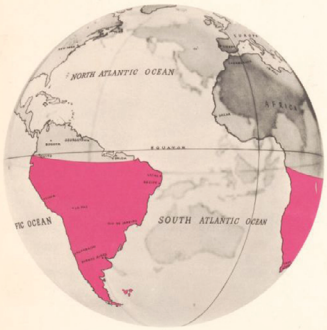
TECHNOPHANY
A Journal for Philosophy and Technology
Vol.1, no.2 / 2021

General Issue



Research Network For
Philosophy and Technology

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Technophany Vol.1 No.2

Apropos Technophany

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§1. The Concept of Technophany

The term "technophany" was coined by Gilbert Simondon to describe a form of mediation which allows technology to be re-integrated into culture.[1] What does it mean, however, to re-integrate technology into culture? Is not culture itself partially constituted by ever-evolving technology? We will have to answer why such an integration is needed before we can understand what this form of mediation is and what its limits might be today. For Simondon, there are conflicts between technology and culture that arise for various reasons. First of all, there is, in general, a type of xenophobia present in what is understood as culture where technical objects are prejudicially seen as alien to it; this forces technology to become ostracised, which is to say, excluded from culture.[2] As we can already read in the "Introduction" to *On the Mode of Existence of Technical Objects* (1958), technical objects have been undermined and undervalued compared to aesthetic objects. Aesthetic objects are identified with culture, while technical objects are reduced to utilities and, therefore, considered secondary beings whose value of being is no other than utilitarian.[3]

Besides this stereotype, which is deeply grounded in modern culture, there is a more fundamental conflict that arises out of a process of polarisation, where there is the constant becoming obsoleteness of culture, on the one hand, and the constant evolution of technology on the other. Even though both culture and technology evolve over time, the evolution of technology occurs at a much faster pace and constantly intensifies such a polarisation. Institutions and their related infrastructures struggle to maintain

1 The first time Simondon uses the word is unknown. From the existing publication, the term was frequently discussed in a course he gave in Lyon between 1960 and 1961 with the title "Psychosociology of Technicity," the term was occasionally used in some other texts, which we will also mention in this article.

2 Simondon compared this ostracism with the discrimination of the black population of the United States, See "Psychosociologie de la technicité," in Gilbert Simondon, *Sur la technique* (Paris: PUF, 2016), 37.

3 Gilbert Simondon, *Du mode d'existence des objets techniques* (Paris: Aubiers, 2012).

ISSN 2773-0875

an "organic" unity with the advancements of new technologies,[4] and when they look to use those old technologies, which no longer exist, a lack which contains the seeds of discontent is produced. The accelerating evolution of technical objects results in an antagonism between culture and technology, or more generally, as it was known during the time of his writings, an antagonism between culture and civilisation.

This disjunction between culture and technology has produced such a discontent, one which has resulted in the accusation and demonisation of technology. Following the rapid industrialisation on the 19th century, when the awareness of the alienation of workers by capital and machines started growing, technologies became condemned as the source of this alienation and as a violation of mother nature. However, this opposition between culture and technology is problematic in itself because culture here, meaning outmoded institutions and values, is far too narrow to grasp true "Culture," which should be understood as the unity of both culture and technics, as Simondon contested:

> In reality, culture and civilisation are reciprocal and complementary symbols, the sole combination of which should be considered as culture in the broader sense of the term—meaning in the sense of anthropologists, ethnologists, and ethnographers. In the broader sense, culture encompasses, understands, and brings together civilisation and culture in the narrower sense of the term.[5]

A veritable culture reconciles the antagonism between a culture that looks backwards and technology that moves forward. To reconcile this antagonism, it is necessary, as we are often reminded, to develop a "technical culture."[6] In his 1960–1961 course, Simondon distinguishes two kinds of technology: phaneotechnics and cryptotechnics. The former refers to technologies directly exposed to the users' perception; the latter are parts that are hidden in their internal design because they are not necessarily to be shown

4 Simondon's use of the term organic is intriguing and inconsistent. In his writings around 1950s and 1960s, he occasionally used terms such as holistic and organic, for example, in "Cybernetique et philosophie" (1953) he used the term "holique," and in "Technical Mentality" (1961), he spelt it as "holistique." Here we can understand it in terms of reciprocal relations between parts, and between parts and the whole. The whole is important since the concept of sacrality which we will discuss extensively in this text is closely related to the concept of totality.

5 Simondon, "Psychosociologie de la technicité," 33, "En fait, culture et civilisation sont des symboles réciproques et complémentaires dont la réunion seule doit être considérée comme la culture au sens majeur du terme, c'est-à-dire au sens des anthropologues, des ethnologues, des ethnographes. La Culture, au sens majeur, compte, comprend, et réunit la civilisation et la culture, au sens mineur du terme."

6 Simondon, *Du mode*, 102.

therefore "susceptible of being introduced in the citadel of culture."[7] Phaneotechnics is the source of technophany since the latter is necessarily an exposure. It carries a halo which is expected to resolve the tension between culture and technology and, therefore, to reintegrate technical objects into Culture:

> Such technophanies, acknowledged and culturalized, are the path through which the technical object regains a place in a culture that ostracises it: the object re-enters the fortress of culture through a ritualisation, rich in images and symbols, much like the aspects of sexuality, ostracised and veiled by clothing, reappear in the culturalized ritual of elegant grooming.[8]

As technophany suggests, it is the manifestation of technicity (in analogy to hierophany, the manifestation of sacrality), which is consecrated in symbols and images. These symbols and images are recognised by culture and can penetrate and aestheticise the citizens' everyday lives. A popular science fiction book and film carry these symbols and images; they reintroduce technologies and machines by elevating them to the rank of culture. We might be able to define these technophanies as the product of industrial aesthetics, which re-aestheticise technologies in the form of art or aesthetic objects, for example, photography and cinematography—two technophanic examples that Simondon gave along with science fiction.[9] Simondon also recognises the constant successions of technophanies from the 17th century to the 20th century. He made a comparison between the technologies of the 1930s and those of the late 1950s and early 1960s, noting how, following the launch of Sputnik, space technology began to supplant Hertzian innovations like radio and television:

> From 1935 to 1944, the most powerful and prestigious technophany was radio broadcasting. Germany and England waged part of the war using radio transmitters, with jamming and counter-transmissions. Hitler, in particular, had understood the technophanic significance of Hertzian diffusion. However, in contemporary times, the power of radio waves no longer holds the same prestige, and technophanic power has shifted towards rockets and artificial satellites … [10]

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7 Simondon, "Psychosociologie de la technicité," 38.

8 Simondon, "Psychosociologie de la technicité," 39, "De telles technophanies, reconnues et culturalisées, sont la voie par laquelle l'objet technique reconquiert une place dans une culture qui l'ostracise : l'objet rentre à nouveau dans la citadelle de la culture par le biais d'une ritualisation, riche en images et en symboles, tout comme les caractères de la sexualité, ostracisés, voilés par le vêtement, se manifestent à nouveau dans la ritualisation culturalisée de la toilette élégante."

9 Simondon, "Psychosociologie de la technicité," 40–41.

10 Simondon, "Psychosociologie de la technicité," 117, "De 1935 à 1944, la technophanie la plus

In 1958, Hannah Arendt opened *The Human Condition* by writing that the launch of Sputnik was the most significant scientific event in the century.[11] Both Arendt and Simondon would be shocked by the development of computational technology that followed. Even though Simondon provided us with a philosophical treatise on transistors (i.e., in METO), he wrote very little about modern computers. Since the 1950s, not only have technological developments in computing brought us a seemingly inexhaustible list of innovations, but likewise the merger of art, design, and technology has entered a new stage. While Simondon often referred to the creation of automobiles, which pioneered integrating engineering and industrial design in the first half of the 20th century, it is now up to us to imagine what Simondon would have said about the Macintosh and Tesla. Today, the automobile industry is only one of the countless industries that effectively integrate art, design and technology into their products. The technological convergence (of the automobile, space technology, artificial intelligence, etc.) has produced even more spectacular technophanies, in which Elon Musk's launch of a red Tesla into orbit between Mars and Jupiter stands out as a representative. There are far too many technophanies to count if we try to extend Simondon's examples. Furthermore, it is perhaps necessary to ask if Simondon's observations made more than 60 years ago are still valid today? While Simondon's observation and analysis remain undoubtedly important for us, and its originality and profoundness are still plausible, does the hiatus between culture and technology still pose a problem? And is technophany, illustrated by the above examples, still an effective means to resolve such a problem?

Every quarter, if not more often, we see new applications, new gadgets with improved interactions, and new infrastructures with faster speeds and at larger scales; we are subject to the constant process of disruption. These new products and technologies produce shocks that cannot be easily absorbed. Two attitudes in the face of this new technophanic situation can be observed. Firstly, we hear more and more calls for the return to microorganisms, to plants, and animals. Such a "political naturalism" is a crucial move if we are to undermine humancentrism. However, it fails to confront the technological condition that Simondon described, one that becomes more sophisticated day by day. Secondly, a type of dogmatic materialism has been reborn that glorifies the transformations caused by digital technologies in every aspect of human life and sees it as the inevitable progress of the completion of the human (it constitutes what we can call "digital vitalism.") According to this transhumanist and posthumanist point of view, the

puissante et prestigieuse était celle de l'émission hertzienne. L'Allemagne et l'Angleterre ont fait une partie de la guerre au moyen des émetteurs hertziens, avec brouillages et contre émissions. Hitler, tout particulièrement, avait compris le sens technophanique de la diffusion hertzienne… Or, de nos jours, la puissance des émissions hertziennes n'a plus autant de prestige, et le pouvoir technophanique s'est déplacé vers les fusées et les satellites artificiels…"

11 Hannah Arendt, *The Human Condition* (Chicago: Chicago University Press, 1992 [1958]), 1.

ultimate technophany would be the realisation of technological singularity, the moment when *homo sapiens* are redeemed so as to become *homo deus*. With this awareness of the omnipresence and omnipotence of technology, could we conclude that we are now ready to realise veritable Culture, which has been until now only obscured by culture, its nostalgic psycho-social shadow?

§2. The Analogy between Technophany and Hierophany

It would be too hasty to already announce the completion of Simondon's project, especially since the term technophany has yet to be scrutinised. One might want to first ask why did Simondon want to coin a term that resonates so closely with Mircea Eliade's hierophany? While in *On the Mode of Existence of Technical Objects* (1958), the term technophany was not yet evoked and Mircea Eliade was not mentioned, in "Psychosociology of Technicity" (1960–1961), a course that Simondon gave in Lyon, and which could also be read as the continuation of MEOT, Simondon began and ended it by precisely entering into dialogue with Eliade's concept of hierophany. Retrospectively, one cannot help but recognise the influence of Eliade's thinking on Simondon's genesis of technicity[12] present in Part III of METO and identify Simondon's effort to respond to Eliade's proposition regarding the degradation of sacrality by conceiving technicity as both the rescue of sacrality and the base of culture.[13] In METO, after Simondon analyses the evolution of technical objects (Part I "Genesis and Evolution of Technical Objects") and the role of technology between humans and the world (Part II "Man and Technical Object"), Simondon confesses that a more profound analysis is still missing regarding the genesis of technicity.[14] Moreover, it seems to me that if this connection were not clarified, we would not be able to understand the philosophical proposal of Simondon, which was hinted at in an unsent letter he addressed to Jacques Derrida on the occasion of the establishment of the *Collège International de Philosophie* (CIPH) in 1982, concerning the aesthetics of technology. [15]

12 This is rather evident when we read "Psychosociologie de la technicité," 31, where Simondon made evident that his elaboration on technicité is methodologically mirroring Eliade's discourse on sacrality, "Au-delà de l'utilité qui ferait de ces objets des ustensiles (terme employé par Heidegger), au-delà d'un symbolisme facile et superficiel d'appartenance à une caste ou à une place, on doit s'efforcer de découvrir un sens de la technicité, comme Mircea Eliade s'efforce de découvrir, sous les images et les symboles, un sens de la sacralité."

13 Simondon, "Psychosociologie de la technicité," 31.

14 Simondon, *Du mode*, 213.

15 Gilbert Simondon, "On Techno-Aesthetics," *Parrhesia* No.14 (2012), 1–8, without understanding the concept of technophany, it seems to me that it is difficult to understand Simondon's intention of writing this letter to Derrida related to the establishment of the CIPH, but also other essays, for example, "L'effet de halo en matière technique : vers une stratégie de la publicité (1960)," reprinted in Simondon, *Sur la technique*, 279–293.

This letter, published posthumously, could be easily misread as a unconvincing proposal about the marketing of technological products, or even industrial propaganda, which one could hardly relate it to the agenda of CIPH.

Hierophany, the manifestation of sacrality[*sacralité*], is a term that Eliade prefers to the more conventionally used theophany, the manifestation of God. Hierophany is a world-making process in that the world ceases to be a homogenous space but becomes a constellation of heterogenous places where the sacred manifests itself. These places could be as diverse as the top of a mountain, a gigantic tree, the source of a stream, etc. They are where the shaman would go to communicate with the heavenly gods directly.[16] In the METO, Simondon calls these places key points [*points clés*], which indicates the place of sacrality and supernatural power. The key points are not isolated, instead they form a network of power. These singular points reveal a new reality which is distinguished from its surroundings. Retrospectively, Simondon could have directly cited Eliade in METO:

> When the sacred manifests itself in any hierophany, there is not only a break in the homogeneity of space there is also revelation of an absolute reality, opposed to the nonreality of the vast surrounding expanse. The manifestation of the sacred ontologically founds the world.[17]

Eliade, as a historian of religion, wants to return to hierophany because what he saw in modern society was the degradation of sacrality. The distinction between the *non*-modern and the modern is described as *pre*-modern and modern; with sacrality becoming depreciated as superstition having already been overcome by the modern. This depreciation of sacrality is fundamentally a mistake for Eliade; instead, he believes that rediscovering the archetype of hierophany may allow the moderns to renew their relations with the sacred. Simondon saw an isomorphism between technicity and sacrality. Like sacrality, technicity is maintained by a network or what he calls a reticular structure, indicated by the key points or the places of hierophany; true technicity, as Simondon claims, is a character of the network of objects and not a single object.[18] In METO, Simondon saw an even more profound relationship between the two. The genesis of technicity started with a magic phase, where the world is indicated by key points or places of hierophany. The oversaturation of the magic phase led to its bifurcation into technics and religion; each of them later bifurcated into theoretical and practical parts. This bifurcation process is accompanied by a desire to return to the unity *analogical* to the magic phase. I emphasise analogical because Simondon did not mean to suggest that one should return to the

16 Mircea Eliade, *Images and Symbols: Studies in Religious Symbolism*, trans. Philip Mairet (Princeton: Princeton University Press, 1991), 167.

17 Mircea Eliade, *Myths, Rites, Symbols. A Eliade Reader Vol. 1* (New York: Harper & Row, 1976), 144.

18 Simondon, "Psychosociologie de la technicité," 83.

actual unity of the magic phase, but rather a unity analogous to it, like the reciprocal and communal relation between figure and ground we find in Gestalt psychology. One of the aims of the study of the genesis of technicity is to renew the relation between technicity and sacrality, especially in the modern conception; science and technology mean profanity, and they are often opposed to religious sacrality, but more fundamentally (as a methodology), technological thought must be resituated within a genesis together with religious, aesthetic and philosophical thought, without which, we will easily fall prey to technological determinism.

