

Recursivity and Contingency

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condition under which thinking is possible, and this condition always carries a negative dimension such as incompleteness, lack, or obstacle:

[W]e think in a world of inscriptions already there. Call this culture if you like. And if we think, this is because there's still something missing in this plenitude and room has to be made for this lack by making the mind a blank, which allows the something else remaining to be thought to happen. But this can only "emerge" as already inscribed in its turn.⁶⁵

There is something that presents itself as a lack, which hurts the already thought as plenitude, since it suspends the already thought in order to allow something new to come. Like the leaving of blank margins in Chinese and Japanese calligraphy and painting, the empty is what *completes* the fullness; the empty is *already* inscribed. I would like to return to what we discussed in the previous chapter regarding the rationalization of the incalculable or the unknowable, though here Lyotard may use the terms *unpresentable* or *unthinkable*. The transcendence would be challenged by the transhumanists: What could not be thought by a superintelligence? And if all is already inscribed in the superintelligence, there is no longer an unthought. Does it also mean that there will be no longer any thinking, and no longer anything contingent?

§42. CONTINGENCY AFTER SYSTEM, OR TECHNODIVERSITY

In *Toward the Postmodern*, after having said that we are "in an Umwelt that is the realization of metaphysics as a general physics under the name of cybernetics," Lyotard continues: "[I]n the Umwelt I am describing, all politics is certainly nothing other than a program of decisions to encourage development. All politics is only . . . a program of administrative decision making, of managing the system."⁶⁶ Decades after poststructuralism we are in a much more embarrassing situation with technical systems. Lines of flight can exist only as a refusal to engage with the system, as a self-marginalization or escape to occultism

⁶⁵ Lyotard, *The Inhuman*, 20.

⁶⁶ Lyotard, *Towards the Postmodern*, 101; cited also by Woodward, *Lyotard and the Inhuman Condition*, 86.

and sectlike communes. The question of system remains to be tackled, not only from the perspective of deconstruction, which was carried out in the twentieth century, but also to fragment the system by allowing diversity to emerge.⁶⁷

Meillassoux's notion of absolute contingency provides another perspective from which to approach the inhuman, since he refuses the privilege given to what he calls *correlationism* as the only possibility of knowledge; or, more generally, he provides an ontological refusal of a unified system of knowledge based on subject-object correlation. The correlation between the thinking subject and the thought object privileges a subjectivism that excludes the unthinkable or speculation as a veritable possibility. Empiricism cannot accept that the unthinkable is possible, since if it were possible, it would have to admit the transcendental. What is fundamental to Meillassoux's challenge to correlationism is its anthropocentrism. As he writes:

Would there not be more modesty, then, in considering that the Universe has nothing to do with our subjective qualities, that it could very well do without them at any degree whatsoever, and to say, more soberly, that there is no absolute scale that makes our properties superior (because more intense) to those of nonhuman living creatures or inorganic beings?⁶⁸

Contingency is that which exceeds correlationism, and in a certain way we may say the opposite—as did Schelling, whom we quoted at the beginning of chapter 1—that is, that maybe it is correlation itself that is contingent, or, as Paul Klee says in his Notebook, “[W]hat is visible is but a fragment of the whole, there being many other latent realities,”

⁶⁷ I would like to refer to a small book by a French author, Josep Rafanell i Orra, *Fragmenter le monde* (Paris: Éditions divergences, 2018), to acknowledge the author's attempt to politicize the term *fragment*, for the author to fragment is a necessary step for better political recomposition. However, I must also emphasize that the projects are fundamentally different. Rafanell i Orra's critique is still based on an organicist thinking close to that of Donna Haraway and Isabelle Stengers in that he restricts his discourse to the relation between the human and nonhuman, but he does so by refusing cybernetics. I propose to understand fragmentation as an epistemological and epistemic task that aims to reappropriate cybernetics, like an event (*Ereignis*), and to do so we must understand the inhuman beyond the human and nonhuman.

⁶⁸ Meillassoux, “Iteration, Reiteration, Repetition: A Speculative Analysis of the Sign Devoid of Meaning,” in *Genealogy of Speculation: Materialism and Subjectivity since Structuralism*, ed. Suhail Malik and Armen Avanesian (London: Bloomsbury, 2016), 126.

which according to Blumenberg is a “devaluation of nature.”⁶⁹ Contingency is necessary since it challenges the absolutization of correlationism, which in fact leads to a de-absolutization. Reason finds itself in the midst of a jungle of order and disorder. If we admit that correlationism is not the only way of knowing, and that knowledge cannot be reduced to the experience of the subject, it is possible to think of a materialism that is speculative instead of merely factual. Meillassoux aims for an absolute heterogeneity of knowledge, with differences in nature instead of differences in degree, since differences in degree imply a monism, or a fake pluralism:

We do not need a monism—or a monopluralism, a monism of difference that seeks to be a pluralism (the magic formula: “monism = pluralism”) but ends up reabsorbing all things into one and the same Whole (albeit an open Whole) to a greater or lesser degree (the tragic formula: “pluralism = monism”). On the contrary, what we need are dualisms everywhere: pure differences in nature, with no continuity whatsoever between that which they make differ, between the many regimes of the real—matter, life, mind, society, etc.—whose possible coordination does not at all allow us to think their rapprochement, unless in a crude mode of blind fact.⁷⁰

Absolute contingency implies both the limit of thinking and the limit of the unthought: the former, because thinking is limited when it is based on correlationism; the latter, because the unthought can only present itself partially as contingency. The correlation didn’t exist in “ancestral” times. However, as Brassier has showed, this is not the most efficient way to reject correlationism, since this ancestrality can still be thought as such in terms of chronological time, like what paleontologists have been doing, speculating on the images left by the fossils. For Brassier, Lyotard’s solar catastrophe would be a better refusal of correlationism, since it is the annihilation of thinking; as he quotes Lyotard: “[A]fter

⁶⁹ Paul Klee, cited by Hans Blumenberg, “Imitation of Nature: Toward a Prehistory of the Idea of the Creative Being,” trans. Anna Wertz, *Qui Parle* 12, no. 1 (spring/summer 2000): 47.

