science is entirely capable of delimiting a domain of beings according to the mode of its being, and in so doing of circumscribing and founding it. For Heidegger, such an anticipatory sketch of the being of beings can be seen, for example, in the nature which according to Galileo is mathematically structured, thereby allowing it to present itself as an object. For Heidegger this means that it presents itself as something measurable and calculable.⁵ In brief, according to Heidegger science is entirely capable of founding itself but – and this is the crucial point – it is incapable of mak-

⁵ Martin Heidegger, *Phänomenologische Interpretation von Kant’s Kritik der reinen Vernunft [Interpretation]*, in: M. Heidegger, *Gesamtausgabe*, Band 25, Frankfurt/Main: Vittorio Klostermann, 1977, p. 30. Now, Heidegger also insists on the fact that while nature is scientifically objectivated, that is subjected to scientific objectivation, it nonetheless exists “in itself”, which is to say independently of science. This means that, for science, this “in itself” of nature is both inevitable and inaccessible. Cf. M. Heidegger, *Gesamtausgabe*, Band 7 (Vorträge und Aufsätze), Frankfurt am Main 2000, p. 55.

ing explicit the meaning of this foundation. To make sense of its operation of foundation, science would need a thinking that gives meaning, i.e. *philosophical thought*. This is precisely what is implied in the thesis advocated by Heidegger, namely that “science does not think”. I quote: “Using physical methods, for example, I cannot say what physics is. What physics is, can only be thought following the manner of the philosophical question”.⁶

Heidegger simultaneously reprises and radicalises the Husserlian thesis on science as *techné*. Science can very well be technical by its very essence, Heidegger tells us, but the essence of technics is not itself technical. Technics is, in its essence, by definition, a metaphysical project. In effect, it is a singular relation entertained by the knowing and acting subject with beings, a relation founded on the transformation of beings into a mere matter of disposal and manipulation, and on the correlative forgetting of the being of beings. For this very reason, science is not a true thinking, because due to its intrinsic structure it is a techno-instrumental apparatus.

I would like to sum up the essence of the philosophical position according to which science does not think into two propositions: First, the science that does not think is a science which, handling mathematical symbols, transforms all beings into quantified and measurable entities. The second proposition that concerns the nonthinking character of science, if I can put it like this, is clearly expressed by Heidegger: science does not think because its knowledge is, in the final analysis, always in a non-autonomous position, a position, as it were, of “dependence on ‘some thing’”. In other words, if scientific knowledge, by its very essence, is not truly an autonomous procedure of knowledge, it is because science always needs a thinking that would be capable of giving meaning to its functioning.

2.

I would now like to turn to philosophical positions that advocate the opposite thesis, namely that *science thinks*. However, I would like to emphasise that this second position, looked at more closely, is but another “turn of the screw”. In

⁶ Martin Heidegger, *Gesamtausgabe*, Band 16 (*Reden und andere Zeugnisse eines Lebensweges*), Frankfurt am Main 2000, p. 705.

effect, the conclusion according to which science thinks results from taking to its ultimate consequences the position according to which science is a techno-instrumental mastery of beings, a mastery founded on the mathematisation of being. The most representative stances within this second position is without doubt that developed by what is customarily called French epistemology, that is by Gaston Bachelard, Georges Canguilhem, Alexandre Koyré Michel Foucault, Michel Serres, Jean T. Desanti, Dominique Lecourt.

In order to make explicit my thesis, according to which French epistemology broke with the Husserlian and Heideggerian conception of science while taking to its ultimate consequences the techno-instrumental conception of science, I would like to refer to some propositions by Bachelard.⁷ As is well known, for Bachelard, there only exists the world constructed by science. In this perspective, science represents the moment when the immediate must give way to the constructed (*BE*, 119). It is not the object in its immediate givenness that guarantees the truths of scientific knowledge; it is not positive reality which is constitutive of scientific knowledge, but rather the break with pre-existing, everyday knowledge, with primary evidence. In fact, scientific objectivity is only possible if one has first broken with the immediate object, if one has refused the seduction of the first choice, if one has stopped and contradicted the thoughts born of the first observation. Every properly verified objectivity refutes the first contact with the object (*BE*, 123). Science is not the adequate expression of reality. On the contrary, scientific knowledge constitutes the process of objectivation: determining an objective character is proving that one has correctly applied a method (*BE*, 30). The real that science explores, says Bachelard, is nothing but realisation. It even seems that a real is only instructive and certain if it has been realised and above all if it has been put back in its proper neighbourhood, in its rank of creative progression (*BE*, 77). The reality that is the object of science is nothing other than its own construction.