In "Psychosociology of Technicity," the intimacy between technicity and sacrality is not presented in the same way as in METO. However, Simondon constantly indicated the isomorphism and intimacy between technicity and sacrality. How could we understand this nuance? Considering that the term technophany did not appear even once in METO, could we understand "Psychosociology of Technicity" to be placing more of an emphasis on this new concept? If so, given the consistency of Simondon's work, where could we place technophany back in METO, or more specifically, in Simondon's speculation on the genesis of technicity? Technophany, for Simondon, like hierophany, is not only any kind of revelation but a movement which transcends images and symbolism towards the interiority of the real, namely an extraordinary reality distinguished from everyday reality:

> The *technophanic initiation* is not merely an unveiling, but rather, in the etymological sense, a movement towards the interior of the real, seen increasingly closely and understood more essentially in its structural and functional intimacy. However, what remains constant during this journey into the interior of the real is the style of majesty and majority of the technical object.[italics are mine][19]

What is manifested in technophany is not merely a beautiful design but rather something more profound and difficult (if not impossible) to fully grasp. However, even though technophany is isomorphic to hierophany, its mode of revelation is necessarily technical. Access to the interiority of the real cannot be achieved via means other than through technical objects. Technicity and sacrality are put into a subtle competition, to the extent that technophany becomes a replacement for hierophany. The hiatus between technicity and sacrality enlarges over time. In "Psychosociology of Technicity," Simondon historically moves from the 17th-century artisanal culture to 19th-century positivism via the 18th-

19 Simondon, "Psychosociologie de la technicité," 101, "L'initiation technophanique n'est pas seulement un dévoilement, mais bien, au sens étymologique, un mouvement vers l'intérieur du réel vu de plus en plus près et compris de plus en plus essentiellement en son intimité structurale et fonctionnelle. Mais ce qui reste constant au cours de cette marche vers l'intérieur du réel, c'est le style de majesté et de majorité de l'objet technique. "

century encyclopaedia to show how such a hiatus was produced and compensated and how the overcoming of this hiatus should be regarded as a significant philosophical task. In the 17th century, sacrality was superior to technicity because technical objects of that epoch were only simple tools subordinated to artisans; therefore, we saw the domination of sacrality. In the 18th century, the hiatus was enlarged due to the improvement of technologies and the emergence of larger-scale ateliers; consequently, encyclopedism appears as a technophany to mediate the two. As Simondon pointed out, encyclopedism added nothing more to Descartes' mechanism but only prolonged and multiplied it by endowing it with an "aesthetic turn."[20] In other words, the *Encyclopaedia* of d'Alembert and Diderot constituted technophanies, which, according to Simondon, are "partially hierophanies," though "the hierophanic element being aestheticised, became implicit."[21] 19th-century positivism was accompanied by the rise of gigantic automatic machines, to which the workers had to subordinate their bodies. The technophany of encyclopedism ceased to be effective. The hiatus between sacrality and technicity was enlarged so that an antagonism appeared irreconcilable.

§3. The No Man's Land Between Sacrality and Technicity

Simondon pointed out several times in "Psychosociology of Technicity" that there is a no man's land between sacrality and technicity. How should we understand this no man's land? Is it a vacuum produced by the hiatus between sacrality and technicity, one still waiting to be filled? Simondon mentions that leisure is the no man's land between sacrality and technicity; however, it does not provide anything common between them, therefore it also fails to be a veritable candidate.[22] Nevertheless, he gave a criterion to the occupier of this no man's land:

> There exists a no man's land between sacredness and technicity. In this no man's land, a normativity must emerge as the foundation for a cultural unity suitable for the current psychosocial conditions of life for most human groups. Indeed, it is in this no man's land that the most polarising and remarkable actions are instituted, and they are instituted *without positive*

20 Simondon, "Psychosociologie de la technicité," 104.

21 Simondon, "Psychosociologie de la technicité," 105.

22 Simondon, "Psychosociologie de la technicité," 99, "Le loisir est un *no man's land* entre sacralité et technicté, mais non point un terrain commun offrant une perspective commune. Il n'existe pas de forme unique de loisir, mais deux formes peu compatibles : *le loisir de sacralité*, halo négatif prohibant la technicité et la repoussant hors des limites du temps sacré comme on repousse les réalités profanes hors des zones voisines du temple, et *le loisir de technicité*, conçu comme une des fonctions de l'activité complète de l'homme au travail."

> *norms*.[italics are mine][23]

In *On the Mode of Existence of Technical Objects*, we are told that aesthetics appeared to be the mediative power of convergence after the bifurcation from the magic phase to religion and technics. However, aesthetics failed to maintain its converging power when further bifurcation continued in the genesis because aesthetic thinking is still situational, meaning its role is to serve as "the paradigm for orienting and supporting the effort of philosophical thinking,"[24] implying that philosophical thinking will have to intervene to bring about a higher order of convergence. In "Psychosociology of Technicity," such an opposition between aesthetic thinking and philosophical thinking was not emphasised; instead, Simondon suggested again that aesthetics could resume this function; however, one will need to redefine what aesthetic here means and distinguish from aesthetics thus conventionally understood:

> However, the aesthetic category that converges technicity and sacrality is not the usual aesthetic category, detachable from the world. It is a concern for totality and the organisation of existing reality according to its lines and powers, to add, in accordance with the *uniqueness of this singular world*, an overdetermination brought about by the creativity of techniques: in this aesthetics of totality, there is a perception of sacredness, that is, the uniqueness of the given world, prior to technicity, the basis of constructiveness, an open system of the complete nature.[Italics are original][25]

Does this suggest that Simondon abandoned the categorisation of aesthetic and philosophical thinking present in METO? In METO, we recall that Simondon, by referring to Bergson, juxtaposed philosophical intuition from the concept and idea, deduction and induction, and indicated that the former is a veritable philosophical method to grasp the genesis of technicity. Simondon distinguishes three kinds of intuition, namely

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23 Simondon, "Psychosociologie de la technicité," 124, "Il existe un *no man's land* entre la sacralité et la technicté, et c'est dans ce no man's land qu'une normativité doit se faire jour comme fondement d'une unité culturelle adéquate aux actuelles conditions psychosociales de vie de la plupart des groupes humains. C'est, en effet, dans ce *no man's land* que s'instituent les actions les plus polarisantes, les plus remarquables, et elles s'instituent sans normes positives."

24 Simondon, *Du mode*, 276.

25 Simondon, "Psychosociologie de la technicité," 120, "Mais la catégorie esthétique faisant converger technicité et sacralité n'est pas la catégorie esthétique habituelle, détachable du monde. Elle est une préoccupation de totalité et d'organisation du réel existant selon ses lignes et ses pouvoirs, pour ajouter conformément à *l'unicité de ce monde unique* une surdétermination apportée par la créativité des techniques : dans cette esthétique de la totalité, il y a perception de la sacralité, c'est-à-dire de l'unicité du monde donné, antérieur à la tech nicité, base de la constructivité, système ouvert de la nature complète."

magical, aesthetic, and philosophical, which also correspond to three successive stages of convergence in the genesis of technicity. The distinction between aesthetic intuition and philosophical intuition is clearly stated as follows:

> Aesthetic intuition is contemporary with the bifurcation of magical thinking into technics and religion, and *it does not truly synthesise the two opposed phases of thought*; it merely indicates the necessity of a relationship and accomplishes it allusively in a limited domain. Philosophical thinking, on the contrary, *must genuinely accomplish the synthesis*, and it must construct culture, coextensive with the culmination of all technical thought and all religious thought.[italics are mine][26]

It is not possible to conclude from Simondon's existing publications if there is a significant change in the philosopher's thinking concerning the role of aesthetics. The lack of references in his writings and the limited published work make such research unproductive. Moreover, intuition, be that philosophical or magical, cannot be isolated from the very concept of aesthetics if, by aesthetics, we mean, as the Greeks understood, the study of the sensible.[27] However, in his 1960–1961 course on the psychosociology of technicity, we could at least say that he reaffirmed the importance of aesthetics as having the capacity to grasp "totality" and perceive "sacrality." It seems that the redefined concept of aesthetics is able to take up the task of philosophical thinking and occupy the no man's land between technicity and sacrality; as Simondon said, "if this discovery is possible, it will provide the basis of a culture that would give again to aesthetic category the central place which it did among the Greeks."[28] If we follow this line of thought, then the concept of technophany is the key to conceiving the power of aesthetics and the possibilities of convergence in the future. It is that which withholds at the same time a pair of polarising forces: schematisation of technics and intuition of the sacred.[29] The example that Simondon gave to explain this polarisation is nonetheless rather astonishing: Le Corbusier's Couvent Sainte-Marie de La Tourette. With this example, his definition of aesthetics acquires a more concrete meaning.

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26 Simondon, *Du mode*, 324–325, "L'intuition esthétique est contemporaine du dédoublement de la pensée magique en techniques et religion, et elle n'effectue pas une synthèse vséritable des deux phases opposées de la pensée ; elle indique seulement la nécessité d'une relation, et l'accomplit allusivement dans un domaine limité. La pensée philosophique au contraire doit accomplir réellement la synthèse, et elle doit construire la culture, coextensive à l'aboutissement de toute la pensée technique et de toute la pensée religieuse."

27 As we know that only in the 18th century, a rather narrow concept of aesthetics was established by Alexander Baumgarten, who understands aesthetics as the study of the lower faculty of cognition, in contradistinction to logic, which belongs to the higher faculty of cognition.

28 Simondon, "Psychosociologie de la technicité," 121.

29 Simondon, "Psychosociologie de la technicité," 122.

Figure 1. Couvent Sainte-Marie de La Tourette (1960), Source: Wikimedia

The building of Le Corbusier, according to Simondon, possesses such polarising categories. On the one hand, there is a *negative aesthetic*, which presents itself as monstrosity; on the other hand, it also contains a positive category, namely, *functional optimisation*. The negative aesthetic intuits and withholds the totality; the functional optimisation analyses and segments, according to functionalities. It is interesting to notice that the totality is associated with negativity because only the negativity withholds the whole without determining it, such as Kant's negative affirmation of the beautiful expressed in the two moments, purposiveness *without* purpose and pleasure *without* interest. Simondon's task to reconcile sacrality and technicity could also appear analogous to Kant's ambition to unify nature and freedom. This containment of the two polarising forces constitutes a new normativity; this normativity is necessarily *teratological*. It is a constructiveness [*constructivité*], simultaneously auto-normative and auto-constructive. The example of the monastery of Sainte-Marie was mentioned again in another text titled "Technical Mentality," thought to be written during the same period as his course on psychosociology of technicity (i.e., 1961); the article was primarily a discussion on the rise of cybernetics as a new epistemology and the design of open machines. Towards the end of the article, Simondon evokes Le Corbusier's Sainte-Marie as an archetype of the open system. It resonates with the impression that is left to us in the course, and the term technophany also appears for the first time in this article:

> And this is possible not only because of the architectural conception of the whole, but also because of the spirit of pairing down that manifests itself in the choice of forms and the use of materials: it will be possible, without any break between the old and the new, to still use concrete, shuttering,

> iron, cables, and the tubulature of long corridors. The non-dissimulation of means, this politeness of architecture towards its materials which translates itself by a *constant technophany*, amounts to a refusal of obsolescence and to the productive discovery amongst sensible species of the permanent availability of the industrial material as the foundation for the continuity of the work.[italics are mine][30]

Once an example is given to demonstrate such a philosophical task, controversies arise, like opening a Pandora's box. What are the other examples which demonstrate Simondon's vision of technophany? Would Le Corbusier have become the saviour of culture? One could undoubtedly examine other examples teratological architecture made since the 20th century by world famous architects, assessing if they succeeded, in reconciling technicity and sacrality as Le Corbusier's Sainte-Marie did according to Simondon. However, such a demonstration would be almost arbitrary, and such research might well be futile. Sacredness is not an object or a thing; it is the unthinged [*unbedingt*]. As Simondon claims, sacredness is maintained by a reticular structure, isomorphic to technology; it is also something that cannot be reduced to science or even religion. Simondon's concept of technophany didn't resolve the problems of our time, rather he handed down to us a specific inquiry into the future of technology, design, and art.

Today, it is already in everyone's consciousness that we have entered into a technological era no matter whether one likes it or not; the importance of technology in the process of hominisation, as well as in the constant reconstruction of the world view, is recognised even in mass media. However, the concept of technophany, which Simondon envisioned to converge the technical and the sacred, has yet to be fully reflected upon. The task of convergence between sacrality and technicity remains a major challenge in contemporary thought,[31] and it is handed to us as an essential resource for a critique of technological determinism and political naturalism.[32] This task will demand a persistent questioning and reconceptualisation of technology, with and beyond Simondon: with Simondon, because his original thought on technology allows a new dialogue between technology and philosophy; beyond Simondon, since his thought will have to be verified, modified,

30 Gilbert Simondon, "Technical Mentality," *Parrhesia* 14, (2012): 25.

31 See Jacques Garelli, "Être-au-monde et être cosmique," *Psychiatr Sci Hum Neurosci* 1, (2003): 41–49.

32 I developed the concept of cosmotechnics as a response to it, for a shorter introduction, see Yuk Hui, "On Cosmotechnics: For a Renewed Relation between Technology and Nature in the Anthropocene," *Techné: Research in Philosophy and Technology* 21, no. 2–3 (2017): 1–23; for more elaborated concept of cosmotechnics, see Yuk Hui, *The Question Concerning Technology in China. An Essay in Cosmotechnics* (Falmouth: Urbanomic, 2016) and Yuk Hui, *Art and Cosmotechnics* (Minneapolis: University of Minnesota Press/E-Flux, 2021). Readers might equally want to consult the work of the late Jacques Garreli, who picked up Simondon's allagmatic method to reconcile physics and phenomenology, see Jacques Garreli, *Rythmes et Mondes : au revers de l'identité et de l'altérité* (Grenoble: Jerôme Millon, 1991).

prolonged and enriched under the new technological and planetary condition.

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TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

On Natural Technicity: Oikos, Articulation, and the Gift

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Abstract:
Deconstruction is from the start a matter of ecology, that is, an approach to the interminable articulation of *oikos* that resituates the traditional determinations of nature, technique, and place. Accordingly, "natural technicity" emerges as a metonym for deconstruction; a thinking of technics not on the basis of artefacts, but as originary *articulation*, the process of animating and weaving together the *oikos* and *logos* of ecology. We begin at the *oikos*, emphasising its elemental and decisive character for explicating the "eco" that speaks in both economy and ecology. We then turn to the technical articulation of *oikos*. We suggest that it is precisely through the question of articulation that we arrive at another thinking of technique, the always distinct historical modes in which an *oikos* takes place, which remain irreducible to an exclusive mode of nature or culture. This leads to a thinking of generalised technicity, understood as the highly differentiated series of responses and relations to what is given, in what we see as a history of articulation in response to the gift—for ecology, the originary gift of the sun's thermodynamic plenitude.

Keywords:
Ecology, Technics, Deconstruction, Thermodynamics, Jacques Derrida, Jean-Luc Nancy, Georges Bataille

ISSN 2773-0875

Opening: On the Writing of Matter

In the following, we seek to demonstrate that deconstruction is from the start a matter of ecology, by which we understand the labour of the interminable articulation of *oikos* which resituates the traditional determinations of nature, technique, and place. In this analysis, "natural technicity" will emerge as a metonym for deconstruction: originary technicity thought not from the basis of artefacts but *articulation*, the process of animating and weaving together the *oikos* and *logos* of ecology. But first, in order to clarify the stakes of the following reflections, we must take a step back, to where deconstruction has in many ways been abandoned, with Derrida's early emphasis on "textuality."[1]

Derrida's thinking of "general writing"[2] has often been caricatured by materialist discourses which attempt to monopolise "reality" through an arguably strategic obfuscation of deconstruction's potential for thinking the most imminent ecological threats, such as mass extinction and ecosystem collapse. In this charge, deconstruction is presumed to *lack* a language for these issues, precisely due to its excessive insistence on language; it is thus relegated to a state of "infancy," a literal speechlessness.