⁷⁰ Meillassoux, “Iteration, Reiteration, Repetition,” 132. What Meillassoux says here is a direct critique of Teilhard’s monopluralism. The latter, when comparing the One in the East and West, claims that “For the East, the One is seen as a suppression of the multiple; for me, the One is born from the concentration of the multiple. Thus, under the same monist appearances, there are two moral systems, two metaphysics and two mysticisms”; cited by Ursula King, *Teilhard de Chardin and Eastern Religions*, 3.

the sun's death, there will be no thought left to know its death took place."⁷¹ But what is the use (*Gebrauch*) of thinking the incapability of thinking if this incapability is not *fed back* to thinking itself in order to interrupt thinking as such? That is to say, does it have an effect at all? It is in relation to Meillassoux's explication of the relation between contingency and pluralism that we may be able to endow his absolute contingency with the function of fragmenting the system, and, further, that in between two systems there is a discontinuity or a difference in nature. This is the *positive use* of absolute contingency. Like Gödel's incomplete theorem, it obliterates the illusion of a complete formal system. It is an ontological refusal of monism and a monist system. Contingency means precisely that it can be otherwise or not be. It presents itself as an inessential irruptive fulgurite, which is an irruption *ex nihilo*, rather than following the principle of sufficient reason.⁷² However, our reading may deviate largely from the author's own intention in the sense that this is not what Meillassoux really intends to say. The speculative materialism of Meillassoux needs criteria that can justify that it is not unscientific, otherwise it may repeat what Kant calls the *Schwärmerei* of speculation; his critique of Kant and the awareness of the problem of the *Schwärmerei* force him to refrain to another island other than pure reason. This criteria is what he calls "Galileanism," or, more simply, mathematization, as he is seeking "a materialism capable of founding the thinkability of a nature that is different to our existence and fully mathematizable."⁷³ This is the same gesture that we find in Bertalanffy and Needham concerning the scientificity of organicism, and which turns into a mechanical organicism. Mathematics is able to describe a world that is independent from the thinking subject, and it is not merely empirical or factual. It is the intention to invent an epistemology that is not based on subjectivism that leads Meillassoux to conceive "signs devoid of meaning," which have an affinity to mathematics.

Signs devoid of meaning are antisensible, since they don't acquire their quality (*quality* doesn't necessarily mean *meaning* here) through sensible difference; in other words, they don't acquire their identity through the sensibility that is exhibited in time and space, for example, a melody or a motif. The ontology of empty signs is an anti-Bergsonian

⁷¹ Lyotard, *The Inhuman*, 9; also cited by Brassier, *Nihil Unbound*, 229.

⁷² Meillassoux, "Iteration, Reiteration, Repetition," 150.

⁷³ *Ibid.*, 139.

ontology, since Bergson searches for a sensible difference in time and space (by reducing space to temporal experience). In contrast, Meillassoux wants to affirm an operation or operations of empty signs that are devoid of sensible difference. This is the reason that he makes a distinction between repetition, iteration, and reiteration.

In repetition—for example, the repetition of the note *fa* in a melody—each repetition produces a sensible difference, like a motif whose sign repeats in space; it is differential and limited. Iteration is not repetition in the sense that it doesn't produce sensible differences, since it produces only a pure identity, for example: §§§§§§§§§§. Finally, there is reiteration, which is differential and unlimited. Reiteration is a concept that is not satisfactorily explained: “[T]his third type of recurrence is differential like repetition, but differential in a different way than the latter, since it is conditioned by iteration and opens onto the indefinite.”⁷⁴ This third type of recurrence is not simply iteration since it raises iteration to another level:

Reiteration is the foundation of “potential infinity” and the source of all naïve arithmetic. It is involved in mathematical practice not only as a privileged object, but also as a method, namely, in mathematical recurrence. Reiteration is the entry into the differential territory of iteration: the possibility of thinking differences outside the field of sensible repetition.⁷⁵

We may want to ask: Is Meillassoux *not* really talking about *recursion* here, especially the concept of recursion developed by Gödel and later by Kleene? His confidence in reiteration seems to be based on his ignorance of the history of recursion and history of technology at large. This ignorance risks weakening, if not obliterating, his argument. On the one hand, a complex recursive function is a system of meaning for a mathematician, but in the course of operation it can become completely opaque, since the human mind will lose track of it—it becomes “devoid of meaning,” or, as it is sometimes called, a black box. If it is the case, it is also possible to ask Meillassoux whether machinic knowledge is the noncorrelationalist knowledge that he is aiming at. On the other hand, regarding “potential infinity,” it is not clear how different it is from the Kantian natural end or the malfunction of the Turing machine

⁷⁴ *Ibid.*, 177.

⁷⁵ *Ibid.*

with infinite paper tape. The problem of Meillassoux's inhumanism is that it is only a halfway house, since it refuses to take modern technology into account or simply treats it as a classical question of logic, so one can still speak like philosophers before the invention of the Turing machine and before digitalization. The formalism that Meillassoux invokes regarding Georg Cantor and David Hilbert, as we have tried to show in the method of Gödel, first becomes arithmetic through Gödel numbering, and mathematical proof becomes a conceptualization of recursivity. It seems to me that it is a step behind today when one is looking for a nonsubjective (human subject) way of knowledge production, since one has the right to ask if the searching for correlations in big data is not precisely an anticorrelationist strategy. One may want to ask if Meillassoux's ontology of empty signs is only an affirmation of computationalism instead of really opening up the heterogeneity of knowing and the plurality of systems.