In the process of “scientific precision”, of the infinite verification of the initial hypothesis, one can, as Bachelard puts it, grasp the elements of a Copernican revolution of objectivity. And this can be done to the extent that it is not the object which designates precision, but the method (*BE*, 126). Theoretical knowledge is

⁷ I have extracted them from the collection *Bachelard: Epistemologie*, ed. D. Lecourt, Paris: PUF, 1971. Hereafter cited parenthetically by page number as *BE*.

always already a technical knowledge. That is, in modern science, an instrument is truly a reified theorem. The conditions of application of a concept are embodied in the very essence of the theory. That is why Bachelard can argue the phenomenotechnics expands phenomenology: a concept has become scientific to the degree that it has become technical, that it is accompanied by a technique of realisation (*BE*, 135); knowledge becomes objective to the degree that it becomes instrumental (*BE*, 140). According to Bachelard, following contemporary physics we have left nature to enter the factory of phenomena (*BE*, 143). Science has transformed the Cartesian cogito into an instrumental cogito: the eye behind the microscope has accepted instrumentalisation. When all is said and done, it has itself become an instrument behind the instrument; it is the instrument behind the instrument.

These propositions by Bachelard which I've just quoted present, at least from the standpoint of phenomenology or fundamental ontology, a techno-instrumental conception of science at the pure state. Science, for Bachelardian epistemology, is by definition a thought, but a thought that is at the same time a technics. More precisely, for modern epistemology there is no other reality than the one which science has constructed on the basis of its theorems and experimental procedures. Two theorems specify this fundamental position of epistemology.

First, according to Bachelardian epistemology, what characterises a science is that it has a specific object. Now, this object of science is not given, it does not exist somewhere, outside of scientific discourse, in reality, it is not waiting for science to discover and explore it. On the contrary, in order to attain its object, science must construct it. The object or rather the domain of the objects of science is therefore a matter internal to science, it is the product of theoretical norms and experimental standards. The presupposition of the epistemological doctrine according to which science constructs its own object is obviously nothing other than the abandonment of naive realism. In effect, what singularises modern science, according to French epistemology, is that it has abandoned reality as its ultimate and indubitable reference.

Second, the scientific construction of the object is radically separated from every meaning or *every* search for meaning. In this respect, scientific knowledge means the retreat of the world, of this live-world of which Husserl speaks as the source of meaning. More precisely, what characterises modern science is

not simply an active destruction of every meaning that would precede scientific knowledge, but rather a radical indifference to every meaning. This is what is valorised by Pascal's famous dictum on the *eternal and terrifying silence of infinite spaces*. Lacan himself doesn't say anything different when he suggests that science presupposes the signifier that does not signify anything to anyone. If science is indifferent to meaning, if it can do without it, it is because in manipulating mathematical symbols and formulae it makes contact with the real which is at stake. Bachelard's epistemological doctrine therefore starts from the presupposition that science is born with the mathematisation of the universe. Now, unlike phenomenology, this doctrine no longer associates mathematisation with measurement and quantification. Rather, it considers it, to borrow an expression from Jacques-Alain Miller, as an operation with elements that are in themselves devoid of meaning, but which, once they are articulated according to certain rules and ordered in a consistent network, nonetheless produce material effects. In fact, scientific objects don't have any other support or substance than this network of symbols and formulae.

Here I need to stop in the presentation of Bachelardian epistemology. In order to establish the epistemological position according to which science itself constructs its own objective reality, it is necessary to complement it with regard to a crucial point. This position is grounded on a presupposition which can't be explained. In fact, this position does not have any solution to the following problem: namely, how to reconcile the fact that, for modern science, the object of its research cannot be other than a constructed object, with science's conviction that the construction of its object intervenes in the "reality itself" and determines it. More precisely, it intervenes in something which exists "beyond" the scientific construction of the object and independently of this construction, something that represents in some sense a *non-realist matter* on which and on the basis of which the scientific construction proceeds. For this non-realist matter we will use Lacan's concept of the *real*. In brief, ever since the birth of modern science in the guise of Galileo's mathematised nature, science has taken its construction of the object for the *discovery of the real*, or, more precisely, for the *discovery of the laws in the real*. The scientific knowledge only works on the basis of the presupposition that a network of signifiers articulated independently of our knowledge is always already at work in the real. In brief, scientific knowledge is always considered, and it considers itself, as a knowledge in the real. One could illustrate this knowledge in the real, for example, by a stone which,