Karen Barad offers one of the most poignant formulations of this critique in their thematization of nuclear violence. For Barad, Derrida's thinking through the primacy of the "written trace" prevents him from doing justice to a violence that reaches beyond the potential eradication of the textual trace and the worlds it constitutes, and thus blinds him to the bodily suffering and material devastation of those existences that slip through the interstices of "textuality":

> Does Derrida trip over the threshold he sets between linguistic and physical forms of violence in his examination of nuclearity? What are we to make of his near exclusive focus on textuality that winds up eliding both the destructive force of physical violence and the possibilities of its interruption in their materiality?[3]

Barad accuses Derrida of having "lost track" in his writings on nuclear apocalypse, of

1 For example: Jacques Derrida, *Of Grammatology* (Baltimore: The Johns Hopkins University Press, 1997); "Freud and the Scene of Writing" and "Structure, Sign, and Play in the Discourse of the Human Sciences," in *Writing and Difference* (London: Routledge, 2005): 246–292; 351–371; *Dissemination* (London, New York: Bloomsbury Academic, 2016).

2 As developed in Jacques Derrida, "From Restricted to General Economy: A Hegelianism without Reserve," in *Writing and Difference*: 251–277.

3 Karen Barad, "After the End of the World: Entangled Nuclear Colonialisms, Matters of Force, and the Material Force of Justice," *Theory & Event* 22, no. 3, (2019): 524–550; 534.

the "continuous nuclear war" perpetrated by the ongoing colonialism of nuclear "tests" responsible for immeasurable health complications and land destruction in the Global South. This they attribute to Derrida's "losing track" of the very principles of "general textuality," walling himself in an "academic form" and "reinforcing an enclosure of representationalism where his concern is with the absolute destruction of literature, the archive, the name, and not the planet itself."[4] The charge is that Derrida's epistemology and ethics run up against their absolute limit where discourse ends, "there" in the real world and "the planet itself." Consequently, Derrida's texts on nuclearity—if not all of his writings—in their overwhelming attachment to literary textuality, an effect of their *forgetting* of the literal principle of general textuality that these texts have established and elaborated, are better passed over in silence.

Indicatively, it is precisely in the performative relation of language to silence that Barad locates deconstruction's *captivity*. In "Force of Law," Derrida too invokes a "mystical" silence that is captured in the performance of the linguistic act, but which serves also as language's aporetic foundation—the same silence that Barad desires to liberate from its linguistic prison.[5] And yet this silence is for Barad not nothing—or rather it *is* nothing, nothing understood *as* matter, a matter "inseparable" from the "speaking silence of the void."[6] This silence amounts to a fundamental resistance to the work of presentation, a radical, unpresentable elementality that sets this play of textuality moving.[7] In seeking to liberate that which remains the silent other of language, Barad seeks to present a language of silence, and thereby effects nothing less than the double genitive *of* deconstruction.

Claire Colebrook levels the exact opposite critique against deconstruction. Noting Derrida's "inadequate attention to *literal extinction*,"[8] she suggests that the problem is not at all that deconstruction walls itself up in a textual prison, but rather that its hyperbolic gestures, such as its demand for justice, "like the text, [are] never *closed*."[9] What is in fact needed in the face of "literal extinction" is a thinking of the possible halt of the trace's promise of iterability. Against its monstrous untamability and relentless opening potential, something like a "thinking of a material sublime: a stony, inert, lifeless,

4 Barad, "After the End of the World," 536–537.

5 Jacques Derrida, "Force of Law," in *Deconstruction and the Possibility of Justice*, eds. Drucilla Cornell, Michel Rosenfeld and David Gray Carlson (New York: Routledge, 1992), 13–14.

6 Barad, "After the End of the World," 542–543.

7 On a similar, deconstructive account of the "elemental," cf. Susanna Lindberg, "Elemental Nature as the Ultimate Common Ground of the World Community," in *Politics of the One: Concepts of the One and the Many in Contemporary Thought*, ed. Artemy Magun (New York and London: Continuum, 2021).

8 Claire Colebrook, "Extinguishing Ability: How We Became Postextinction Persons," in *Eco-Deconstruction: Derrida and Environmental Philosophy*, eds. Matthias Fritsch, Philippe Lynes and David Wood (New York: Fordham University Press, 2018), 261.

9 Colebrook, "Extinguishing Ability," 263.

inhuman matter that is other than all the figures through which it is phenomenalized," must be postulated.[10]

Although these two responses to deconstruction are diametrically opposed, both voice a clear demand for a step beyond deconstruction.[11] While we could continue to adduce explicit and tacit critiques of this alleged textual limitation of deconstruction, from texts that believe themselves to have escaped the orbit of *logos*,[12] it is perhaps more economic to recall Gilles Deleuze's own insistence on the linguistic structure of both the world and structure itself. Deleuze would not hesitate to write, in celebration of structuralism:

> And if structuralism then migrates to other domains, this occurs without it being a question of analogy, nor merely in order to establish methods 'equivalent' to those that first succeeded for the analysis of language. In fact, language is the only thing that can properly be said to have structure, be it an esoteric or even non-verbal language. There is a structure of the unconscious only to the extent that the unconscious speaks and is language. There is a structure of bodies only to the extent that bodies are supposed to speak with a language which is one of the symptoms. Even things possess a structure only in so far as they maintain a silent discourse, which is the language of signs.[13]

Here, the silent discourse of things becomes language and *logos*, which is not mere analogy, but rather an elemental signifying structure. Whether Derrida's "textualism" is more metaphysical than Deleuze's "materialism" or not, one does not understand anything about either *post*-structuralist project, if one does not observe that *they both trail after the writing of matter, that they follow an originary technicity at the heart of existence*.

Derrida himself tried repeatedly to clarify the "misunderstandings" that his use of the

10 Colebrook, "Extinguishing Ability," 266.

11 Both Barad and Colebrook have made significant contributions to eco-deconstruction and the task of pursuing their contributions further remains at hand; here, only the point on textuality is pressed, to wrest *logos* as a specific mode of technicity and as an articulation of natural technicity.

12 Notwithstanding their eclecticism, such examples showcase the force of the materialist tide that bears down on eco-deconstruction. Often these critiques seem recalcitrant not merely to *logos*, in a restricted sense, but to all technical mediation. Certainly, some of these critiques aim at barely more than a straw man. Calling, for instance, for a "renewal" of materialism, Levi Bryant denigrates the substitution of the reality of things and phenomena with discourses, a substitution "convenient for humanities scholars who wanted to believe that the things they work with—texts—make up the most fundamental fabric of worlds." Levi R. Bryant, *Onto-Cartography: An Ontology of Machines and Media* (Edinburgh: Edinburgh University Press, 2014), 1.

13 Gilles Deleuze, "How Do We Recognize Structuralism?" in *Desert Islands and Other Texts 1953–1974*, ed. David Lapoujade (New York: Semiotext(e), 2004), 170–1.

figures of textuality and archi-writing continued to generate. For example, in "A Letter to a Japanese Friend," while admitting that the explicitly linguistic delimitations of his interventions helped develop the lineaments of deconstruction, he underlined that such were only partial registers or "models" for what deconstruction was to be:

> It goes without saying that if all the meanings enumerated by *Littré* interested me because of their affinity with what I "meant" ["*voulais-dire*"], they are concerned, metaphorically, so to say, only with models or regions of meaning and not with the totality of what deconstruction aspires to in its most radical ambitions. This is not limited to a linguistico-grammatical model, nor even a semantic model, let alone a mechanical model. These models themselves have to be submitted to a deconstructive questioning.[14]

The force to which all such models must be submitted, and perhaps most urgently among them the linguistic model, is that of articulation, of the event of taking-place—"if [indeed] deconstruction takes place everywhere it [*ça*] takes place, where *there is* something […]."[15] This is a thinking of an unmistakably *material* taking-place, an "insistence," that sets us on the way towards an ecologically inflected deconstruction. Such an inflection is not a fortuitous or expedient modification, but an emphasis on what is always already there, the ecological at the heart of the discursive; for deconstruction is not principally a kind of discourse, but a metonym for what happens. The discourse of deconstruction—to the extent that deconstruction becomes discursive—is in this way a testimony, a bearing witness, and a response, to this taking-place, the event of articulation. An "ecologically inflected" deconstruction as a programmatic, would be tasked with translating this quasi-transcendental event into explicitly "ecological" registers, and further with pursuing the history of human and non-human techniques of response to this articulation.

Such responsiveness and responsibility are as important for the futures of technology as they are for ecology. At a moment when (neo-)cybernetics closes in upon contemporary technological thought from all directions, deconstruction offers one of the few means of querying its presuppositions by inflecting the *logos* with a thinking of archi-technicity or "writing." Already in *Of Grammatology* (1967), Derrida sought to limit this cybernetic "model," as well as the linguistic "model," claiming that "cybernetics is itself intelligible only in terms of a history of the possibilities of the trace as the unity of a double movement of protention and retention."[16] The trace, that is, writing thought "before the letter," enables an internal rupture of the notion of the *pro-gram*, the "fore-writing," in the sense

14 Jacques Derrida, "Letter to a Japanese Friend," in *Pysche: Inventions of the Other, Volume II*, eds. Peggy Kamuf and Elizabeth Rottenberg (Stanford: Stanford University Press, 2008), 2–3.

15 Derrida, "Letter to a Japanese Friend," 5.

16 Derrida, *Of Grammatology*, 84.

of "fore-controlling" of the biological articulation of the informational code of cellular life, as well as military, societal and financial processes.[17] The reinsertion of thought at the heart of the ubiquitous, non-exclusively-human technicity of writing that deconstruction effectuates is necessary in order to turn biosemiosis to sense. This turn takes place where deconstruction articulates itself, *there*, at the *oikos*.

On the Locus of Life: *Oikos*

Having wrested the *logos* of ecology from the silence imposed by the materialist ban or abandonment of deconstruction, we turn briefly to the topology and character of the "*oikos*," the hearth of ecology, before proceeding to explore its technical articulation.

Oikos is home and house, a unit of life serving as a fundamental element of production, politics and sociality. This elemental character of the *oikos* is pivotal in order to explicate the "eco" that speaks in both economy and ecology. As an element, an *oikos* is part of a wider environment, a surrounding world, and yet an *oikos* also represents an environment unto itself, with a distinct structure (*logos*) and articulation (*nomos*), fashioning a singular internal life of its own.

It might be considered, provisionally, that the notions of economy and ecology rest on a first generalisation of "*oikos*," a certain synecdoche of the part standing for the whole. In effect, the whole of nature, on the one hand, and the whole of the international community, on the other, are understood as having, respectively, a *structure* and *articulation* analogous to a household. Although this discursive construct can be understood as a "domestication" of the planetary, a reduction of the incommensurable articulation of existence to the form of the home, this configuration of the *oikos* can also be understood as a vital localisation of the universal. Thus, Geoffrey Bennington's critique of Georges Bataille's endeavour to thematise a general economy is valid, insofar as it underlines the restricted character of every economy, or rather, its character as restriction.[18] It is well possible, however, to invert this critique. An economy is only possible through a non-dialectical double restriction of *oikos*, that is, a restriction of its spatio-temporal restrictions, that constitutes the originary escape of an economy from the confines of its locality. For it is clear that the *nomos* of the *oikos* must be iterable and open to another *oikos*. As such, *every* economy is general.

It is in view of this double movement of exteriorisation-interiorisation of the *oikos*, that Olivier Human and Paul Cilliers propose to understand complex systems as "open" and

17 Derrida, *Of Grammatology*, 9.

18 Geoffrey Bennington, "Introduction to Economics I: Because the World is Round," in *Bataille: Writing the Sacred,* ed. Carolyn Bailey Gill (London: Routledge, 2005), 48-49.

"folded," rather than merely "general."[19] Ordinarily, a "restricted" economy concerns the production and consumption of resources through its constituent parts and is in this regard internal to the system—bound up with its inherent constraints.[20] Such an economy is "conservative" in that it expends its forces by utilising maximally the constraints that it cannot overstep. This translates into the effort to preserve its structure, through a certain set of priorities or inviolable principles.[21] Human and Cilliers find in Edgar Morin's theorisation of complex systems a model that can accommodate heterogeneous disruptive forces—what Bataille calls "transgression" and Derrida "play." Play constitutes an internal transgression articulated through "multiple non-linear interactions and feedback paths within complex systems," which are constitutively permeable.[22] The play at the heart of the system, which is supported by the system's relationship to its environment, is what makes it non-totalisable—as such play "breaks" the system; by the same token, however, play *makes* the system.

Importantly, play is possible because of an internal, domestic lack. Derrida writes:

> If totalization no longer has any meaning, it is not because the infiniteness of a field cannot be covered by a finite glance or a finite discourse, but because the nature of the field—that is, language and a finite language—excludes totalization. This field is in effect that of *play*, that is to say, a field of infinite substitutions only because it is finite, that is to say, because instead of being an inexhaustible field, as in the classical hypothesis, instead of being too large, there is something missing from it: a center which arrests and grounds the play of substitutions.[23]

The missing centre is the "there" of the *oikos*, the *chōra* where *there is* the excess of the gift, to which the final part of this essay returns. In this missing centre, the hearth of *oikos*, a conflagration takes place as the solar excess sets in motion a system forever open to its constitutive lack. The *Hestia* or hearth is the sun-inside, the folding of excess into absence: *oikos* is topologically non-orientable.

Inviting or rather *discovering* the excess inside, play manifests "the precarity of the system,

19 Olivier Human and Paul Cilliers, "Towards an Economy of Complexity: Derrida, Morin and Bataille, Theory," *Culture & Society*, 30(5), 38.

20 Human and Cilliers, "Towards an Economy of Complexity," 27.

21 Human and Cilliers, "Towards an Economy of Complexity," 28.

22 Human and Cilliers, "Towards an Economy of Complexity," 36.

23 Jacques Derrida, "Structure, Sign and Play," in *Writing and Difference* (London: Routledge, 2005), 365.

the fact that any system is always open to (self-)destruction."[24] Accordingly, if a general economy or ecology has, or more precisely according to Jean-Luc Nancy, *is*, *sense*, a well from which meaning can emerge, it is precisely because their systemic character, abiding *and* precarious, lends itself to both prediction *and* the incalculable.[25]

What remains to be understood is that play is always a technique—that the *oikos* of both economy and ecology is always technically articulated. In this regard, Émile Benveniste's effort to establish the distinctive socius of the *oikos* is particularly illuminating. His etymological analysis of the semiotic affinity and distinction of the notions of "home" and "house" show that the technicity of the latter subtends the mores of the former. Benveniste writes: "Far from constituting two distinct social units, Gr. *dómos* and (*w*)*oîkos* signify practically the same thing, 'house.' Date, dialect and style govern the choice of one or the other."[26] Yet, gradually *domos* will assume in Greek the meaning of "house" and *oikos* that of "home," splitting the unitary artefact into two. In Latin *domus*, cognate of the Greek *domos*, will retain the primary sense of "home." Next to other adduced evidence, Benveniste argues:

> […] *Domi*, *domum*, *domo*, signify only 'the home,' with or without movement, as the point of arrival or departure. These adverbs oppose the 'home' to that which is outside it (*foras*, *foris*), or to foreign parts (*peregre*); or they contrast everyday occupations, the works of peace, *domi*, to war, *militiae*. Such ideas could hardly be reconcilable with the word for "house" if we had to take it in a constructional sense. It is clear that these adverbial uses imply a moral rather than a material connotation for *domus*.[27]

Nonetheless, the "constructional sense" is never altogether abandoned. A home must be also a house, built through the jointure (*harmos*) of parts into a domestic harmony, which is not a naturalised effect of stabilising violence, but the arrest of a fragile metastability. Accordingly, this building activity is not exclusively, or principally, architectonic, but proceeds for the most part, through the finite natural technicity of life itself—its metabolics.[28]

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24 Human and Cilliers, "Towards an Economy of Complexity," 37.