There seems to be an impasse in Meillassoux's desire for a new epistemology. But it is necessary to notice that Meillassoux renounced being a reductionist. He is not seeking a mathematical reductionism, but rather sees very clearly the irreducibility of art and life; as he says: "I observe the mathematization of the real, without entering into its theories; and I observe the irreducibility of knowledges and arts one to the other."⁷⁶ For us, this irreducibility is at the core of an organological struggle, and organology is not a correlationism. Rather, organological thinking is a synthetic thinking. It is an attempt to connect different regimes and domains in order to preserve life and advance science and technology. There are two significant aspects of Meillassoux's inhumanism. One is the necessity to think beyond the human, although how this form of epistemology can be formalized is still a big question. The other is to take the concept of contingency and the opening stretched out by Meillassoux to consider the fragmentation of system. This has to be distinguished from naive discourse on postmodern rootlessness (rootlessness in the sense that cultural differences become no longer significant). On the contrary, fragmentation is a return to locality in order to find a strategy to appropriate the inhuman system, not solely from an economic point of view, but rather with an aim of diversity. To fragment the system is not to refuse science and technology, which are

⁷⁶ *Ibid.*, 154.

its foundation—and here we must recognize the very limit of sabotage, for it will never do any harm to the system since it is only a contingent event for ameliorating the system—but rather to develop different sciences and technologies, to develop different cosmotechnical relations, and in order to do so we will need to recognize both the technical reality and human reality.

In *The Question Concerning Technology in China*, I engaged with the projects of anthropologists such as Philippe Descola and Eduardo Viveiros de Castro, which demand an ontological pluralism in order to surpass modernity by refusing nature as a single system.⁷⁷ The latter is what Descola calls *naturalism*, a concept of nature reposing on the opposition between culture and nature (besides naturalism there are other ontologies such as analogism, totemism, and animism). Viveiros de Castro has criticized Meillassoux for speaking only from the perspective of Judeo-Christian eschatology, since Meillassoux proposed to question the world without human beings, in which correlationism cannot properly function since there is no direct correspondence between the two parts. In contrast, Débora Danowski and Viveiros de Castro propose that in Amerindian mythology it is the opposite: At the beginning there is the human without the world.⁷⁸ In other words, Meillassoux follows the logic of Genesis—God creates the world before creating human beings—while in Amerindian culture such genesis doesn't exist. This critique from Viveiros de Castro and Danowski can be taken simply as a reactionary and postcolonial critique of Meillassoux's speculative philosophy imbued with Judeo-Christian ideology. However, it can also be read as an affirmation of Meillassoux's emphasis on a pluralism with differences in nature.⁷⁹ The affirmation of different natures is an affirmation of locality, and such a question of locality cannot be fully posed as a return to indigenous knowledge or a Romantic concept of nature, but rather as a reopening of the question of

⁷⁷ Hui, *The Question Concerning Technology in China: An Essay in Cosmotechnics* (Falmouth, UK: Urbanomic Media, 2016), §5.

⁷⁸ See Débora Danowski and Eduardo Viveiros de Castro, *The Ends of the World*, trans. Rodrigo Guimaraes Nunes (London: Polity, 2016), chap. 4.

⁷⁹ Meillassoux, "Iteration, Reiteration, Repetition," 132. Note that there is a difference between difference in degree and difference in nature. The former signifies variations of qualities and quantities (although differences, they are still of the same being), while the latter affirms nonqualitative differences (for example, a chair and the ashes after it is burned are two beings with difference in nature).

technodiversity and the strategies needed to maintain and continue the ramification of these diversities.

However, we must qualify a distinction here between the nonhuman, a category that plays an important role in the “ontological turn,” and Lyotard’s inhuman. The nonhuman is other than human—for example, plants, animals, and minerals—but the inhuman is precisely the negation of the human, what it is not and what it will never be, but the inhuman is inside it. If the concept of the human changes, the inhuman that is its other changes as well. The inhuman may carry the name of God, the infinite, the noumenon, absolute contingency, and so on, but affirming the inhuman will also demand a rationalization that renders a coherent form of life or life of the spirit. Technology in the twenty-first century is becoming inhuman in a negative sense, because it is human, all too human.

The inhuman of Meillassoux is different from the inhuman of Lyotard, precisely because the former poses a problem for Lyotard. This is because Meillassoux’s inhuman is the affirmation of a nonhuman way of production of knowledge and systematization—the recursion of meaningless signs—while it is possible to conceive Meillassoux’s inhumanism as a radical opening of production of knowledge that Lyotard didn’t realize. For us, the question is, how is it possible to open up a pluralism when the organizing inorganic is presenting itself as an alienating force, threatening to totalize the production of knowledge and the determination of rules? This is the significance of conceiving a cosmotechnical thinking, not only as a philosophy of technology but also as a strategy for rethinking the coexistence between humans and machines, organic subject and organizing inorganic, the artificial earth and the cosmos. We are not calling for a return of humanism against the inhumanism of the system, but rather trying to conceive the inhuman as a possibility that transcends the system. Insofar as we can speak of a real pluralism and such pluralism is realizable, it is necessarily supported by a technodiversity. The question of technodiversity directs us to the question of epistemology (way of knowing) and episteme (the sensibility that underlies such way of knowing). The most inhuman part of the human is its sensibility (or intuition, if you wish), which, instead of reason, is the foundation of the moral. Exiting the positive feedback loop that characterizes the modern vision of progress, it is possible for another thinking to function either by negating it or by transcending it—that is to say, by inventing another recursive process, another epistemology, as Bateson might suggest.

§43. SENSIBILITY AND PASSIBILITY

The discussion of Lyotard's concept of the inhuman is a preparation for a cosmotechnical reappropriation of the organizing inorganic. The proposal of fragmenting the system is an attempt to reflect on technodiversity, which is reduced to a single world history of which the *Homo deus* is its culmination. In the end, the development of a system approximating a political theology is fundamentally a synchronization and convergence in the sense of Teilhard's noospheric reflection. Teilhard's noosphere is very close to Vladimir Vernadsky's use of it, which designates a phase of the development of the earth after the geosphere and the biosphere. The noosphere is *fragmentable* due to its being inorganic and its becoming organic. Teilhard's noosphere is evolutionary in the sense that it has its origin in the Western concept of time as progress, and it will have to conquer cultures that seem to him antitime and antievolution: namely, the Eastern way of thinking, which is devoid of love and progress as well as ignoring synthesis and world as an organic whole.⁸⁰