independently of our knowledge, itself “knows” that, thrown in the air, it must fall. On the contrary, Tom, the cartoon cat, does not fall and can walk in the air. Why? Because he doesn’t pay attention to this knowledge in the real, but lives in the imaginary world of his consciousness. This imaginary world allows him to refuse to know anything about the law of gravity. That is why he must first of all open his eyes for the real in order to become aware of the void beneath his legs. But Tom the cat does not only show us that knowledge in the real has nothing in common with the imaginary world of consciousness. He also shows us that ever since the emergence of science, the only operative knowledge is this knowledge in the real which, as in the example of the stone, does not know.

We must nevertheless add that, despite the mathematised and constructed character of nature, no one, and science itself even less so, has ever seriously doubted the existence of this real into which science intervenes and which it determines. But there is nothing obvious about this position. What could confirm the *conviction* of a science which gives up on any reality, on anything that lies outside the horizon of mathematical formalisation, that its construction of reality determines, or even forms and transforms a real which would subtract itself from this construction?

We can’t have it both ways: either we pose that the real into which science intervenes exists “in itself”, that is before this intervention – but at the cost of exiting the domain of scientific knowledge, since for science *qua science*, such a “nature in itself” precisely does not exist; or we insist on this point – and postulate that science, when it constructs its object, establishes at the same time *a new reference point outside of the constructed object*, or, more precisely, a *real* that science then discovers as the basis of its knowledge. But then we would need to respond to a twofold question: First, what is the real that science produces in the construction of the object? Second, what legitimates modern science in its conviction that its network of mathematical symbols makes contact with a real that is supposed to exist independently of mathematical construction?

Before I examine more closely the problem of science and its real I would like to sum up my sketch of the position according to which science thinks, the position elaborated by French epistemology. The science which, in its abstraction from all the qualities of sensible objectivity, constructs its object, presents itself, in this approach, as a science which thinks, because *thought is precisely*

not meaning, it is not equivalent to meaning. Scientific thought is embodied in an articulation of mathematical symbols. Given that this articulation is infinite in principle, we could say that the scientific construction of the object presents science to us as a machine of thought, a machine that functions as a ceaseless (re)construction of its objects of knowledge. We could characterise the ceaseless functioning of the scientific machine of thought in the following way: we could say, for example, that modern science carries out its research (in microbiology, quantum physics, genetic engineering, and so on) in an unconditioned manner, which is to say simply guided by a disinterested scientific interest, and not by an moral or social interest, an ordinary objective or purpose. Science is thus a thought that does not know limits, a thought that is, *by definition*, excessive. And this excessiveness of science, its intrinsic transgressive character, is part of the very essence of its process of knowing, of its construction without reason or cause of its object.

This also means that this unconditioned process of science has nothing to do with human welfare, nor with any Good sought by man. Scientific knowledge, by its inherent structure, ignores any human welfare and even human survival as such. If we take modern science seriously, that is, if we accept that it constructs its own object while destroying meaning, we should also to some extent agree with the following proposition, put forward by Jean-Claude Milner: “Something is nonetheless certain: if ethic exists, science has nothing to say about it, and, without doubt, qua science, it can do nothing with it”.⁸ Milner’s view is not, or at least this is how I understand him, that science is unethical. Even if we agree with his statement that science can do nothing with ethic, this doesn’t mean that we fail to acknowledge that there is an ethical dimension to scientific thought. This ethic of science, however, can be nothing other than, to borrow the Lacanian terminology, its “not giving up on its desire”, or, which amounts to the same, not giving up on its capacity to think. It is in this sense that we could say that there is no ethic of science to the extent that science respects the imperative that belongs to it and which demands that qua science it is “good for nothing” – that is that science is only good *for* thought. Science thus presents itself as a experiment with thinking and as the generic condition of thought: it is *good for thinking*.

⁸ Jean-Claude Milner, *L'œuvre claire. Lacan, la science, la philosophie*, Paris, Seuil, 1995, p. 39.

But the question that arises here is even more decisive, since it is a matter of asking ourselves if the image of science as unconditionally following its imperative represents a *philosophical* or a *scientific* image of science. Or, to formulate the question otherwise: what are the reasons inherent to science itself whereby the supposition that science thinks is pertinent and relevant for science such as it effectively functions? In brief, is it necessary, and if so to what extent, for contemporary science to affirm itself as a domain of thought? I will answer this question in two steps.

3.