25 Human and Cilliers, "Towards an Economy of Complexity," 35.

26 Émile Benveniste, *Dictionary of Indo-European Concepts and Society* (Chicago: Hau Books, 2016), 241.

27 Benveniste, *Dictionary*, 243–244.

28 See Georgios Tsagdis, "Architectures of Thought: Negentropy, Metabolics and the General Ephemeral," *Footprint* 30, 31–44.

What is Called Articulation? From Deconstruction to Natural Technicity

> "It is from the primary possibility of this articulation that one must begin. Difference is articulation."[29]

Deconstruction takes place there, at and as, the *oikos*; making up its jointure and architecture, composing an *oikos*. This is where it will always have taken its place—*in place*—and for this, there must have been at the start, perhaps not a being, a text, or meaning, but some ashes, some irreducible base materiality, miniscule and ungraspable as it may be. And yet this base material precondition paradoxically testifies to deconstruction, that is, articulation, as having arrived earlier. There will have been already the results of an unpresentable "possibility of movement, of the machine, of *techne*, of orientation in general."[30] The *oikos* names the remains of this articulation: giving a name to the remaining earth, worlds, and lives, perhaps most simply, *artefacts*, in their singularity.

And yet perhaps the term "deconstruction" remains unwieldly for thinking this taking place of an *oikos*, given its persistent connotations as an interpretative method, a presupposition which limits its effects to an anthropocentric linguistic field. It might thus be appropriate to turn to one of the many other figures that Derrida would utilise to think this event, for example, "spacing," which lends itself readily to explicitly ecological themes, given its far more material meaning. Now, spacing does not refer here to a process of introducing space into a pre-given whole, but instead to a basic operation of separation, of opening and tensing, that defers unity by inscribing differences. Spacing in this sense is not a negative operation, but most fundamentally a way to think *articulation*.

This material inflection of deconstruction that is offered by the thinking of "spacing" is emphasised by a passage from *Of Grammatology* in which Derrida comments on a certain physical path, the *picada*, which Claude Levi-Strauss presents as a "crude trail whose 'track' is 'not easily distinguished from the bush.'"[31] For Derrida, the *picada* is a fine example of a spacing that takes place "in the world," beyond the limits of the text in its restricted linguistic sense. This physical path reflects the self-fracturing of a "natural" *oikos*: "the opening, the divergence from, and the violent spacing, of, nature, of the natural, savage, salvage, forest. The *silva* is savage, the *via rupta* is written, discerned, and inscribed violently as difference, as form imposed on the *hyle*, in the forest, in wood as matter […]."[32] What the *picada* highlights is that spacing is not a mere supplement to, or feature of, human language, but instead, the very opening and articulation of existence. What

29 Derrida, *Of Grammatology*, 66.
30 Derrida, *Of Grammatology*, 84–85.
31 Derrida, *Of Grammatology*, 107.
32 Derrida, *Of Grammatology*, 107–108.

remains, attests to this natural articulation, this "movement of protention and retention [that] goes far beyond the possibilities of the 'intentional consciousness.'"[33] And it is here that one finds an invitation for another thinking of technique, a thinking that emphasises the always distinct and historical *how* of each articulation—the modes in which an *oikos* takes place which remain irreducible to a determined field of nature or culture.

Derrida himself will draw such a line from spacing to a kind of natural technicity in *On Touching—Jean-Luc Nancy*. Nancy's thinking of a finite, material spacing at the heart of any presumed co-presence, sharing or relation, functions as a catalyst for Derrida to frame the taking-place of existence as a matter of technique.

> What seems to prescribe [Nancy's] necessary taking into account of plasticity and technicity 'at the heart' of the 'body proper' is an irreducible *spacing*, that is, what spaces out touching itself, namely con-tact. […] Such an experience is always affected by the singularity of that which—by reason of this spacing—*takes place*, which is to say, by the event of a coming. *Taking place* and *taking the place of*, I would add, in order to inscribe the possibility of metonymy and substitution, that is, of technical prosthetics, right onto the very singularity of the event. […] And this, I think, also opens onto organic articulation, *technē*, substitution, prosthetics, the *place of taking the place*, *what is held to taking the place of* something—from before man, before humans, well before and thus well beyond the humanualism of the-hand-of-man.[34]

At the heart of the body proper, there is a fundamental spacing, but one that must be always taken in its singularity as a specific way of relating, a movement bound with the specificity of a given *oikos*. Indeed, spacing is a matter that takes place in and beyond a body, *there* from *this* base materiality. As we read in *Of Grammatology*: "articulation, wherever one finds it, is indeed articulation: that of the members and the organs, *differance* (in the) (self-same) [*propre*] body."[35] The challenge here presented by Derrida and Nancy is to think this spacing in its finite materiality, that is, as "organic articulation," and thus, in a rigorous sense, as *technē* "before and well beyond the humanualism of the-hand-of-man." Such a *technē* would need to be thought as anterior to the anthropological epochs of technics, and as being constitutive of them.

Nancy's thought is indeed rife with such a thinking of the technical articulation of existence––its necessarily historical *being-put-into-play*. For example, in *A Finite Thinking* (1990), he writes that, "nature designates an exteriority of places, moments, and forces:

33 Derrida, *Of Grammatology*, 84.

34 Jacques Derrida, *On Touching—Jean-Luc Nancy* (Stanford: Stanford University Press, 2005), 221.

35 Derrida, *Of Grammatology*, 248.

technology is the putting into play of this exteriority as existence."[36] In *The Sense of the World* (1993): "it is necessary to come to appreciate 'technology' as the infinite of art that supplements a nature that never took place and will never take place. An ecology properly understood can be nothing other than a technology."[37] What is, *qua* nature (*physis*), can here be thought only in its finite articulation, that is, through the discrete techniques and materiality in which it takes place.

Such a thought opens onto a generalised thinking of articulation and a fresh moment in the deconstruction of onto-theology through its persistent devaluation of technics. Where onto-theology has understood technics as undesirable prostheses to be neglected or repressed, then as unfortunate but constitutive elements of human existence, and finally as the impure essence of human life itself, Derrida and in his wake, Nancy, undertake to think technique not on the basis of artifactuality, but as an operation that gives artifice, that is, finite *articulation*.

We refer to this operation as *natural technicity*: the events of articulation as the ways or manners in which the tracing of existence takes place—the technical blossoming of *physis* as an *oikos*. Natural technicity can be thus understood as a metonym of deconstruction, a way to express the operation of taking-place in its finitude. This inflection of technique should perhaps be approached through its most determined sense in English, where technique refers to *a way*, *the how*, of not necessarily a being or thing, but of an event—the *way* an event transpires, *how* a relation takes place.

This auto-deconstruction makes tremble not only the hegemonic senses of technique, but also that which comes to be the other side of the same predicament, the thought of a presumed natural, a-historical earth, a pure *oikos*. This trembling reveals a diverse history of techniques, a general technicity of life's different articulations, excessive and constitutive of anthropotechnics. Accordingly, "humanualism" would comprise only a partial, if irreplaceable, scale or series of scales in a wider field of techniques of articulation, the histories of which, we are now to suggest, must be understood as responses, as relations to what is given. This *reception* will animate the writing of life as a history of articulations, comported to the gift.

36 Jean-Luc Nancy, *A Finite Thinking* (Stanford: Stanford University Press, 2003), 25.

37 Jean-Luc Nancy, *The Sense of the World* (Minneapolis: University of Minnesota Press, 1997), 41.

Dis-closure: On the Solar Gift

Techniques are responses to an *arrivant*, a gift. On more limited scales, we can see that, aside of human beings, there are discrete others towards and with which beings comport themselves. On a more general scale, there too is a necessary constitutive play with alterity through which any partially closed system, any *oikos*, composes and articulates itself. However, beyond the limits of any given *oikos*, all planetary articulation is made possible by the exceptional experience of the solar gift—there is no economy, no ecology, without this pure gift of the sun's excessive abundance, without the "exuberance and effervescence" of a sun that "gives without ever receiving."[38]

The sun's import is already evident in Bataille's earliest work; for instance, in "Solar Anus" (1927/31) the sun appears as the point towards which vegetation "uniformly" directs itself, from which humanity averts its gaze and which compels the earth into a frenzied masturbation, leading to general collapse;[39] however, these vertiginous theoretical probes never coalesce into a rigorous thermodynamic understanding of solar excess. In the writings of the period, such as "The Notion of Expenditure" (1933), excess refers principally to the gift received rather than the gift given; it concerns the wasteful or ostentatious expenditure which both conditions and undoes a system from within—a patrimony in the absence of the father. Only later, in "The Accursed Share" (1949–54), is the sun thematised as a necessary—yet not internal—element of the "general economy" of planetary life. Excess means here that "as a rule an organism has at its disposal greater resources than are necessary for the operations that sustain life."[40]

Resources are afforded by the pure gift of the sun that the living, as living, receives, responds, and corresponds to. The "purity" of this gift is here understood in the limited sense of the radical non-reciprocity that conditions the archi-response of all that receives it. It does not presuppose that the gift is given for someone or something that already exists in advance of the reception of the gift. Nor does it require that upon the locus of its reception, the being that is constituted as the recipient of the gift perceives or receives what is given to it as a "gift," that is, as something implicated in a pre-established moral order, which implicates the recipient in the same order.[41]

In the *chōra* opened by the archi-response provoked by the solar gift, specific responses

38 Georges Bataille, *The Accursed Share: An Essay on General Economy, Volume I: Consumption* (New York: Zone Books, 1988), 28.

39 Georges Bataille, *Visions of Excess: Selected Writings, 1927-1939* (Minneapolis: University of Minnesota Press, 2009).

40 Bataille, *The Accursed Share I*, 27.

41 Cf. Nancy, *The Sense of the World*, 60–62.

proliferate. They articulate themselves as techniques, techniques to expend or dispense [*dépense*] the gift productively or transgressively. "Productive" designates here the building up and developing of the already situated structures of an *oikos*, whereas transgression consists not simply in the squandering of the solar gift, but in the gesture of an expenditure that makes the systemic architecture of the *oikos* tremble.

The principal question that troubles the generalisation of the planetary ecologic economy is whether the insertion of the sun as origin of all economic excess constitutes anything more than a violent internalisation of the sun into an economy that is always, by default, "restricted." This is the relevance of Bennington's aforementioned critique of Bataille. For Bennington, the sun can be considered a pure gift if and only if it "stands *outside* this finite terrestrial system"; however, it can be conceived and received as one only *within* the system—it is this irresolvable antinomy that appears to support Bataille's tellurocentrism and anthropocentrism, to which we return below.[42]

At the same time, for Bennington there is a second gesture of "economisation," an internalisation of the gift, because Bataille:

> consistently shows that *there is no gift*, and to that extent no loss, no excess, no transgression or dilapidation that does not generate surplus value within the system it attempts to exceed: and indeed that this surplus value *just is* what is called by names such as loss, excess, dilapidation and so on.[43]

For the introduction of the sun to constitute something more than a mere expansion of a restricted economy, the topologically non-orientable folding of *oikos* that we traced out must be thematised: the sun is inside *because* it is outside. Without ever engaging in such a thematisation, Bataille recognised and tried to align the double movement of thermodynamic expenditure, coalescing into and dissolving what is. On the one hand: "a squandering of energy is always the opposite of a thing, but it enters into consideration only once it has entered into the order of things, once it has been changed into a *thing*."[44] Where the squandering of energy becomes a thing and takes (its) place is *oikos*. *Oikos* is the location where entropy is arrested; its corresponding duration is the negentropic time that remains. Such is the place of response, of techniques of response, the ways in which this gift is interiorised, metabolised, metastabilised, articulated.

On the other hand, things are never perfectly stabilised in their interiority—their metabolism requires that they constantly dissolve into other things, into a bacchanalian fusion of

42 Bennington, "Introduction to Economics I," 50. Emphasis added.

43 Bennington, "Introduction to Economics I," 54.

44 Bataille, *The Accursed Share I*, 193.

energies. The doors of the *oikos* break, all is welcome into a radical hospitality, and all proceeds to the outside:

> And if I thus consume immoderately, I reveal to my fellow beings that which I am *intimately*: Consumption is the way in which *separate* beings communicate. Everything shows through, everything is open and infinite between those who consume intensely. But nothing counts then; violence is released and it breaks forth without limits, as the heat increases.[45]

The archi-uneconomic gift of entropy takes place in a "there" that is never mere interiority—indeed it spreads, stretches and expands in all possible directions. The sun is this forever elsewhere that one must always recover *in* the *oikos* and indeed *as* the *oikos*. For *oikos* must be thought as the lot where the sun allots its law, its *nomos*, precisely in the sense of legal apportionment recognised by Benveniste.[46]

This double-becoming of *oikos*, the internalisation of its exterior and externalisation of its interior that constitutes its metabolics, is also always already a technical process that leads to further technicisation. What deconstruction proposes is the generalisation of the anthropic principle and an opening up of the limits of the human *oikos*—"nature" partakes in the anthropotechnical entropic feast and its glorious arrest.

Thus, we hold that deconstruction carries Bataille's project of general economy further by opening up the two modes of human pre-eminence in the history of life, modes that Bataille's lifelong friend, Jean Piel, identified as humanity's capacity to amplify the potential of natural technicity, glimpsed in "the branch of the tree" or "the wing of the bird;" and its capacity to consume the excess of this potential in the most intense and luxurious manner.[47] Promethean "humanity," at once anthropological object and capitalist subject, has certainly acquired unprecedented ways of generating entropy, from the discovery of fire, to thermonuclear weaponry, a tendency that led Claude Levi-Strauss to call for a discipline of "entropology" in place of anthropology. [48] And yet, this entropic excess is possible only because, already with "the branch of the tree", there are *technically*

45 Bataille, *The Accursed Share I*, 58–59.

46 Bataille, *The Accursed Share I*, 58–59. It merits note that for Benveniste the field of gift and exchange is characterised by great lexical stability for long periods. It is only when the Greek *dapanan* transforms into the Latin *damnare*, that the sense of ostentatious or lavish expenditure assumes the sense of a curtailment or loss of resources and thus an affliction (Benveniste, *Dictionary*, 44, 52–53). Entropy is the law that celebrates and condemns at once.

47 Jean Piel, *"Bataille and the World From 'The Notion of Expenditure' to The Accursed Share,"* in *On Bataille: Critical Essays* (New York: State University of New York Press, 1995), 102.