The noosphere has to be challenged for the sake of a noodiversity as an overcoming of the system, however noodiversity also demands technodiversity as its material support. How is this technodiversity possible in a world where capital is striving for synchronization and convergence? Some theorists believe that with full automation it is possible to emancipate both technology and workers from capitalism, however, they committed the mistake by seeing technology as a universal and that there is only one single history of technology or human-machine complex. It is rather obvious that every nation-state is going to have its own Ministry of Accelerationism (e.g., Dubai appointed its Minister of Artificial Intelligence in 2017), and it is hard

⁸⁰ As Joseph Needham noted in his preface to *Teilhard de Chardin and Eastern Religions*, xiii: "The 'eastern' way, he [Teilhard de Chardin] felt, was anti-time and anti-evolution; he repudiated the attraction of pure nature-mysticism, and didn't like the idea of return or fusion with the One, identification with the universe without the presence of any love. Similarly, the 'western' way for him was a way of convergence including love, of progress, synthesis, taking time as real and evolution as real, and recognizing the world as an organic whole." Needham defended Chinese thought by saying that though Teilhard de Chardin had lived for a long time in China, he spoke very little Chinese, and what he said about antitime and antievolution is Hinduism and Buddhism but not Taoism. In *The Question Concerning Technology in China*, following Marcel Granet and François Jullien, I have attempted to analyze why time was not elaborated in China, and how this was related to its technological thinking.

to imagine that this will be an emancipatory politics and not one that only further strengthens the synchronization of the global axis of time. I attempted to show in *The Question Concerning Technology in China* that, besides considering the different natures that anthropologists propose, it is necessary to consider different cosmotechnics in order to conceive the possibility of the bifurcations of future and world history. A question is raised immediately: What precisely is the difference between Chinese technology and European technology? Does it mean that they produce spoons of different shapes? But are they not of the same function: spoon? It was not my intention to say that technologies are different functionally, but rather that one has to look beyond functionality, as both Heidegger and Simondon endeavored to do so. Historians, when comparing technologies in different geographical regions, tend to understand which one is more advanced than the other: for example, papermaking in the second century in China was more advanced than in Europe during the same period, or, as Bertrand Gille contested, one shouldn't compare a particular technology but technical system as a whole. Both cases presuppose an understanding that technology is universal and all technologies could be measured according to a universal progress. When we say different cosmotechnics, it means to challenge this dominant view in philosophy and history of technology. We will present this *différance* with an antinomy of the universality of technology:

Thesis: Technology is an anthropological universal, understood as an exteriorization of memory and the liberation of organs, as some anthropologists and philosophers of technology have formulated it;

Antithesis: Technology is not anthropologically universal; it is enabled and constrained by particular cosmologies, which go beyond mere functionality or utility. Therefore, there is no one single technology, but rather multiple cosmotechnics.

The thesis states that technology has its universal part: for example, the exteriorization of memory and the liberation of organs, which Leroi-Gourhan has already shown very clearly in *Gesture and Speech* and which we have discussed in chapter 3 concerning the organized inorganic. Then there is also a nonuniversal part, meaning that technology is always complicit with an episteme that is fundamentally

cosmological and irreducible to universal values.⁸¹ It is also the same Leroi-Gourhan, who joined the expedition team in Beijing in 1932 in which Teilhard de Chardin also took part, who warns us in the second part of his book *Rhythm and Memory*, where he expresses his worry of the arrival of complete synchronization: “Individuals today are imbued with and conditioned by a rhythmicity that has reached a stage of almost total mechanicity (as opposed to humanization).”⁸² Leroi-Gouhran’s warning came out of the anxiety of an epoch of the mechanical industrialization. Today, as we tried to show, such a classical humanist critique has to be reevaluated, but he is at least right when pointing out the increasing synchronization of corporal, social, and cultural dynamics.

If we follow Lyotard in saying that the positive inhuman consists of the possibility of resistance, we still need to develop it further. This inhuman is the Unknown, which poses a challenge to the inhuman system and functions as the necessity of contingency. But here we must respond to a question from the scientists: Are we not here sacrificing science and technology to the Unknown, or, more precisely, to a mythical and religious thinking? This is the central dilemma of modernization, since in view of modern science archaic cosmologies have to give way. Kant’s attempt to give room to religion is condemned as being lazy and insufficiently rationalist, but here it is not only a question of religion but also of moral values, which can exist only in relation to a cosmology: an *axio-cosmology*. Modern science is universal insofar as it is applicable to physical phenomenon, as Kant already anticipated, but science and technologies are bounded in broader cosmic realities that cannot be reduced to astronomy. With this notion of axio-cosmology in mind, we would like to come back to the question of sensibility and aesthetics. In the last chapter of *Science and the Modern World*, “Requisites of Social Progress,” Whitehead, like Schiller, raises the question of art and aesthetic education. While commenting on the problems left by the industrialization of the nineteenth century, he attributes these to the unachieved project of aesthetics:

⁸¹ For a critique of Leroi-Gourhan’s analysis, please see Hui, *The Question Concerning Technology in China*, §2, “Cosmos, Cosmology and Cosmotechnics.”

⁸² André Leroi-Gourhan, *Gesture and Speech*, trans. Anna Bostock Berger (Cambridge, MA: MIT Press, 1993), 311.

The evils of the early industrial system are now a commonplace of knowledge. . . . A contributory cause, of substantial efficacy to produce this disastrous error, was the scientific creed that matter in motion is the one concrete reality in nature; so that aesthetic values form an adventitious, irrelevant addition.⁸³

In the nineteenth century, Whitehead sees a disaccord between aesthetic intuitions and the mechanism of science,⁸⁴ which leads to such a “disastrous error.” Whitehead also uses the word “sensitiveness,” which for him includes “apprehension of what lies beyond oneself; that is to say, sensitiveness to all the facts of the case.”⁸⁵ For Whitehead this sensitiveness can be understood as an intuitive intimacy between parts and whole.⁸⁶ We will affiliate sensitiveness with what we call *sensibility*. Whitehead challenges mechanistic science and proposes to understand time and space as relational, hence organic. For Whitehead the aim of constructing an organic philosophy is to “construct a system of ideas which brings the aesthetic, moral, and religious interests into relation with those concepts of the world which have their origin in natural science.”⁸⁷ This paradigmatic change that Whitehead is aiming at also demands a symbolic support, which is technics.