In a first step, we need to return to real that science deals with. To repeat once again: science, when it thinks, that is when it constructs its object, always at the same time produces a surplus, precisely a surplus-product. To its constructed object it adds the *real*, that is a point which is “external” to scientific construction, a point in which science intervenes and which furnishes it, if I may say so, with the material for its construction. In itself, this real is nothing but an indeterminate and undetermined X. However, this real, while being indeterminate and undetermined, nevertheless accompanies the scientific construction of the object. In effect, without this X the construction of the object would be a vain imaginary game. But let us recall that this real is not something that will be given as such, “in itself”. Rather, we are dealing with a paradoxical entity. It is true that the real presents itself as an irreducible given, as a presupposition of scientific activity. But it is scientific knowledge itself which creates this real as a given, as an always already present presupposition of its construction of the object. In other words, and here lies the paradox, the real is the necessary presupposition of operational science, and at the same time its surplus product; that is, the real is only the presupposition of science to the extent that it is its surplus product. The external real of science thus belongs to it in an absolutely intrinsic way.

The crucial point is therefore the following: one could say that science thinks when, in constructing its object, it adds to it some real, but it adds it precisely as irreducible to this construction. In other words, pure thought, that is the thought that is only destined for thought, is not any thought, but a thought articulated with the real. It is only in this sense that one can say: if science thinks, then the real, that is an X, exists. This also means: if science wants to be equal

to its concepts and its task, or better, if it wants to affirm itself as a thought, it is necessary for it to also think its articulation with the real, or more precisely its production of instance of exteriority which nevertheless belongs to its interiority. The real, in a word, is the verification of the fact that science thinks.

But why would science want to be equal to its concept and its task? In fact, we have yet to answer the question we posed, namely: is it necessary (and if so why) for contemporary science to affirm itself as thought, or, which amounts to the same, to fix a real and attach it to itself? In order to respond to this question we need to take a further step.

To take this step, we need to return to the question that I posed at the beginning of this talk, namely: why does modern science, ever since its Galilean birth, persist in its conviction that it has to do with a real external to it? In order to answer this question, it is useful to recall that modern science, though Galilean, is also a Cartesian invention. In fact, at the time of a radical crisis of knowledge that had been triggered in the sixteenth century by the undermining of the biblical signifier, Descartes did not just put forward the cogito – issued from methodical doubt as a point of pure thought, that is of a thinking without qualities whose correlate can only be a being equally stripped of all qualities, that is a subject. This thinking without qualities constitutes the point on the basis of which proceeds the construction of a new stable reality, impervious to the crisis of knowledge. This is one side of the Cartesian invention. The other, which is no less important, is the role played by God in the birth of modern science. We know that Descartes introduced it as the instance that does not deceive and which thereby guarantees that the construction of a new universe is not a mere phantasmagoria. The Cartesian God is the object of a demonstration in which the point of pure thought, the cogito, is articulated to the real.

In brief, it is God which, for science, guarantees that its symbolic construction makes contact with the real. God guarantees that the laws which science discovers are in effect the laws of the real itself and not simply ingenious inventions and semblances of scientific knowledge. This means that the crisis of knowledge which gave rise to the birth of Galilean and Cartesian science was not the crisis of the real.

Now, from the moment, when it came to be known that God is dead, that is, when God died for science itself, the latter must confront a different host of problems. The disappearance of the instance of guarantee has shaken up belief in the real as the support of science. In effect, science is no longer capable of making the distinction between the real and the imaginary. The consequences of this loss of guarantee are only clearly manifest today, when science no longer seems capable of determining whether its knowledge is safe from the intrusion of semblances and hallucinations. This is the principal difference between the position and role of contemporary science and the position and role of science in the seventeenth century. Today, the world as such presents itself as a materialisation of the hallucinations of science itself, or even, to use a somewhat threadbare formula, as a virtual reality.

It's true that science has always been considered as unlimited and excessive. However, today its excessive character has a new signification. In the past, science was considered as excessive because of its will to knowledge, which did not recognise any higher authority. Today, the situation has completely changed: contemporary science remains riveted to the imperative of knowledge, but it no longer possesses a guarantee that would allow it to know whether its knowledge can produce effects in the real. But if the death of God has stripped science of this indispensable guarantee, it has also made it possible to show that science is a machine of knowledge that itself constructs and produces the real which is at stake in scientific knowledge. Now, one of the unexpected consequences of this disappearance of guarantee is that the real itself has become suspect. More precisely, what has been put into question by the death of God is the capacity of science to determine, separate and discriminate the real from a mere phantasmagoria. That is why the crisis that science faces today is not a crisis of knowledge but a crisis of the real itself.