48 Claude Lévi-Strauss, *Tristes Tropiques* (New York: Criterion Books, 1961), 397.

entropic *and* negentropic tendencies, because human and tree share the same *oikos*. The task at hand then, the first task of philosophical anthropology, is to situate this singularity of the human adventure as but one scale within a far wider, general, articulation of life, scales of the unrelenting, irrepresably diverse responses to the solar gift.

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TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

Post-Apocalyptic Amazement: Aesthetics and Historical Consciousness in the Natural Contract

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Abstract:

The intention of my essay is to introduce the concept of "natural-history" (*Naturgeschichte*) to foster dialogue on the role of art, aesthetics, and historiography in speculative materialism and the wider debates around the Anthropocene. I will present my argument in four steps: The first will be a brief reconstruction of the natural contract as conceived by Michel Serres in *Le Contrat naturel* (1990). Since in his essay Serres largely dispenses with an aesthetics, in my second step I will argue that at the same time the utopian model of the new, human-built environment, *Biosphere 2* (1991) manifested exactly an aesthetics as suggested in legal-theoretical terms by Serres. In the third step, using the example of three films by Ben Rivers, one of which is specifically about *Biosphere 2*, I will show that the potential of utopian ideals is preserved in their realization only insofar as it is documented in images of transience that may be identified as allegorical representations. This implies a critique of the concept of utopia. In a fourth step, I will therefore show that the natural contract's utopian body of ideas and the manifestation of the utopian concept in *Biosphere 2* can be viewed from a historical-philosophical perspective, with reference to the allegorical representation of the film, as the fate of all nature in which history inscribes itself. To that end, Benjamin's formulation of "fallen nature" [*gefallene Natur*] will need to be differentiated here. This selective counter-reading of Serres against Benjamin and the films of Ben Rivers ultimately aims at the restitution of a historical-philosophical argument to the status of art in the natural contract or—in a broader sense—in the Anthropocene; more precisely, it also pursues the conception of an aesthetics of amazement in post-apocalyptic narrative time.

Keywords:
natural contract, natural-history, Naturgeschichte, amazement, Biosphere II

ISSN 2773-0875

How can we imagine a moment of amazement without placing it in correlation with the existence of human consciousness? This question—which I think is new in the history of the concept—has been raised in the last decade, at least indirectly, in the debates around the Anthropocene and the founding of speculative materialism. It arose indirectly since within these particular discourses two other problems or lines of inquiry stand primarily at the foreground: for one—in epistemological terms—the problem of the facticity of scientific knowledge in the absence of a contemporaneously existing human consciousness; and for another—in psychological terms—the question concerning the traumatic effects manifested in this consciousness in the face of the certain knowledge that something came before it and that it will end. In this sense, as we know, the Anthropocene does not just signify the emergence of humans as an influencing factor on the planetary scale; equally, as a geo-chronological category, it also demarcates the boundedness of the epoch that lies before the existence and after the extinction of human life. But the question of amazement also remains indirect in so far as it reveals itself to be a question bound to the human. Most assertions we encounter about amazement are ultimately based on the manifestation of certain phenomena in the interstices between nature and culture. For me, the question of an aesthetics of amazement—which, given the formulation of the issues by the discourse of the Anthopocene and speculative materialism, I would call an aesthetics of "post-apocalyptic amazement"—therefore arises, as it were, in the projection of a concept of amazement that subtracts the human being speculatively from his or her own experience.

If, in this sense, we transpose the basic argumentation regarding factuality in Quentin Meillassoux's *Après la finitude*[1] onto the ontological structure of art, as it was most prominently elaborated undoubtedly by Heidegger in his work of art essay, the conflict between Earth and World is at first preserved, to the extent that for Meillassoux as well, it is in the speculation of art that its possibility for truth unfolds, or better said: is embedded into the speculation of the work as a heretofore factual novelty. But Meillassoux and the speculative materialism based on his thought propagate a new conception of nature and matter against Heidegger and, more generally, against modernity. Although Schelling and Deleuze certainly remain points of departure, in *Après la finitude* we see a completely different radicality, with which the necessary contingency of the laws of nature are conceived in rejection of the constitutive significance of the proposition of reason.[2]

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1 Quentin Meillassoux, *Après la finitude. Essai sur la nécessité de la contingence,* foreword by Alain Badiou (Paris: Seuil, 2006).

2 See also Quentin Meillassoux, "Spéculation et contingence," in *L'héritage de la raison. Hommage à Bernard Bourgeois*, ed. Emmanuel Cattin and Jean-Pierre Zarader (Paris: Ellipses, 2007). Proximate arguments that simultaneously put more emphasis on continuity with Schelling's and Deleuze's natural philosophy are made in Iain Hamilton Grant, *Philosophies of Nature after Schelling* (London: Blooms-

The *Earth*—according to Heidegger, the nature or matter (φύσις [*physis*]) uncovered and produced in the work of art—would on Meillasoux's account still be the material substrate, but the *World* that reveals itself in the art work would no longer be the horizon for the origin and future of a Dasein grounded *there*, developed through the history of being and understood transcendentally, but is rather the cosmological utopia of the general possibility of a "*Fort*sein" removed from any earthly roots. When the Earth—as hyletic material or the materiality of art—no longer provides any orientation but is instead subject to the absolute contingency of the laws of nature, then the world of the work of art can also no longer be described as "erected" in Heidegger's sense. What remains possible, however, is the speculation on matter, or the speculative stance of art—its projection toward or even from the future, or more concretely: its conception of utopian scenarios.

In what follows, I will attempt to show that in this sense, utopias in conception can do without finitude and without the correlationism rejected by Meillassoux, but in the transition to form, to a work, an event, or even, with regard to the history of ideas, in their form as thoughts, they remain bound to *History*. The conception of a utopia will thus not only never be able to realise its *own* world, but in the sense of the *futur antérieur* it will only have ever conceived of a world—the one of *its own history*. That in this way the idea of the world as a secure horizon of being no longer exists is particularly evident, to my mind, in the historical-philosophical perspective on the classical idea of amazement (θαυμάζειν [*thaumazein*]). In his theses *On the Concept of History* Walter Benjamin spoke, in this sense, of a state of "knowledge" in which a previous "philosophical amazement" is no longer tenable.[3]

According to Benjamin, this amazement had since the time of the Greek *polis* been experienced within a politically delimited world that was not—or only just temporarily—on the verge of falling apart. If it did fall apart—temporarily—as it did in the course of history, for instance in 1755 during the earthquake in Lisbon, such an "extraordinary world event"[4] would be interpreted "only" as *a* catastrophe, and consequently as an exception in world history, even if such an occurrence may certainly provoke new metaphysical

bury, 2006). Several problems of a possible aesthetics of speculative realism are addressed in the contributions ed. Baylee Brits, Prudence Gibson, and Amy Ireland, *Aesthetics After Finitude* (Melbourne: Re.Press, 2016).

3 "The current amazement that the things we are experiencing are 'still' possible in the twentieth century is not philosophical. This amazement is not the beginning of knowledge—unless it is the knowledge that the view of history which gives rise to it is untenable." Walter Benjamin, "Theses on the Philosophy of History" in Walter Benjamin, *Illuminations. Essays and Reflections*, ed. Hannah Arendt and trans. Harry Zohn (New York: Schocken, 1968), 257.

4 Johann Wolfgang von Goethe, *Aus meinem Leben. Dichtung und Wahrheit, Poetische Werke,* vol. 8, *Autobiographische Schriften*, Part 1, ed. Liselotte Lohrer (Stuttgart: Cotta, 1950), 38.

reflections.[5] With the economic and ecological crises of the 20th century, and above all the beginning of the 21st, the state of exception has however been experienced increasingly more as the rule, which encompasses the entire planet and with it all humanity. The catastrophe is no longer simply a one-time, extraordinary world event precipitated by anonymous nature of the kind Goethe could still talk about. It is rather a permanent condition for which humanity is itself at least partially responsible. Accoring to Jean-Luc Nancy, we thus find ourselves in an era that is continually aware of an "equivalence of catastrophes [*équivalence des catastrophes*]".[6]

When catastrophe itself becomes the rule, however, its meaning is reversed.[7] Thus, in his 1990 *Contrat naturel*[8] Michel Serres already writes no longer from an apocalyptic perspective, but rather more from an anastrophic one, projecting an anticipatory retrospective view onto a world and a time in which future subjects will have found themselves. His resolutely legal-philosophical essay[9] goes decidedly beyond the issues of ethical responsibility formulated some years previously by Hans Jonas. In contrast to Jonas, for Serres the subjects of a community and environment no longer operate morally solely under the "ecological imperative" that is oriented on and departs from Kant, but rather under a new contractual situation beyond the negotiating table and the courtroom.[10] In the open air, the forces and entities of nature in the midst of change—the lakes and

5 For example, following Susan Neiman's thesis that "the rising expectations that the social and the natural worlds would be equally transparent […] made Lisbon the shock it wouldn't have been without them." Susan Neiman, *Evil in Modern Thought. An Alternative History of Philosophy* (Princeton: Princeton University Press, 2015), 247.

6 Jean-Luc Nancy, *L'Équivalence des catastrophes (Après Fukushima)* (Paris: Galilée, 2012).

7 On this point, see Maurice Blanchot, *L'Écriture du désastre* (Paris, 1980).

8 Michel Serres, *Le Contrat naturel* (Paris: Flammarion, 1990). Subsequent references will be indicated with the abbreviation NC. Quotations are taken from the English edition: Michel Serres, *The Natural Contract*, trans. Elizabeth MacArthur and William Paulson (Ann Arbor: The University of Michigan Press, 1995).

9 *"Le Contrat naturel traite de philosophie du droit."* Michel Serres, *Retour au* Contrat naturel (Paris, 2000), 7.

10 Jonas' essay on the ethics of responsibility continues to share its anthropocentric disposition with Kant. At stake is not a contract with nature, but an ethics for and in the image of the "good man." Jonas' chief objection against Kant lies in a new assessment of the relationship between mankind and technology. In accordance with his transposition of the categorical imperative into an ecological one: "'Act so that the effects of your action compatible with the permanence of genuine human life'; or expressed negatively: 'Act so that the effects of your action are not destructive of the future possibility of such life'; or simply: 'Do not compromise the conditions for an indefinite continuation of humanity on earth'; or, again, turned positive: 'In your present choices, include the future wholeness of Man among the objects of your will.'" See Hans Jonas, *The Imperative of Responsibility. In Search of an Ethics for the Technological Age*, trans. with the collaboration of David Herr (Chicago: University of Chicago Press, 1984), 11.

rivers, forests and deserts, wind and rain, flora and fauna, as well as the metropolises and mega-cities—must for Serres be recognized as new, equally vested partners of a living and life-giving planet named "Biogea."[11]

After this condensed overture, which deliberately aims to only indicate the complex and novel issues of "post-apocalyptic amazement" and its aesthetics in the Anthropocene, in what follows I will try to develop my argument clearer alongside four steps: The first will be the reconstruction of the natural contract as conceived by Michel Serres in *Le Contrat naturel* (1990) (I.). Since in his essay Serres largely dispenses with an aesthetics of the natural contract, in my second step I will argue that at the same time the utopian model of a new, human-built environment, *Biosphere 2* (1991) manifested exactly an aesthetics as suggested in legal-theoretical terms in the *Contrat naturel* (II). In the third step, using the example of three films by Ben Rivers, one of which is specifically about *Biosphere 2*, I will show that the potential of utopian ideals is preserved in their realization only insofar as it is documented in images of decay or transience that, in their enhanced artistic form, may be identified as allegorical representations. This implies a critique of the concept of utopia. If it really were the case, namely, that utopias can never actually be achieved, then in a temporal sense, strictly speaking they have no history. If the utopia were actually to be attained or fulfilled, then an end would also be reached that would itself stand outside historical time—analogous to the conventional understanding of the ultimate apocalypse. An objection to the concept, however, is provided here by the narrative possibility of the post-apocalypic, which speculates in the form of a story about a time 'after' or 'beyond' the final catastrophe. Unlike the theological perspective, or rather, because from the traditional perspective the narrative appears to be missing, a new space of the possibility of post-apocalypse arises. Through the adaptation of theological texts, but moreover also in the invention of new narratives, it is thus absolutely possible to portray post-apocalyptic scenarios cinematographically or in literature.

It is particularly the 'logic' of the moving image that fills the void with its own materiality and technology in the absence of a post-apocalyptic narrative (III.). Fourth, the natural contract's utopian body of ideas and the manifestation of the utopian concept in *Biosphere 2* will thus be viewed from a historical-philosophical perspective, with reference to the allegorical representation of the film, as the fate of all nature in which history inscribes itself. To that end, Benjamin's formulation of "gefallene Natur"[12] [*fallen nature*]—the visual representation of which is the ruin and the formal purpose of which is allegory—will need to be differentiated here. This selective counter-reading of Serres against Benjamin and the films of Ben Rivers ultimately aims at the restitution of a historical-philosophical

11 Michel Serres, *Biogée* (Brest/Paris: Le Pommier, 2010). For an elaboration of this perspective see Emanuele Coccia, *La vie des plantes. Une métaphysiques du mélanges* (Paris: Bibliothèque Rivages, 2016).
12 Walter Benjamin, *Ursprung des deutschen Trauerspiels* [1928] (Frankfurt a. M.: Suhrkamp, 1978), 158.

argument to the status of art in the natural contract; more precisely, it pursues the conception of an aesthetics of amazement in post-apocalyptic narrative time (IV.).

I.

Michel Serres' *Contrat naturel* opens with an allegorical unpacking of Francisco de Goya's *Duelo a garrotazos* [Fig. 1]. The picture—part of the "Pinturas negras" cycle, which was painted between 1820 and 1823 on the walls of the Quinta del Sordo and has been in the collection of the Museo del Prado since the 1880s—depicts a duel between two men armed with sticks in the foreground of an anonymous landscape, under a clouded sky. Due to their struggle, the men are sinking ever deeper into the morass. The sky seems to darken, no ground seems to support them.

Fig. 1: Francisco Goya, *Fight to the Death with Clubs*, 1820–1823, mixed media on mural transferred to canvas, 123 x 266 cm, Madrid, Prado.

Serres is fascinated in this painting by the fact that the two protagonists obviously pay no attention to the independent existence of their environment. Given the convincing comparison that Ronald Paulson has drawn with William Hogarth's *Election 4* (1758) [Fig. 2], it is particularly striking how Goya reduces the surrounding townscape, which still characterizes the representation in Hogarth's prints and paintings, to an apocalyptic landscape emptied of human presence.[13] The only thing that still remains of the life

13 On the comparison with Hogarth, see Ronald Paulson, *Representations of Revolution (1782–1820)*

of society is the battle between the two rivals. There are no witnesses to this rivalry within the image. The fight scene thus appears like a reduction of the essence of duelling. Moreover, in order to maintain control over their distance at such close bodily proximity, the duellists look each other directly in the eye. They blot out the nature that surrounds them. The apocalyptic landscape and the quicksand-like abyss that opens up beneath them isn't visible to *them*, although the coloration of the landscape in particular seems to pervade the forms of the fighters' bodies. The rivals, meanwhile, are focused only on their own combat. Winning *this* is the only thing that matters. The struggle against the forces of nature, the morass that threatens to swallow them, is something they can only lose. But even more grave is the fact that the two rivals are not even aware of nature. It is therefore, as Serres writes, "more than likely that the earth will swallow up the fighters before they […] have had a chance to settle accounts" (NC 1).

Fig. 2: William Hogarth, *Four prints of Election*, Plate 4, 1757 or 1758, 403 x 540 cm.