It has been suggested that there are similarities between Thomas Kuhn’s concept of paradigm change and Michel Foucault’s concept of episteme, a concept that the philosopher abandoned after *The Order of Things*. In *The Order of Things*, Foucault attempts to show how knowledge was produced under different epistemes between the sixteenth and the nineteenth centuries: the Renaissance, the classical, and the modern. I am tempted to understand episteme in terms of sensibility, or, more precisely, the conditions under which such

⁸³ A. N. Whitehead, *Science and the Modern World* (New York: Pelican Mentor Books, 1948), 204.

⁸⁴ *Ibid.*, 88.

⁸⁵ *Ibid.*, 200.

⁸⁶ *Ibid.*, 149: “The parts of the bodily event are themselves pervaded by their own enduring patterns, which form elements in the bodily pattern. The parts of the body are really portions of the environment of the total bodily event, but so related that their mutual aspects, each in the other, are peculiarly effective in modifying the pattern of either. This arises from the intimate, character of the relation of whole to part. Thus, the body is a portion of the environment for the part, and the part is a portion of the environment for the body; only they are peculiarly sensitive, each to modifications of the other. This sensibility is so arranged that the part adjusts itself to preserve the stability of the pattern of the body.”

⁸⁷ A. N. Whitehead, *Process and Reality* (New York: Free Press, 1978), xi.

knowledge is produced. Sensibility is always local and historical; it is also the condition of noodiversity. For example, epistemes in Europe were different from epistemes in Asian and African cultures, since underlying these different epistemes are different sensitivities and different senses of existence in relation to the cosmos. I would like to offer a rather unconventional interpretation of the relation between the positive inhuman and the question of sensibility that Lyotard raises in his exhibition *Les Immatériaux*. This hinges on the question of whether the postmodern is a new episteme, and if so, in what way this episteme is related to technology. Lyotard didn't connect his notion of the postmodern with Foucault, but it seems to me quite reasonable to make such a connection. The postmodern for Lyotard presents a new sensibility, which was the theme of his 1979 *The Postmodern Condition* and the main discourse of his 1985 exhibition *Les Immatériaux*. Lyotard wants to invoke in the exhibition a sensibility of insecurity, of uncertainty, of anxiety. The role of art, and here this exhibition in particular, is the means of sensibilization. The reconstitution of the episteme is what I understand as the discovery of "sensibility" and the project of "sensibilization":

"The Immaterials" . . . is a kind of dramaturgy of the epoch that is born. We want to make you feel. This is neither pedagogic nor demagogic. We don't flatter you (see how well you are), we don't educate you (see how smart we are). We seek to awaken a sensibility already there in all of us, to make feel [*faire sentir*] the strange in the familiar, and how difficult it is to get an idea of what is changing.⁸⁸

I believe that Lyotard wanted to demonstrate a new *sensibility* (or maybe we can say an *epochal sensibility*) and therefore to *sensibilize* the postmodern through the medium of art and new technologies. Such sensibility, it seems to Lyotard, is able to provide a new framework and new meanings to techno-logos, to illuminate the possibilities opened up

⁸⁸ "Texte de la cassette-son remise à la presse," in *Les immatériaux* press release (Paris: Centre Pompidou, 1985), 9: "Les Immatériaux . . . sont une sorte de dramaturgie de l'époque qui naît. On cherchera à vous faire sentir. Ce ne sera pas pédagogique, et pas démagogique. On ne vous flattera pas ("Voyez comme vous êtes bien"), on ne vous éduquera pas ("Voyez comme nous sommes intelligents"). On cherchera à éveiller une sensibilité qui est déjà là dans nous tous, à faire sentir l'étrange dans le familier, et combien il est difficile de se faire une idée de ce qui change."

by the new technological *epochē* in the sense of phenomenology. This *epochē* doesn't mean that technology will become the new ground, but rather a new condition under which new syntheses and new compositions will have to be produced. Lyotard turned to the thirteenth-century Japanese monk Dôgin's concept of the "clear mirror" to seek a possibility or a passage (*passibilité*, a term that he used to translate Sigmund Freud's *Durcharbeiten*) in the new technologies. This speculative question is formulated as such: "[I]s the passage possible, will it be possible with, or allowed by, the new mode of inscription and memoration that characterizes the new technologies? Do they not impose syntheses, and syntheses conceived still more intimately in the soul than any earlier technology has done?"⁸⁹ We can rephrase this question in the following way: How can we think in terms of indeterminism instead of determinism? What kind of thinking is necessary for this indetermination to be carried out, instead of seeking refuge in a metaphysics of contingency? However, Lyotard didn't go far enough, though he still had projects in mind—it was said that Lyotard wanted to prepare a sequel to the exhibition titled *Les résistances*, which plays upon the opposition between noise and information.

It seems to me that Lyotard's attempt must be carried further, and beyond European history, and maybe even beyond what he had in mind at that moment: the condemnation of cybernetics as a trivial and deterministic science. What is important in Lyotard's concept of the inhuman is not only its fundamental critique of humanism, but also its fundamental potential as resistance. But such resistance has to be reinterpreted here as a search for pluralism as indetermination, and therefore as a multiple cosmotechnics. Cosmotchnical thinking is not a call to return to archaic knowledge but rather to reconstruct technological thoughts and technological genesis in order to reappropriate modern technology. One may reproach the inhuman as a humanist concept, since Lyotard still want to get hold of the phenomenological body, but as we have seen that it is not the case and this kind of accusation offers nothing productive, since it is only a posthumanist identity fetish while ignoring the organological struggle in Lyotard's proposal. Lyotard refers to Guillaume Apollinaire's *Les peintres cubistes. Méditation*

⁸⁹ Jean-François Lyotard, "Logos and *Techne*, or Telegraphy," in *The Inhuman: Reflections on Time*, 57.