Having supplemented its construction of the object with the real, science has not yet wanted to know anything of this crisis of the real. With the emergence of biomedicine, life, as the object of its manipulations, and thus the real, which was silent up to this point in science, has suddenly been given the sale right to speak. *Bios*, life, the proper object of bio-medicine and of biotechnological knowledge is not simply, and this point is essential, a constructed scientific object. The life which is hidden in *bios*, that is the real itself, a real that science produces as the surplus produced in its construction of its object. But this is exactly why life

works over science and causes it problems. Ethics or more exactly, bioethics is probably the most forceful manifestation of the problems and difficulties that the real of life poses today to science. By this term, bioethics, I designate the knowledge, the practices and the institutions that present themselves today as a sort of defense of life *against* science and that looks for the response to the question of knowing whether the fact that life has become a scientific problem is good for life and most especially, for human life.

I consider this bioethics, on one hand, as an expression of anxiety unleashed by the fact that science itself has produced its real, even as this production would no longer be guaranteed by divine will. This is less about anxiety, which is to be felt outside of science, in everyday life, it is more about uncertainty to which science is pushed because of its production of the real. If, in a general sense, the real had been situated like a tacit presupposition as a solid support of scientific knowledge, then from this same fact, scientific knowledge has always maintained its manifestly “realist” sense. Yet, since the withdrawal of God, the real has manifested itself, to express myself in terms of the third critique of Kant, like a non-realist real, or a ground without ground. This is an aspect of bioethics. At the same time, and on the other hand, bioethics today veils and masks the problematic relation between science and life. It masks the fact that, in the phenomenon of life, science for the first time directly encounters what might be called the real, the real which, since its modern emergence, necessarily accompanies the construction of science’s domain of knowledge. In this regard, we might say that bioethics functions in the framework of science as a principle obstacle to all attempts to clarify the fundamental structure of scientific knowledge and of its problems.

These two aspects of bioethics permit us to focus on an essential point: to know whether science today or the center of scientific preoccupations today, is not simply the object of its knowledge, that is to say its constructed object. The center of its preoccupations becomes the real itself. If science wants to affirm itself today as a thought, that is to say, if it refuses to be reduced to a materialized phantasmagoria in its increasingly sophisticated instruments, if it still would strive for objective knowledge, universally valid, it should resolve, for the reasons strictly inherent to science, the problem of the real that it adds to its construction of the object. Science has to answer the question, how it can affirm this paradoxical real, which doesn’t exist prior to scientific knowledge, but

is, on the contrary, its surplus product and at the same time its always already given presupposition.

I will stop myself at this task. I am not in the place, of course, to provide a response to the question of knowing if and in what manner science today is capable of overcoming this challenge. However, I would, in the guise of a conclusion, at least sketch the problem for which the articulation of a real as independent of thought confronts scientific thought. For attempting to approach this problem, I will touch on the division of the body of scientific disciplines in two, the division introduced by Alain Badiou in his “Afterword: Some Replies to a Demanding Friend” published in the collection *Think Again: Alain Badiou and the Future of Philosophy*⁹. In this text, Badiou isolates a compact core of some scientific disciplines to which it is legitimate, according to him, to understand their scientific statuses according to the way in which they combine mathematic formalism with experimental procedures under theoretical control. And he places all the rest on the other side, that is to say, the disciplines that do not use mathematics in their manner of proceeding and that render their scientific status suspect in the eyes of Badiou. These disciplines represent either a simple technical knowledge that, even in producing material effects, remains on the side of ideology, like biology for example; or they are disciples that are simply reducible to ideology, and Badiou files under this, with a few rare exceptions, the whole of social and human sciences.