Using this depiction of a fight as an example, Serres distinguishes between two scenes of violence: for one, the "historical war" (NC 2), in which the two duelists are allegorically involved, and for another, the "blind violence" (NC 2) that reigns in nature. Goya's painting thus figures for Serres as an allegory of the "theater of dialectics" (NC 11). "Dialectics" here alludes to the relationship between "master and slave" (NC 16) as elaborated by Hegel in the chapter about lordship and bondage in his *Phenomenology of Spirit* and transposed by Carl Schmitt to the theaters of war in the 20th century as the relationship from friend and foe. For Serres, this dialectic between master and slave, friend and foe is not just a key point in Hegel's *Phenomenology of Spirit*[14] but moreover, in its significance, the central

(New Haven/London: Yale University Press, 1983), 361, n. 61. Surprisingly, in this same note Paulson also cites René Girard's *La Violence et le Sacré* (1972)—a key work by the same author who would later bring Serres to Stanford and whom Serres, in turn, helped elect to the *Académie française*.

14 Here—although one could hardly count him among the ranks of the Left Hegelians—Serres stands in the tradition of French Hegel interpretation that goes back primarily to Jean Hyppolite. Hyppolite's

flaw of his critique of the social contract. The *Contrat naturel* comes to the conclusion that the Hegelian dialectic—at least, in the interperation that reduces it to conflictual social relationships[15]—does not suffice for a natural contract because it does not recognize and acknowledge the role of nature as a third "actor": "The dualists don't see that they're sinking into the muck, nor the warriors that they're drowning in the river, together. In its burning heat, history remains blind to nature." (NC 7). The "theater of dialectics" does not take into account on its stage that the floorboards can break, the actors can sink into the mud, or the entire house (οἶκος [*oikos*]) in which, in keeping with the theatrical metaphor, all the spectators sit as well, can collapse. That, however, according to Serres, is the point of departure that necessitates a new natural contract and a new ecology, because analogously to allegory as a rhetorical form, a collapse of the house would bring the entire "theater of dialectics" to an end.

According to Serres, then, the historical war, or the "subjective war" (NC 10ff; 40) between the two duellists creates a dynamic horizontal within the structuralist square [◇], which corresponds to the centripetal movement of the sticks in Goya's painting, and can perhaps best be conceived as a one-sided Mobius strip. This strip turns around an axis on the lower end of which is situated "the worldly world [*le monde mondial*] […], the objective common enemy of the legal alliance between the de facto rivals" (NC 11, trans. corrected) and on the upper end of which the Earth as living environment threatens to collapse. Serres elaborates:

"The square turns, standing on one of its corners: such a rapid rotation that the rivals' diagonal, spectacularly visible, appears to become immobile, horizontal, invariant through the variations of history. The other diagonal of the gyroscope, forming a cross with the first one, becomes the axis of rotation, all the more immobile the faster the whole thing moves: a single objective violence, oriented more and more consistently toward the world. The axis rests and weighs on it. The more the subjective combat gains in means of destruction, the more the fury of the objective combat becomes unified and fixed." (NC 12)

In accordance with this diagnosis, Serres rejects not only the dialectic of master and slave (Hegel/Marx) but ultimately the *Contrat social* (Rousseau) as well, since, to put it briefly, the latter is based on war as "motor of history" (NC 11). Elsewhere, Serres offers the diagnosis that the major turning point in the modern age was the transition from the

Hegel interpretation had in its time significantly influenced Michel Foucault, which whom Serres had worked closely in the early 1960s in Clermont-Ferrand, Vincennes, Paris I. Cf. Jean Hyppolite, *Genèse et structure de la Phénoménologie de l'esprit de Hegel* (Paris: Aubier, 1946); ibid., *Etudes sur Marx et Hegel* (Paris: Rivière, 1955).

15 See here also Alexandre Kojève, *Introduction à la lecture de Hegel. Leçons sur la phénoménologie de l'esprit*, ed. Raymond Queneau (Paris: Gallimard, 1947). Unfortunately, Serres does not consider the dissertation by Alfred Schmidt, written under the supervision of Adorno and Horkheimer, and dedicated to the transformation of the concept of nature in Marx's late philosophy. Cf. Alfred Schmidt, *Der Begriff der Natur in der Lehre von Marx* (Frankfurt a. M.: Europäische Verlagsanstalt, 1971).

peasant life of the great majority of humanity to an industrial and urban environment, which led, among other things, to the paradox that we still want to feed ourselves almost exclusively with the products of the earth. Unlike Heidegger, however, Serres does not at all argue for the contemplation of the Dasein of "farm ontologies [*ontologies agricoles*]" (CN 17), but on the contrary for the acceptance of a Fortsein under the new conditions, for which a social contract could no longer be adequate on a planetary scale, but only a newly conceived natural contract would be appropriate. Serres speaks of the "[…] necessity to revise and even re-sign the primitive social contract. This unites us for better and for worse, along the first diagonal, without the world. Now that we know how to join forces in the face of danger, we must envisage, along the other diagonal, a new pact to sign with the world: the natural contract." (NC 15).

From the art historical perspective, and with a view to an aesthetics of the natural contract, it may seem noteworthy that Serres introduces his reflections with a painting by Francisco de Goya, or later points out that only a false path estranged from the world could lead from the *Duelo a garrotazos* to a conception of life of the kind that Jean-François Millet still considered worthy of depiction in his painting *Angélus* (1857-59) [Fig. 3] (CN 37). But nowhere does Serres offer an aesthetic theory, much less an exemplification of art works that would be adequate for his world-inclusive natural contract or would actually correspond to an artistic experience. Given the legal-philosophical perspective that Serres obviously adopts, the view of art at first remains obstructed. But at the point where the thoughts of the natural contract manifest themselves as form and experiential space, if not earlier, the question of an aesthetics of amazement becomes critical.

Fig. 3: Jean François Millet, *L'Angélus*, 1857–1859, oil on canvas, 55,5 x 66 cm, Paris, Musée d'Orsay.

II.

In aesthetic terms, Serres' legal-philosophical conception of a new natural contract has a prominent counterpart—not least in its ambitions—in *Biosphere 2*, the research project conceived primarily by John P. Allen. Indebted in its architectural language to the geodesic designs of Richard Buckminster Fuller, *Biosphere 2* was initiated in 1991 in Oracle, Arizona and for a short time tested the stability of an ecosystem independent of the Earth's biosphere. [Fig. 4]. The potential of *Biosphere 2* at the start of the 1990s, however, turned out to be a source of amazement not so much for the scientific community but rather for the media public, and in particular for viewers in front of their television sets. The life of the eight inhabitants came into people's living rooms much like, a few years later, the "human zoo" would do on the TV show *Big Brother*, created by John de Mol and significantly influenced by *Biosphere 2*—namely, as Reality TV. The reality of a second biosphere was consequently simulated, but this simulation was itself real. The ground on which a utopia such as *Biosphere 2* could arise, beyond the conventional research projects of established US universities, had been prepared early on in particular by new conceptions of the world, such as Alexis Carrel's *L'Homme, cet inconnu* of 1955, as well as by science fiction and new age literature.

Fig. 4: Still from Ben Rivers, *Urth* (2016).

Now, how can the status of this utopia be assessed in retrospect, and what essential gain can be derived for an aesthetics of the natural contract from this perspective? One possible

way of answering this question is, in my view, offered by *Urth*, a film by Ben Rivers,[16] which was produced as a filmic installation in 2016 at the invitation of the Renaissance Society of Chicago and documents the afterlife of *Biosphere 2*. In addition to the images, the voice-over narration is crucial for the reception of the film from the very start. The film opens with an epigraph read over abstract, nebulous fields of color, then blurred images of *Biosphere 2*, and finally, a flat grass-green monochrome. The quote is taken from Mary Shelley's apocalyptic novel, *The Last Man*, of 1826,[17] to which the dystopian voice-over narration of the rest of the film—written in the form of a diary by the science-fiction author and art theorist Mark von Schlegell—responds with appropriate contemporary references.

The amazement at the possibilities of a second, man-made biosphere is here transformed meta-reflexively into bewilderment at the imagination of this *attempt*. A genuine potential of "post-apocalyptic amazement" is thus manifest. After all, from a historical-philosophical point of view—just as the pre-modern world was increasingly threatened by the hazards of progress—there had to be a time in which futuristic visions of a new, human-constructed "survival world" (*Überlebenswelt*) could insert themselves between the dystopias of the Cold War and the utopias of modernist technophilia. In the place of futuristic visions, therefore, Rivers' *Urth* does not just display their decay. His film about the ruined remains of *Biosphere 2* is much more a demonstration of the impossibility of a

16 The title of the film may be understood—in the Derridean sense—as *différance* with respect to Earth and at the same time it plays on a reference to Norse mythology. On this point, see the comments made by Timothy Morton in an unpublished lecture, the manuscript of which Ben Rivers generously shared with me: "*Urth* is where we are. *Urth* is Earth, with a U. *Urth* is uncanny Earth. *Urth* is Earth with you in it. […] It's a Norse myth: the Norns entwine it. One of them is called Urth. Urth means *twisted*. From urth we get the English word *weird*. Weird can mean strange of appearance, and weird can also mean fateful in an uncanny twisted way." Timothy Morton, "Lights, Camera, Stillness," unpublished lecture delivered at *Anthropo/seen: Black Ecology*, Utopia and Uncertain Futures, Forum of the Future, Porto, Portugal, November 10, 2017.

17 "But the game is up! We must all die; not leave survivor nor heir to the wide inheritance of earth. We must all die! The species of man must perish; his frame of exquisite workmanship; the wondrous mechanism of his senses; the noble proportion of his godlike limbs; his mind, the throned king of these; must perish. Will the earth still keep her place among the planets; will she still journey with unmarked regularity round the sun; will the seasons change? the trees adorn themselves with leaves, and flowers shed their fragrance, in solitude? Will the mountains remain unmoved, and streams still keep a downward course towards the vast abyss; will the tides rise and fall, will beast pasture, birds fly, and fishes swim, and the winds fan universal nature; when man, the lord, possessor, perceiver, and recorder of all these things, has passed away as though he had never been? O, what mockery is this!" Mary Shelley, *The Last Man*, vol. 2 (London: Henry Colburn, 1826), 150.

utopian conception when—as a "concrete utopia"[18]—it enters the realm of the fate of its manifestation, its past future.

The optimism inherent in the ideational utopia of *Biosphere 2*, and to a large extent, in Serres' legal-philosophical futurology as well, does not therefore turn completely into its opposite in Rivers' *Urth*. Rivers' later documentary film essay about the ruin of the utopia in Arizona is much more aligned with a pessimistic attitude in Benjamin's sense, though it is oriented to the idea of happiness in its plea for the profanation of the everyday lifeworld. For what end, after all, if not for an everyday lifeworld—here understood quite simply as an environment in which life is possible—would a natural contract or a new *biosphere* be designed? One can safely assume that here in this new living sphere, too, it is all about living a good life in pursuit of happiness. Rivers thus cinematically *arranges* what in Benjamin is called "pessimism," by allowing empathy with the necessity, legitimation, and boundedness, the before- and after-life of utopian forms, the dreams of their visionaries, and the autonomous life of their manifestations. It is less the case here that hope is awakened of an infinite future in a new biosphere—in the sense of a hypostatization of a biospherological correlate between human and living environment that is assumed to be constant—and more that the euphoria of utopian conceptions as 'human, all too human' is represented.

Rivers had already distanced himself from an immutable notion of utopia with regard to *A Spell to Ward Off the Darkness* (2013), his first collaboration with Ben Russell. He says in an interview that "the idea of utopia is ill-conceived, which is what Marx thought. If it's too dreamy, if you think you can create something which is lasting, then it's too idealistic and it's dangerous. […] We started thinking about it as something temporary, like the idea of temporary autonomous zones […]."[19]

Rivers' citation of "temporary autonomous zones" is a reference to a postulate proposed by Hakim Bey that attracted notice between anarchism and post-situationism, particularly in

18 Hans Ulrich Obrist takes the term from Yona Friedman, in John P. Allen, Kathelin Gray, and Hans Ulrich Obrist, "The Search for a unique, non-repeatable experience," in *Mousse* 57 (2017), 75–83, here 77. The term "concrete utopia" is of course on its face improper, or an oxymoron, since *by definition* a utopia (non-place, from οὐ- [*ou*] "non-" and τόπος [*topos*], "place") cannot be "concrete." In so far as *Biosphere 2* is however an experimental design testing the possibility of an artificial biosphere that promised a second living environment independent of the Earth and for a certain time during the experiment was able to stabilize it, it makes concrete a place that, de facto, from the terrestrial perspective, does "not yet" exist. On the attempt to resolve the contradiction between utopia and concretization, see Michel Foucault, "Des espaces autres," (conférence au Cercle d'études architecturales, 14 mars 1967), in *Architecture, Mouvement, Continuité* 5 (1984), 46–49.

19 Giovanni Marchini Camia, "Interview with Ben Rivers," in Annabel Brady-Brown and Giovanni Marchini Camia, eds., *fireflies: Pedro Costa/Ben Rivers,* 4 (2016), 57–63, here 61.

subcultures. Its philosophical foundations however are grounded in the Pauline conception of messianic time, which had gained relevance again around the turn of the 21st century.[20] What is crucial in eschatology, according to Paul, is not the end itself but rather—to follow Benjamin, Taubes, and Agamben—*what remains in a time that has already begun to end;* be it in the opening up to the present or in the katechontic delay of the approaching or threatening end.[21] The process brings to light what I call "penultimate wonder": the amazement at phenomena that are characterized specifically by the fact that they become apparent only in the experience of a post-apocalyptic time. What is illuminating in this experience from a historical-philosophical perspective is that it was already possible in various other times in a comparable way. Rivers' two-minute short film, *The Shape of Things* (2016), first shown at the 2017 Triennale di Milano, allows a comparison in this regard between the demise of the self-contained classical culture of the Maya (3rd-9th centuries) and the present eschatology of the Anthropocene. *The Shape of Things* refers to the form of two Mayan clay sculptures, which Rivers filmed in the ethnographic collection of the Harvard Arts Museum for the duration it takes to hear the reading of the poem *At Tikal* by William Bronk, recorded in the Woodberry Poetry Room of the Harvard Library in 1956 [Fig. 5]. The poem closes with a line that recognizes in the uniqueness of Mayan culture the finitude of the return of infinte utopias: "And oh, it is always *a* world and not *the* world."[22]

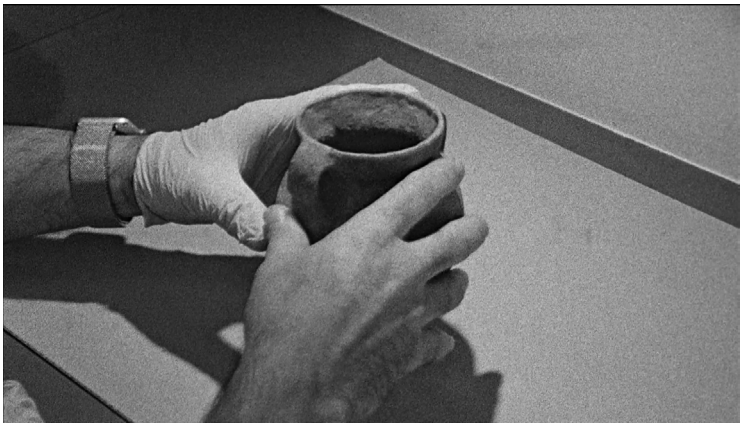

Fig. 5: Still from Ben Rivers, *The Shape of Things* (2017)

20 See Hakim Bey, T.A.Z. *The Temporary Autonomous Zone. Ontological Anarchy, Poetic Terrorism* (Brooklyn: Autonomedia New Autonomy Series, 2003).