esthétique (1913), in which the poet says, “[M]ore than anything, artists are men who want to become inhuman.” The part that Lyotard didn’t cite continues: “[T]hey seek painfully the traces of inhumanity which are never found in nature. These are the real truths, and beyond them, we know no reality.”⁹⁰ For Apollinaire, this truth is always new, since it is never once and for all. It is this contradiction—a verity in constant change—that is opposed to the reduction of such a verity to communicative writings. The latter could be realized by machines, which are capable of reproducing signs devoid of sense.⁹¹

§44. ORGANICISM, ORGANOLGY, AND COSMOTECHNICS

We have been on a long excursion from the organic to the inhuman, in order to trace a trajectory from philosophy of nature to a philosophy of technology, while also speculating on the future of such philosophy. The accidentality of technics becomes the necessity of the survival of mankind, while becoming contingent again in the progress of civilizations, and now it comes back to centrality by imposing a necessity, which is no longer simply about the survival of the human species but also that of the earth. Such a task is often ambiguously referred to as *ecology*. Philosophies of nature à la Bruno, Spinoza, Schelling, Laozi, and Zhuangzi, among others, don’t answer our problem directly today, though they remain inspiring and necessary for developing new trajectories of thought. This seemingly bold statement resonates with the opening quote from Jean-Luc Nancy regarding catastrophe, precisely because organization through cybernetic thinking has realized (in certain sense) the general organism *qua* cybernetic system, which is called *ecology*. Technological progress demands new forms of thinking, which is beyond the love-and-hate game of Continental and analytic philosophy, Western and non-Western thought. Here I risk *burning the bridge*: Seeking salvation in a philosophy of nature may be no longer possible. We are moving away from the first nature, and beyond

⁹⁰ Guillaume Apollinaire, *Les peintres cubistes. Méditation esthétique* (Paris: Eugène Figuière & Cie, 1913), 10.

⁹¹ *Ibid.* Instead of devoid of sense, Apollinaire uses “without understanding them.”

first-order and second-order cybernetics,⁹² from imitator to observer to constructor. At the same time, we must also move away from the second nature in which every being is considered standing reserve (*Bestand*). The concept of nature has to be integrated in the concept of cosmotechnics to conceptually avoid the opposition between nature and technics, and this is the reason why at the beginning of this book I speak of a third nature, which is inscribed in the concept of cosmotechnics. In human history there is no linear temporal development from nature to technics, from nature to politics. Rather, there is an *Urtechnik*, which I name *cosmotechnics*. Some cosmotechnics may appear more “organicist” than others in the sense that they form a dynamic whole, which allows different forms and levels of complexification to be developed in history. Among these cosmotechnics, there was one that was able to mechanize the whole cosmos and decompose it into standing-reserve, which Heidegger calls *modern technology (moderne Technik)*. Needham—the great thinker of the twentieth century, a world-prominent biologist, a founding figure of the history of science and technology in China—when looking at Chinese civilization, found that Chinese technological thinking is not mechanical but highly organicist:

[T]he *philosophia perennis* of China was an *organic materialism*. This can be illustrated from the pronouncements of philosophers and scientific thinkers of every epoch. The mechanical view of the world simply didn’t develop in Chinese thought, and the organicist view in which every phenomenon was connected with every other according to hierarchical order was universal among Chinese thinkers.⁹³

The recent appropriation of Needham’s work in Chinese science and technology attributes the term *holism* to Needham without knowing that Needham criticizes this fascination with the whole for obscuring scientific understanding through a vagueness of wholeness (as we discussed in chapter 1). We may want to read this in parallel with

⁹² In *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), Katherine Hayles proposes a periodization of first-order cybernetics, second-order cybernetics, and artificial life. I find the characterization of the third stage as “artificial life” rather unsatisfactory, since it tends to affirm the posthuman by naturalizing some of the historical and political questions that we aim to unfold in this book.

⁹³ Joseph Needham, *The Grand Titration: Science and Society in East and West* (London: Routledge, 2013), 21.

Deleuze's somewhat brutal reading of the Taoist body in the famous "How to Make a Body without Organs" in *A Thousand Plateaus*. The Taoist practices sex with a female without ejaculating in order to reinforce his male power or energy, and thereby constitutes an intensive body without organs.⁹⁴ For sure this is an "exercise" of the "whole," as Deleuze declares at the beginning of the chapter (e.g., the whole against the codified functionalities and hierarchies of organs). Any recourse to holism that is not able to give an account of its organizational and causal relations and complexity often falls back to a laziness of defending its vulgarity. Science and technology in China, as Needham observed, was not mechanical as was the case in Europe. It is clear to me that Needham has read Chinese thought from the perspective of his early work on organicism, and his reading of Chinese thought is done through Whiteheadian eyes. Needham remains a great thinker of biology, and his biological thought is analogical to the image of the Chinese thought that he has described for us. However, like the analogy between the beautiful and the good, we may want to ask if this analogy is contingent or necessary.

When Needham turned his eyes from biology to Chinese civilization after the Second World War, it was a contingent event that began when he happened to meet researchers from China in Cambridge. In the course of time, however, this historical event becomes necessary. In so doing, Needham brings Chinese thought closer to cybernetics. Probably for him, the Taoists are the first cyberneticians. If we follow the logic of Needham, we may be able to say that Chinese technology has not passed through the period of mechanism that prepared for the Industrial Revolution in Europe. However, modernization and globalization brought about a new situation, one in which cultures subsumed their cosmotechnics to modern technology, which took up cybernetics as *automatism* without understanding the epistemological changes brought forth by cybernetics. But the automatism that is the dream of mechanism proceeded to realize a "technician system," as Ellul rightly put it. On the contrary, in the West we also observe a *transition* from Cartesian mechanism to organicism and cybernetics/ecology. This chronology, which we call the history of thought or world history, is not a universal principle but rather an instance of noodiversity

⁹⁴ Gilles Deleuze, *Mille Plateaux* (Paris: Les éditions de minuit, 1980), 194.

as well as technodiversity. Evolution is possible only when there is diversity, since biology has already taught us that evolution should be understood as coevolution.⁹⁵ The artificial selection applied in the population (instead of Darwinian natural selection) will finally lead to the reduction and even elimination of technodiversity and therefore noodiversity. The question thus raised is, will the recursive thinking in cybernetics allow us to relaunch the question of organicism and technodiversity, or will it, being driven by efficiency for the final cause imposed by capital, finally only realize a purely deterministic complex system that is moving toward its own destruction, like the one Lyotard described? I believe that in order to respond to this question, we will have to recognize two images of cybernetics that, notwithstanding its diverse schools of thoughts and disciplines, could be summarized as the following:

- One is reductionist; it reduces organisms to feedback systems, which are imitations; it imposes determinism, since all reductions aim for prediction, all predictions are determinisms; its economy is an economy of finality.
- The other is nonreductionist, in the sense of Simondon's general allagmatic, which seeks genesis beyond any form of technological determinism; it is open to contingency without only reducing it to calculation and endorses auto-finality or neo-finalism (in the sense of Ruyer).