At first glance, the classification of Badiou might shock those who work in these disciplines to find themselves excluded from “true” science. As far as I’m concerned, I would underline that this classification brings us an adequate description of the actual situation of science in the framework of globalised capital, capitalism having become the world. If experimental and technical science constitutes one of the principle resources of capitalism, it is due to their capacity of their rendering themselves useful to capitalism. In effect, science is not useful to capitalism other than submitting itself under the imperative of profitability. As for what concerns social and human sciences, the sciences that Lacan had treated as conjecturals, they are of service to capital, because they are, in their nature, from the beginning submitted to the imperative of ideological utility. It

⁹ *Think Again: Alain Badiou and the Future of Philosophy*, P. Hallward (ed.), London, New York: Continuum, 2004, p. 232.

is sufficient to recall here the depreciative judgment that Lacan advanced towards them: “My lifelong repugnance or the appellation ‘human sciences’ is well known; it strikes me as the very call of servitude.”¹⁰

For me, the demarcation introduced by Badiou between, to put it simply, the “pure” sciences, that is to say, the mathematicized and experimental sciences, and the ensemble of conjectural and servile scientific disciplines, is not productive unless one takes it as a line of an intrascientific demarcation. That is as a demarcation that inscribes itself in the very core of science itself. With respect to the theme of my proposal, whether science is thought, this distinction signals that science is not ready to assume by itself what is to be imposed as its intrinsic structure. That is to say, a thought articulated to a real subsisting outside of itself. There is, briefly put, two principle reasons that impedes science from assuming its immanent condition.

The first is quite banal. Science does not assume the task of thinking, but prefers rather to submit to the demand of profitability and utilitarian ideology. The second reason is less trivial because it demonstrates the mathematisized nature of scientific knowledge. Mathematisized scientific knowledge is a knowledge that does not know itself but which, once put to work, functions, as it were, automatically. In short, mathematical thought is a machine for automatic thought, a machine that, in principle, never stops. But it never stops not because there is nothing there to stop it. It does not stop because it functions like a drive, that is to say, following a constraint proper to its headless functioning. This functioning is not ruled by anything but the real that it produces, more exactly, that it produces as an impasse of formalization. Mathematics is, as Badiou writes in *Conditions*, “too violently true to be free”. At the same time, it is too violently free (that is to say discontinuous) to be absolutely true.¹¹ One might thus say that mathematics, as thought, is the passion of the real to a state of purity, that is to say, it presents itself *as a constraint*. This character of constraint for the articulation of thought and the real is, at least in my eyes, the principal reason why science, with the exception of mathematics, does not assume the task of pure thought.

¹⁰ Jacques Lacan, “Science and Truth”, in: Jacques Lacan, *Écrits*, trans. By Bruce Fink, in coll. with H  lo  se Fink and Russel Grieg, New York – London: W.W. Norton & Company, 2005, p. 730.

¹¹ Alain Badiou, “Philosophy and Mathematics”, in: *Conditions*, trans. Steven Corcoran, London – New York: Continuum, 2008, p. 105.

This is why the focus on science as the domain of thought does not proceed by itself, and demands yet another effort, a supplementary effort. A supplementary thought is necessary, the one, which requires that science, for reasons absolutely intrinsic to it (science), puts itself in the service, not of capital, but of the real. It requires a thought that actually aims at what science, according to its essence, wants: and that is a thought itself. Specific characteristic of contemporary science, however, is that today this supplementary thought belongs to science itself. This is how the distinction which, according to Badiou, divides the body of contemporary science into two, might be useful to us; on the condition of not reducing it to a distinction between a “true” science and a “false” science, that is, a “pseudoscience” of conjectural and ideological scientific disciplines. My suggestion is that we understand this distinction in the following way: ideological-conjunctural sciences with its exteriority to science represent the exteriority of that supplementary scientific thought which, even if being exterior to science, is no less scientific. But they represent this intrinsic exteriority of scientific thought in such a way that at the same time they conceal it. With its extra-scientific, ideological contents they reveal and at the same time conceal the fact that to science belongs, as its intrinsic part, also something which is exterior to it, something that subsists outside of science. Ideological sciences conceal the fact that – due to the structure of scientific thought itself – a supplementary effort of thinking, the one exterior to scientific thought, is necessary, in order that science affirms itself as a thought. It is only today that we can give an account that this supplementary effort, extra-scientific, has its place, the place proper to it, in the interior of science. It consists in the decision that only a thought capable of justifying and affirming its dependence to the real, a real which exists independently of thought, is worthy of the name: scientific thought.

To conclude, I would say that science, in affirming that it thinks, already passes over its borders. It makes a step in the domain, for taking up the terms of Badiou, of another procedure of truth, that of politics. To affirm that science thinks does not signify the introduction of political struggle to science. It would be necessary rather to say that it is insofar as science, for reasons inherent to it, affirms itself as thought, that it might eventually contribute to the existence of politics – a politics which, precisely, has nothing to do with technology, as subtle and as brutal as it might be in the regulation of things and people,

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a technology imposed by the logic of capital. Affirming the view that science thinks is a *scientific struggle* for the existence of politics of emancipation.

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