21 Between the two crucial possible interpretations of St. Paul—the consciousness of the time that remains, in which the present then opens up in the sense of *kairos* and life through the Messiah, or the katechontic power that puts off the end times—Bey, and with him Rivers too, falls on the side of the kairological reading. Compare the, in many respects complementary, interpretations of Paul by Agamben and Cacciari: Giorgio Agamben, *Il tempo che resta. Un commento alla Lettera ai Romani* (Turin: Bollati Boringhieri, 2000); Massimo Cacciari, *Il potere che frena. Saggi di teologia politica* (Milan: Adelphi, 2013).

22 William Bronk, "At Tikal," in *Life Supports. New and Collected Poems* (San Francisco: North Point Press, 1981), 39 [my emphasis].

Thus, in the experience of post-apocalyptic time, a notion of amazement returns that was, not insignificantly, conceived in conjunction with the work of art as an object that evokes finite worldliness from an infinite perspective; a perspective that is found in Heidegger's work of art essay, but also in Wittgenstein's remarks on aesthetics: "The work of art is the object seen *sub specie aeternitatis* […]. The usual way of looking at things sees objects as it were from the midst of them, the view *sub specie aeternitatis* from outside."[23] What is crucial, then, are the conditions under which the possibility of the existence of a world can be sustained. In Serres' words, what is crucial, ultimately, are "the conditions in which we are born—or ought to be reborn tomorrow." (NC 44)

III.

So I propose to read Serres' futurology and Benjamin's philosophy of history in conjunction with each other; and with a view to another film by Ben Rivers: *Slow Action*—a 16 mm film in anamorphic widescreen from 200—opens with a sequence of grainy, horizontally cropped black and white photographs, which are reminiscent of the montage techniques in the films of Guy Debord, and especially of the opening of Artur Aristakisyan's *Palms*. Wide-eyed, frightened, suffering, exhausted, and at times contemplative gazes evoke on the whole a nameless presence that, though it makes an impression, returns in the course of the rest of the film only in the privative form of the traces of human existence. The structure of *Slow Action* is built on the idea of dividing the film into four chapters, each devoted to four different islands that form a new archipelago on Earth in the distant future after the sea level has risen. The four islands are: 1) Lanzarote ("Eleven"), one of the driest places on Earth; a desert island on which Rivers films primarily the gardens and almost formless buildings designed by César Manrique, as well as the volcanic landscapes; 2) Tuvala ("Hiva"), a Pacific archipelago made up of several tiny islands ("The Society Islands") on which the volume of plastic refuse from the consumer products imported from Fidji can barely be processed or concealed; 3) Gunkanjima ("Kanzennashima")—literally, battleship island—an actually abandoned island of ruins, on which in *Slow Action* the fictional madman Tadashi Harai lives; and 4) Somerset, Rivers' home region, where he grew up and which the film represents in the distant future as a fictional island separated from the British mainland.

In other words, in *Slow Action*, Rivers films the life forms of Serres' *Biogea*—deserts, seas, islands, coasts—in which, even in time lapse sequences, often nothing changes other than the light and the cloud formations. Domesticated animals—cats, donkeys, dogs, pigs,

23 Ludwig Wittgenstein, notebook entry, October 7, 1916, in *Notebooks 1914-1916*, ed. G.H. von Wright and G.E.M. Anscombe, trans. G.E.M. Anscome (Oxford: Blackwell, 1961), 83e.

ducks, roosters and chickens—who may not have survived their irreversible domestication and connection to house and home, but certainly survived their overlords—are in a double sense witnesses to the master-slave dialectic rejected by Serres; to its former existence and its justified overcoming. After the "theater of dialectics" is gone, these animal scenes suggest that between master and slave Hegel has forgotten nature, as Serres understands it—namely, as a third actor. The same also goes for the reduction of the human presence to a few children, which suggests that animals and children were both excluded from the history of the spirit and would not become active agents of the Anthropocene. In their innocence, lack of cares, and integration with their environment, they are not protagonists of world history. Of the adults on the ruined island of Gunkanjima, only Harai survives as a witness to such history. As a lone hermit who seems to have found his desert, Harai equally eludes the "theater of dialectics," although in his way of life and in his care for the ruins, he adheres to a humanistic ideal. Mark von Schlegell's narration constructs this pradox very precisely:

"The utopia is antihuman in the sense that Harai is its only inhabitant, but it is humanist in that it's in the human history of its architecture and physical development that Harai chases its ideal state."[24] [Fig. 6]

Fig. 6: Ben Rivers, *Slow Action*.

24 Ben Rivers, *Slow Action* (2001), with text by Mark von Schlegell. Harai thus follows the human traces in the ruins that—in contrast to Foucault's "visage de sable"—have not been eradicated or washed away by the ocean's waves. Timothy Morton, writing with reference to Meillassoux, had recognized that hidden in "Foucault's image of the sandy face is a metaphor for what some now call correlationism." Timothy Morton, "How I Learned to Stop Worrying and Love the Term Anthropocene," in *Cambridge Journal of Postcolonial Literary Inquiry* 1, 2 (2014), 257–264, here 258.

Aside from these traces of animalistic, childlike, and isolated existence, astounding inanimate relics also repeatedly appear in the film and are lent a sculptural aura; not least because their function is seldom truly evident. The world we perceive—the abandoned landscapes, the ruined architecture, the objects left behind—is all bathed in an atmospheric light made possible by Rivers' analog cinematographic process, which together with the repetitive orchestration of the score in *Slow Action*, often reduced to high strings, produces an uncanny atmosphere [Fig. 7].[25]

Fig. 7: Ben Rivers, *Slow Action*.

Mounds of trash or rusted out shells of cars are reminiscent of the aesthetic presence of Arte Povera or the ultimately formalist trash aesthetic of someone like John Chamberlain, but crucially, in *Slow Action* they appear precisely *not* with the pretention of art works on display. In addition, Rivers uses the historicity of anachronistic projection techniques to produce geometric bodies that, in accord, with the soundtrack can be perceived to recall sci-fi genres. These cubes will return in *Urth*, as well, in the botanical interior of *Biosphere 2*—strangely and unexpectedly, as factual objets trouvés, which Rivers did not even have to stage, since they actually existed in *Biosphere 2*. In the film, they often appear in the same kind of light as in *Slow Action*—overexposed, with a colored, mostly red or yellowish tinge [Fig. 8]. The cinematic alienation effects of these images stand in an analogous relationship to the contamination of nature, the toxic effect of which is

25 Rivers adopts the film music by Wolfgang Zellers from Carl Theodor Dreyer's *Vampyr* (1932). David Bordwell describes it as Zellers' "eerie score." David Bordwell, *The Films of Carl-Theodor Dreyer* (Berkeley/Los Angeles: University of California Press, 1981), 217.

often indifferent to its appearance. In *Slow Action*, the "idea of an island,"[26] as well as the perception of the deserts or coastlines, is therefore no longer possible in the sense of an "innocent landscape,"[27] but neither does it close itself off from the albeit broken beauty that, astonishingly, persists.

Fig. 8: Ben Rivers, *Slow Action*.

Rivers defines the concept of island in general as "a habitat, which is surrounded by a non-habitat."[28] In its isolation, the island, like the ruin in a park, becomes an allegory of disastrous nature. The desert too—far from being an idealised, innocent landscape—is

26 Ben Rivers presented his film in 2013 at the film festival *Doc's Kingdom – International Seminar on Documentary Film* on the Azores. It was shown under the title *Idea of an Island* and was introduced in the program as follows: "A program of utopian and dystopian visions of the world we live in: insulated places where the entire world is condensed, discovered territories where, as in a stratified rock, different ages and origins, solitary gestures and collective gestus, tensions between the visible and the invisible, word and image, interior and exterior, real and imaginary, memory and transformation are overlapping."

27 "It is no longer possible to contrast an innocent landscape with an alienated humanity. The landscape can no longer be so naïvely delimited. Hardly anyone with his wits about him can now wander through the landscape, bathe in the sea or ramble through field and forest without scenting the poisonous sewage in the seaweed and roots, the exhaust fumes in the wilting leaves, the lethal pesticides in the blossoms. The landscape is so saturated by the toxins of civilization that it has been forced out of its former role and into a new one: it no longer compensates for civilization, but raises it to a higher power." Martin Warnke, *Political Landscape. The Art History of Nature* (Cambridge, Mass.: Harvard University Press, 1995), 146.

28 Ben Rivers in conversation with the author at Cafe OTO, London, January 2017.

much more an absolute metaphor and paradigm for desolation.[29] If in his chapters on the concept of beauty in *Contrat naturel* Serres is essentially laboring on a consciousness-raising critique of ecology, Rivers' cinematographic achievement may be understood, with Benjamin, as a form of "redemptive criticism," in so far as in his work the phenomena survive in order to preserve the experience of amazement over them. In the process, Rivers pursues the intent already expressed by Kant in relation to the concept of amazement, whereby a phenomenon remains astounding even after the experiencing subject becomes aware of the causal explanation of its origin, existence, and perhaps even its historical nullity.[30] This amazement, however, no longer engenders any terror. It is, namely, no longer the distanced experience that, since the Romantic aesthetics of the sublime, generates a yearning for the end in the imaginary contemplation of catastrophe,[31] but rather the composed waiting after the apocalypse: in the narrative time of the post-apocalyptic.

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29 On the "absolute metaphor" (Blumenberg) of the desert, I would like to point to two recent essays of mine: "Die Wüste als absolute Gegenmetapher der Quelle. Zur Metaphorologie der Nach- und Endzeit von Kunst und Geschichte," in *Einfluss, Strömung, Quelle. Aquatische Metaphern in der Kunstgeschichte*, ed. Ulrich Pfisterer and Christine Tauber (Bielefeld: transcript, 2018), 257–270; "Das vierte Höhlengleichnis. Zur politisch-theologischen Ökologie von Wüste und Bunker", in: *Re: Bunker. Erinnerungskulturen, Analogien, Technoide Mentalitäten*, ed. Katrin von Maltzahn and Mona Schieren (Berlin: Argobooks, 2019), 94–105.

An important additional point of reference for *Slow Action* is Werner Herzog's *Fata Morgana* (1971) and the less known *La Soufriére – Waiting for an Inevitable Disaster* (1977). The parody of the sublime gets almost lost in Herzog's late *Lessons of Darkness* (1992) and some of his self-theorization, see especially Werner Herzog, "Vom Absoluten, dem Erhabenen und ekstatischer Wahrheit", in *Werner Herzog. An den Grenzen*, ed. Kristina Jaspers and Rüdiger Zill (Berlin: Bertz & Fischer, 2015), 165–174.

30 Here, I am following the history of the concept traced by Hepburn, in particular in his commentary on Kant (the English word he uses is "wonder," rather than "amazement", but these concepts are of course closely related): "Although wonder itself has a questioning and questing aspect, it rests in its objects, once they are judged in some way *worthy* of wonder. […] 'The halo in the grotto of Antiparos is merely the work of water percolating through strata of gypsum' [Kant, Critique of Judgment, *Critique of Aesthetic Judgment*, §58], but our aesthetic pleasure is not threatened by denying such 'objective finality'; for we can autonomously exercise our aesthetic judgment on the perceived forms of nature nevertheless. […] a vivid blue ocean, a dazzling sheet of mountain-ice… They are phenomenally irreducible, even though causally explicable. The wonder is not vulnerable to the Baconian going 'behind the curtain.' For it is not the genesis of the phenomenon that elicits the wonder, but the phenomenon itself, color, sound, or combinations or impressions, There is no 'going behind' it." See Ronald W. Hepburn, "In Inaugural Address: Wonder," in *Proceedings of the Aristotelian Society* 54 (1980), 1–23. Hepburn's concept of wonder can also be substantiated in passages from Goethe and Wittgenstein. See Goethe's famous dictum, "Search nothing beyond the phenomena, they themselves are the theory" ("Man suche nur nichts hinter den Phänomenen; sie selbst sind die Lehre"), and the reception of it in Wittgenstein's *Bemerkungen über die Farben*. On Goethe and Wittgenstein, see Joachim Schulte, *Chor und Gesetz* (Frankfurt a. M.: Suhrkamp, 1990).

31 Undoubtedly, the philosophical text that remains most influential in this regard for the history of art and aesthetics is Edmund Burke, *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful* (1757).

In this regard, however, amazement can still be conceived—as it was first in the modernist period, especially in Samuel Beckett—only *ex negativo*: as the experience of being indeed astounded that despite all the atom bombs and world wars, the end *as apocalypse* does not arrive, and cannot even arrive in the form of such an experience.[32] It is then not an amazement at the dread, horror, or unfathomability of an impending end, but rather the wonder at its *penultimate* beauty—"mutilated beauty" (*la beauté mutilée*) (NC 24), of which Serres also speaks in the natural contract; a beauty that is broken as well, just as humans in the Anthropocene are subject to more than the traumatising intuition of the end of their own species—and this no longer only because of the absolute finiteness of the sun as a star, but rather more because of the concrete feeling of powerlessness and at the same time responsibility in the face of the impactful role the species plays in its own extinction before the sun burns up. Consequently, "post-apocalyptic amazement" proves to reference concepts that cannot do without human beings and their non-existence as a correlate.

IV.

The work of Meillassoux, as the essential founder of speculative materialism, and the general debate surrounding the Anthropocene, pointed at the beginning merely to the question of amazement beyond the correlation with the existence of human consciousness. Meillassoux' central thesis that true speculation, and thus also the truth of art, requires the recognition of the absolutely necessary contingency of the laws of nature points however—after the attempt to sketch a possible aesthetics of post-apocolyptic amazement on the basis of these conditions—to another problem that can be described, in Adorno's words, as a "problem of *historical* contingency."[33] But Meillassoux's project would then

32 See Clov's impressive monologue in Samuel Beckett's *Endgame*: "They said to me, That's love, yes, yes, not a doubt, now you see how— […] How easy it is. They said to me, That's friendship, yes, yes, no question, you've found it. They said to me, Here's the place, stop, raise your head and look at all that beauty. That order! They said to me, Come now, you're not a brute beast, think upon these things and you'll see how all becomes clear. And simple! They said to me, What skilled attention they get, all these dying of their wounds. […] I say to myself— sometimes, Clov, you must learn to suffer better than that if you want them to weary of punishing you— one day. I say to myself—sometimes, Clov, you must be better than that if you want them to let you go—one day. But I feel too old, and too far, to form new habits. Good, it'll never end, I'll never go. (Pause.) Then one day, suddenly, it ends, it changes, I don't understand, it dies, or it's me, I don't understand that either. I ask the words that remain— sleeping, waking, morning, evening. They have nothing to say. (Pause.) I open the door of the cell and go. I am so bowed I only see my feet, if I open my eyes, and between my legs a little trail of black dust. I say to myself that the earth is extinguished, though I never saw it lit. (Pause.) It's easy going. (Pause.) When I fall I'll weep for happiness." Samuel Beckett, *Endgame* (New York: Grove Press 1958), 80–81.