The technophobes see the first image of cybernetics; Simondon sees the second image of cybernetics and imagines a universal cybernetics or general allagmatic to resolve alienation and antagonism between nature and technics. Heidegger sees both mechanism and organism as the impasse of philosophy and therefore wants to go back to another beginning by invoking the pre-Socratic thinkers, an attempt to discover

⁹⁵ Dorion Sagan and Lynn Margulis in their article "Futures" remind us that "the dramatic evolution of humans cannot be separated from the co-evolution of our microbial ancestors, the bacteria that constructed our cells and those of our food species of plants and animals. In coevolution, over thousands of years partners change genetically. Inherited partnerships evolve together as new proteins and developmental patterns emerge." We can understand this as the question of diversity, but instead of biodiversity, we want to reflect on technodiversity. Lynn Margulis and Dorion Sagan, *Slanted Truths: Essays on Gaia, Symbiosis and Evolution* (New York: Springer, 1997), 241.

a new cosmotechnics, as I have claimed elsewhere.⁹⁶ I believe that it is necessary to read Simondon with Heidegger here, since Simondon's concept of genesis of technicity resonates with Heidegger's proposal to overcome modern technology by reconstructing a different thinking hence another beginning, and in this sense Simondon's more technology-oriented approach complements Heidegger's more culture-oriented program. Lyotard, in spite of his fierce critique of cybernetics, allows us to see the importance of the question of sensibility and how it constitutes the postmodern episteme, which may be strategically appropriated to open society to new transformations. These two images of cybernetics have completely different social, economical, and political implications. The organicist epistemology, presenting a new paradigm shift of thought in the twentieth century, is naturalized in practice and it turns out to be nothing organicist but mechanical, like when we use a recursive machine to write a program printing out "Hello, World." Control through tertiary retentions and protensions such as surveillance, social credits, and big data analysis is taking the first path, in which recursive machines are integrating individuals as the constituents of computation. What Deleuze calls the society of control is fully demonstrated in our digital epoch, of which digital control and flexibility (e.g., modulation or performativity) are its means. We may want to say that *it is a mechanist use of organicist machines for deterministic use*, which, as we wanted to show, is something that has to be reproached, and a broader historical and philosophical perspective opened up, as we have attempted throughout this book. However, let us raise the final question: Is it possible to take seriously the organismic philosophy and transform it into elements of an organology that would allow us to reevaluate actual technological development and leave its finality open?

Organicism is still a philosophy of nature. General systems theory and second-order cybernetics have moved a step further, but in the twenty-first century, can we go even further toward elaborating an organological thinking, one that goes beyond the illusion of human beings as mere observers and machines as replacements for human beings? In order to do so we need to inscribe the cosmos organologically, and this is what cybernetics didn't do and this is at core of the thinking of cosmotechnics. Cybernetics in the Western tradition has

⁹⁶ See Hui, *The Question Concerning Technology in China*, §11.

already adopted its “modern cosmology,” namely, astrophysics: the end of the cosmos, as some historians have claimed.⁹⁷ It is also in this sense that Heidegger sees the end of philosophy and the beginning of a world civilization based exclusively on Western thought. In Chinese cosmotechnics, the cosmos is organic insofar as it is analogical to the body. Chinese medicine is therefore very different from Greek medicine, even though they share certain similarities (for example, diagnosis according to pulses).⁹⁸ The cosmos is an organ of principle, governing both the aesthetic and the moral. The heaven-earth that is the name for the cosmos is correlated with the human activities, while these relations are real and maintained by “resonance.” Precisely because of this, Needham considers neo-Confucianism to be a veritable organic philosophy.⁹⁹ It is also the reason that Mou Zhongshan, the great New Confucian of the twentieth century, characterizes Chinese philosophy as a moral metaphysics and moral cosmology.¹⁰⁰ Standing against it is treating the cosmos as a mere resource—the eternal goal of the deterritorialization of capital.

With the question of the moral we also come back to the question of episteme, which I reformulate as the question of sensibility, or, if you wish, a reterritorialization against determinism. The destruction of capitalism will happen not because it is surpassed by its technology, but because its cosmotechnology is fundamentally against the conditions of subsistence and existence. The epistemologies of capitalist technologies can be overcome only by different cosmotechnics that

⁹⁷ See Rémi Brague, *The Wisdom of the World: The Human Experience of the Universe in Western Thought* (Chicago: University of Chicago Press, 2003); and Alexandre Koyré, *From the Closed World to the Infinite Universe* (Baltimore: Johns Hopkins University Press, 1957).

⁹⁸ See Shigehisa Kuriyama, *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine* (New York: Zone Books, 1999).

⁹⁹ Joseph Needham, *Science and Civilization in China*, vol. 2, *History of Scientific Thought* (Cambridge: Cambridge University Press, 1991), 499: “When Leibniz speaks of the difference between machines and organisms as lying in the fact that every constituent monad of the organism is somehow alive and cooperating in a harmony of will, we are irresistibly remind of that ‘harmony of wills’ which we noted as characteristic of the Chinese system of ‘correlative thinking’ in which the whole universe in all its part spontaneously cooperates without direction or mechanical impulsion.”

¹⁰⁰ See Hui, *The Question Concerning Technology in China*, §18. Note that neo-Confucianism is used to describe the school of thought that emerged in the eleventh century in the late Tang dynasty and became the dominant school during the Sung and Ming dynasties. New Confucianism, on the other hand, is a movement that started between the end of nineteenth century and beginning of the twentieth century.

provide alternative epistemologies and maintain technodiversity and noodiversity. Or, put another way, the totalization of capitalism through more advanced means can be challenged by inventions and usages only according to different ontologies and epistemologies.¹⁰¹ Looking back at history, the Polynesian gift economy that inspired the work of Marcel Mauss and Georges Bataille has been haunting capitalism ever since, and continues in the anticapitalist thought of anthropologists like David Graeber, though modern science has since long rejected *Hau* and *Mana*. This sensibility of the world, of the relation between humans and the cosmos, is different from the modern view, but being at odds with modern science is not an excuse not to develop a cosmotechnical thinking that will organologically inscribe science in its working principle. For a hundred years the absolutization of science has led to conflict, while the absolutization doesn't mean that one is moving toward an end that is called the Absolute, since the Absolute is neither a thing nor a theory of a thing, but is precisely the *unthined* (*Unbedingt*) of an epoch. If we follow Hegel's analysis in the *Vorlesungen über die Ästhetik* that the absolute spirit passed through different stages from art in the ancient Greek time to religion and, arriving at the Enlightenment, philosophy, perhaps cybernetics is the current expression of the Absolute, as Günther has analyzed.¹⁰² After Hegel's verdict on the end of art, we continue to produce more and more artworks. Religions have survived even though they are not compatible with modern science. There are still many Christians, as there are many Buddhists. What sustains religion is not purely fanaticism, but rather faith, and it is in faith that we find the inhuman, as Lyotard found in Saint Augustine's *Confessions*. Maybe after the end of the age of reason art will come back with new gestures and as new forms of resistance, which are beyond the linear history that Hegel has perceived. However, all these remain to be thought and explored beyond the Enlightenment humanism. If the end of European philosophy, according to Heidegger, means the need for new forms of thinking to surpass the challenging mode of unconcealment in modern technology, then these new forms of thinking must first render modern

¹⁰¹ For concrete examples, please see Yuk Hui and Harry Halpin, "Collective Individuation: The Future of the Social Web," in *Unlike Us Reader: Social Media Monopolies and Their Alternatives*, ed. Geert Lovink and Miriam Rasch (Amsterdam: Institute of Network Cultures, 2013), 103–16.

¹⁰² G. W. F. Hegel, *Werke 13 Vorlesungen über die Ästhetik 1* (Frankfurt am Main: Suhrkamp, 1986), 140–44.

technology contingent before elevating it to necessity. The fundamental question is the regrounding of technology. We have to emphasize that this is not to add an ethics to AI or robotics, since we won't be able to change the technological tendency by just adding more values. Instead we have to provide new frameworks for future technological developments so that a new geopolitics can emerge that is not based on an apocalyptic singularity but technodiversity; this is also the reason cosmotechnics is a political concept.

What Needham tried to think through in his multiple volumes of work is the relation between ancient Chinese thought and modern Western science and technology. In other words, he wanted to render Chinese thought contemporary: contemporary not in the sense that Chinese thought has already anticipated and is more superior than modern Western science and technology (in the bad spirit of nationalism and ethnocentrism), but rather in the sense that Chinese thought may be useful for showing another way of thinking without being simply opposed to European thought.¹⁰³ I hold the view that the contribution of a study of Chinese thought of technology in *The Question Concerning Technology in China* (and this is by no means limited to China, but has to be open to all cultures and civilizations) is not only the demonstration of a philosophy of the organism, which has been done by Needham, but rather a reopening of the concept of technics as multiple cosmotechnics and the future of technological imaginations. This will necessitate the rediscovery of the nonmodern epistemologies and the reinvention of epistemes through the regime of aesthetics as responses to the current crisis from the point of view of localities, or as what Augustin Berque calls *recosmosizing* [*récosmiser*]. Schiller's aesthetic education remains important for us today, and it is all the more significant when we recognize it as a political and cultural project, but we can no longer respond to Schiller's question with the same humanist approach, since future aesthetic education will be about inhumanity. Aesthetics is at the base of the episteme in the sense that it is local and constituted by its particular way of living and sensing, which are very often mistakenly considered as mere customs. When Whitehead claims that time and space are relational, he is proposing at the same time a new science and a new aesthetics.

¹⁰³ Needham grew up as a Catholic and called himself a "process theologian" and an "honorary Taoist."

We started our journey on recursivity and contingency by reconstructing a philosophy of nature in Schelling and organicism, and passing to the realization of such philosophy in logic and cybernetics. We tried to suggest a new way to look into the relations between philosophy and technology, organism and machine. We want to supplement this with a cosmotechnical thinking that can be perceived only in systems of knowledge in which the alter-cosmologies remain effective and it is possible to reflect on both questions of epistemology and episteme. The question is not to simply demonize and undermine cybernetics as a mere governmentality, as it is now often conceived, but rather to conceive a new perspective of cybernetics by undermining the tendency of its totalizing and deterministic thinking. However, this is not exactly what Simondon called the *open machine*, since for Simondon the open machine is only a cybernetic machine possessing a margin of indetermination inscribed in its recursive structure and causality. In saying this we mean precisely to move beyond this image of the open machine by resituating technologies in *their* genesis, which means to resituate technologies in various cosmic realities. A true pluralism, which Meillassoux attempts to open up with his concept of contingency, cannot be sustained without technodiversity, and such technodiversity is always in conflict with the totalizing power of its mechanism, whether mechanical or organicist. If cybernetics is the end of philosophy, in the sense Heidegger has attributed to it, and if recursivity becomes a “synonym” for process philosophy, then a *post-European* philosophy can be perceived only by reappropriating this cybernetic moment through different technological thoughts.¹⁰⁴ This is the trajectory that we attempted to sketch out in this book. While the questions that we raised still merit further responses, due to the limits of individual effort, such an attempt will remain a common task of philosophy.

¹⁰⁴ This has to be distinguished from those who pretend to show that cybernetics has a “Chinese origin” or such, though such a quasi-historical approach is always harmless and entertaining.