33 Theodor W. Adorno, "The Idea of Natural-History," [1932], in *Telos. Critical Theory of the Contemporary* 60 (1984), 111–124, here 114 [my emphasis].

shift in such a way that even the necessary contingency of the laws of nature would prove to be transitory in the final analysis. The transience of contingency would be *its* history. But this history itself would then refer back to the contingency of natural history that transpires within it. Consequently, the idea of natural history—between the contingency of the laws of nature and the transience of history—can only be *represented* insofar as the concrete facticity, or what I would call the contingent uniqueness of the respective world, is revealed.

However remote and certainly controversial this counter-reading may seem at first glance, it is, to some extent, already philosophically established or at least laid out by Adorno. After all, his early text on the *Idea of Natural-History* develops from the concept of contingency a forceful critique of the tendencies of dehistoricized ontology (Scheler), the tautological conception of the history of being (Heidegger), and a historicist philosophy of history (Dilthey) in order, finally, to counter these classical positions of the early 20th century with a different, materialistic position, namely that of *natural history*, as developed by Walter Benjamin out of Lukacs' concept of *second nature*.[34] In his study on the *Origin of German Tragic Drama*, which I hold as much too under-appreciated in philosophies of speculative materialism, Benjamin also develops a new concept of the allegorical, which he brings directly in conjunction with the concept of nature. Nature, allegorically considered, is "eternal transience."[35]

In allegory, history and nature intersect. The ruin is an allegory of natural history, and "it is fallen nature" according to Benjamin, "which bears the imprint of the progression of history."[36] Benjamin thus suggests that in allegorical forms such as the ruin, a temporality of the past intersects with one that is projected toward the future and striving for fulfillment there. Utopia is in this way interpreted eschatologically. In its translation into

34 "The retransformation of concrete history into dialectical nature is the task of the ontological reorientation of the philosophy of history: the idea of natural-history." Adorno, "Natural-History," 117. Here, Adorno also explicitly makes reference to early Lukács, whereby Benjamin goes decidedly beyond Lukács' approach of *second nature*: "Lukács can only think of this charnel-house ["charnel-house of rotted interiorities" is a formulation found in Lukács' *Die Theorie des Romans* of 1920—T.H.] in terms of a theological resurrection, in an eschatological context. Benjamin marks the decisive turning-point in the formulation of the problem of natural-history in that he brought the resurrection of second nature out of infinite distance into infinite closeness and made it an object of philosophical interpretation" (ibid.). Around the same time Adorno presented "The Idea of Natural-History," he also explored the theme in his summer seminar of 1932. See Theodor W. Adorno, "Seminar vom Sommersemester 1932 über Benjamins Ursprung des deutschen Trauerspiels," in *Frankfurter Adorno-Blätter IV*, ed. Theodor W. Adorno-Archiv (Göttingen: edition text + kritik, 1995), 52–77.

35 Walter Benjamin, *The Origin of the German Tragic Drama* [1925], trans. John Osborne (London/New York: Verso 1998), 179.

36 Benjamin, *The Origin of the German Tragic Drama*, 180.

political utopias, as effected by historical materialism since Hegel and Marx, eschatology, the future and finitude are thus interwoven, whereby the idea of the post-apocalyptic first becomes possible and its meaning plausible. The melancholy of allegorical reflection lies in this—having been utopia, but now fated as a ruin to exist always already in the attainment of its spatio-temporal uniqueness, its transience, in the consciousness of its *futur antérieur*.

This melancholy is overcome when the utopian idea is maintained within the allegory. But since allegories are not eternal figures, but "decay" as ruins in time, what is utopian within them can only be conceived as a brief timespan. The expiration of all allegory thus corresponds to the instantaneousness of the utopian: a present time or a *kairos* in the future.

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TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

Transduction of The Laws of Logomachy: Metastability, Simondon, and the Heraclitean Lógos

Joel White

Introduction:

This article has two overlapping aims, one specific and the other general. Specifically, it will demonstrate how the thermodynamic concept of metastability, as it distinguishes itself from thermodynamic stability and instability, may offer philosophical semantics (the philosophy of meaning, reference, and its related issues) the theoretical means with which to formulate or *transduce*, the laws of a novel logic or art of sense called logomachy. The general aim is, therefore, to introduce this logic of sense so that the article may then serve as a propaedeutic for further work in logomachy.

Transduction, as a method of philosophising, first proposed by the French philosopher of technology Gilbert Simondon,[1] should be understood as Cécile Malaspina defines it in her *An Epistemology of Noise*; that is, as a method whereby "the structuration of one field of knowledge […] transduces its guiding principles, concepts or problems, across academic divisions and institutional boundaries, into other fields of knowledge."[2] In the case of logomachy, thermodynamics is the field of knowledge that provides guiding principles, concepts, and problems for, in this instance, logic. In many ways, the specific task of this article could be understood as an experiment in transduction since it *aims to determine something previously untested* by placing two fields in relation to each other. Transduction is more than analogical since it aims to produce something else, something *third* from this experimental encounter, rather than merely determining conceptual similarities and differences.

The necessity and justification of formulating a novel logic transduced across thermodynamics take specific inspiration from Simondon. As Simondon consistently pointed out throughout his work, the laws of thought, as inherited from Aristotle and

1 What Simondon strictly means by transduction is perhaps not exactly what I meant by it, in so far as I have extended its meaning beyond the stricter meaning that Simondon uses, which is as an operation by which two or more orders of incommensurable realities enter into resonance and become commensurable. See Isabelle Stengers "Résister à Simondon ?" *Multitudes* 18, no. 4, (2004): 55–62 for a critique of the notion as well as an overview of the method itself.

2 Cécile Malaspina, *An Epistemology of noise,* (London: Bloomsbury, 2018), 94.

ISSN 2773-0875

developed throughout the history of philosophy, most notably in the middle of the 19th century and into the 20th century by figures in the history of Analytic philosophy such as William Stirling Hamilton, George Boole and Bertrand Russell, do not hold good once *thermodynamic states of being* such as metastability are taken into consideration. Indeed, Simondon suggests the "rejection" of them. If Simondon is right and thermodynamic states such as metastability in their differentiation to stable and unstable states *of being* require the rejection of these logical laws, the question arises: what laws might replace them, if any? More generally, what is it about thermodynamics that complicates logic? And could there be such a thing as a logic transduced *through* thermodynamics that, similar to some of the more general aims of process philosophy, more adequately accounts for judgments concerning the energetic transformations of things in the world? Logomachy hopes to be the answer to many of these questions by providing a logical framework for how things are thermodynamically in the world, what I will call later in the article: the *quamity* of things. Indeed, logomachy, as a logic, positions itself as between Cratylean process philosophies of pure becoming, where the world is seen as purely unstable and Aristotelian-inspired substance-attribute philosophies, where strict ontological independence of particulars is affirmed. In other words, since the universe is not absolutely unstable or absolutely stable, a logic that deals with the world as it energetically flows and changes but also as it settles and slows is needed.

The article will begin by outlining what is generally meant by logomachy in so far as it is a *logic* or *art* of sense, that is, a *techne* of *logos*. It will then explore the concepts of metastability, stability and instability in thermodynamics as well as how metastability is understood by Simondon, for whom it is a central concept. The purpose of exploring metastability is that it will then serve as one-half, so to speak, of the forthcoming transduction. The article will then outline what is commonly understood by the laws of thought. It will briefly outline their formulation in Aristotle, before moving to the debate in analytic philosophy concerning their relation to ontology and thus how they ground valid reasoning. I will then look at Simondon's rejection of these laws. This section will then serve as laying the ground for the second half of the transduction. Before outlining the laws of logomachy, which is to say, the result of their transduction, the article will revisit the presocratic philosopher Heraclitus. The intent is to demonstrate how, for Heraclitus, the *lógos*, as a logic of sense, is fundamentally concerned with the metastability of the *objects of sense*, i.e., not their stability nor their instability. Since it is not uncontroversial to read into Heraclitus, a presocratic philosopher, thermodynamic theories concerning metastability, energy, and entropy, concepts that were not fully outlined until the 19th century, my claim that a logic of metastability can be found in specific key Heraclitean fragments is interpretatively supported by the work of French classics scholar and philosopher Clémence Ramnoux whose work endorses an understanding of the Heraclitean *lógos* as fundamentally thermodynamic, which is to say, concerned with the dynamics of energy,

heat and fire.

The affirmation of a thermodynamic Heraclitus is, also, theoretically motivated by a secondary intention: to reconceptualise the *lógos* and, in doing so, detach the meaning of *lógos* from the meaning it has been given by the Derridean critique of logocentrism (the most dominant of the post-war continental conceptualisations of this Greek term after Martin Heidegger's). The initial turn to Heraclitus as a potential source for the development of logomachy was also equally motivated by Simondon's statement in *L'Individuation à la lumière des notions de forme et d'information* that metastability, though somewhat present in the Ionian school of thought, was more generally ignored or forgotten by the ancients.[3] By showing how the concept of thermodynamic metastability is present in the fragments of Heraclitus, especially the *kykeôn* (posset) fragment (DK.22 B125), the idea is to scrutinise Simondon's train of thought concerning the Ionians—of which Heraclitus is a later representative. As Ludovic Duhem writes, "Simondon was acutely aware that Heraclitus took much of the physicalist thought of the Ionians and transduced this thought into a logic rather than an ontology."[4] Heraclitus, thus, in many ways, serves as the closest example of a logic of sense that resembles logomachy, specifically as it concerns the objects of sense.

Logomachy as a Transduced Logic of Sense:

While I shall not explore in depth the etymological and conceptual history of the Greek word *λογομἄχἵᾱ* nor its subsequent translations into Latin, *logomachia*, or, logomachy, I shall, nonetheless, now briefly outline the two major moments in the concept's history so that what is at stake in logomachy's philosophical *recovery* as a logic of sense is elucidated. The first time that *λογομἄχἵᾱ* is used *conceptually* in the Western philosophical tradition is in Plato's *Cratylus*. That is, while Plato does not formulate the term *λογομἄχἵᾱ* (this is by the Apostle Paul, see below), he nonetheless uses the Greek words "*μαχώμεθα ἐν τοῖς λόγοις*" to signify something akin to *λογομἄχἵᾱ* qua *a conflict in and about sense*. Indeed, having arrived in the *Cratylus* at the contradictory etymological meaning of knowledge (*epistḗmēʹ*) either as "stasis" (*histesi*) or "movement" (*hepetai*) of the soul in its relation to things, Socrates opts to orient the meaning of *epistḗmēʹ* toward the contemplation of the Forms. It is also at this moment that Socrates suggests that returning to the problem, that knowledge might be anything other than stable, would result in a "*μαχώμεθα ἐν τοῖς λόγοις*"

3 Gilbert Simondon, *L'Individuation à la lumière des notions de forme et d'information* (Grenoble: Millon, 2013), 26.

4 Ludovic Duhem, "Apeiron et physis ; Simondon transducteur des présocratiques", *Cahiers Simondon* no. 4 (2012).

a conflict (*makhṓmetha*) in sense (*lógois*), a *λογομἄχῐ̓ᾱ*, logomachy.[5] Socrates declares that logomachy is not fit for friends and henceforth must be avoided to maintain peace and prevent civil war among words. Similar to this use by Socrates, logomachy's first cited use as a compound neologism, *λογομἄχῐ̓ᾱ*, is biblical and can be found in 1 Timothy, 6:4. The Apostle Paul is counselling Timothy against supporting those of his parish who spread false teachings and desire to debate the Law over simply following it. The logomachy that Paul wishes to avoid potentially threatens the Church's purity and the *lógos* qua the Word of God.[6] These first Greek uses of *λογομἄχῐ̓ᾱ* should be kept in mind since they reveal to what extent logomachy as a Greek concept inherited into Latin, the Romance languages and then English is concerned with the movement or operations of sense and the conflicts that arise in sense due to these movements. That is, to what extent sense is stable or unstable? Beyond these Greek origins, logomachy's other major meaning is something akin to a "dispute over the meaning of words" or a sophistic "conflict waged *only* as a battle of words;" that is, "*just semantics.*" Outlined most definitively by the 17th-century Swiss theologian Samuel Werenfels in his *De logomachiis eruditorum*, written in Latin in 1988 then translated into English in 1702, Werenfels desires to apply a philosophical "Remedy to a most pernicious Distemper, which has long afflicted the Learned World […] The contending about words (logomachy)."[7] For Werenfels, there exist both good words, and bad words, both a good *logos* and a bad *logos*; the task once again, like Socrates and Paul, is to put an end to debate concerning sense. Logomachy opens up, therefore, the problem of what Lyotard might call the *différend*. That is, the question of how and why disputes about sense arise as well as the practical and political implications of sense-making, sense-destroying and sense-maintaining to paraphrase Walter Benjamin from *Critique of Violence*. The application of logomachy so that it might investigate how sense is made, destroyed and maintained, I name *logomachics*.[8]

Having now briefly outlined what is meant by logomachy, it is also apposite to discuss what is meant by a *logic* of sense since the definition of logic itself could open a logomachy. I take a *logic* of sense to mean two things. Firstly, as it is formally understood, I take logic to mean the formal principles in accordance with which it is possible to assess the appropriateness of reasoning or judgment: why certain things can and cannot be said to *make sense*. In

5 *Cra*. 430 c–d.

6 *The Bible: New Revised Standard Version*, eds. Zaine Ridiling (National Council of Churches, 1989), 451.

7 Samuel Werenfels, *A Discourse of Logomachys: Or Controversys about Words, So Common Among Learned Men. To which is Added, a Dissertation Concerning Meteors of Stile, Or False Sublimity* (Cheapside, London: J. Darby, 1711), 1.

8 Indeed, Lyotard offers many useful concepts in this regard; one would need to also look at "paralogy" as the contestation of an instituted *logos*. Jean-François Lyotard, *Le différend*, (Paris, Éditions de Minuit, 1983).

this regard, a logic is not too dissimilar to a technical grammar in so far as a technical grammar determines the constraints and limits of a language as it is used. Logomachy, as a logic or as a technical grammar of sense, likewise aims to draw-out the limits and constraints that sense is bound by. These constraints could likewise then be called laws or principles since to overstep them would constitute an infringement. Secondly, then, logic is understood as the operations through which sense emerges and functions. In this regard, the notion of logic follows Georg Wilhelm Friedrich Hegel's logic as well as Gilles Deleuze's treatise on Stoic logic, how sense emerges as an expression. Moreover, in the same way that Simondon's theory of ontogenesis, as Jean-Hugues Barthélémy writes in a note to Simondon's "The Position of the Problem of Ontogenesis": "is no longer an onto-*logy* in the strict sense of the term," the *logic* of sense that I call logomachy is not a logic that understands the *logos* as "exterior to what it knows; nor is it "an *ob*-jectifying *logos*."[9] Logomachy is closer to being a logo-*genetics* of sense since its *logos* emerges—or is *generated*—through the metastable system or logic that constitutes and maintains it. John Stuart Mill's famous definition from *System of Logic* summaries these two sides of logic. He writes: "Logic, is the science of the *operations* of *the understanding* which *are subservient to the estimation of evidence*: both the *process itself* of advancing from known truths to unknown, and all other intellectual operations in so far as they are *auxiliary to this*. [my emphasis]"[10] Logic is, therefore, the process or operation of the understanding in so far as it is subservient to a set of laws that govern it. These laws are not, however, arbitrary, but, as Mill writes, they are subject to the estimation of evidence. The key difference between logomachy and other logics, even Deleuze's, is that it turns to the science of thermodynamics and the notion of metastability as key to the transduction of its laws. That is, in so far as the operations of sense are subservient to evidence, this evidence is furnished by what is and what is not thermodynamically possible. In this sense, one could likewise call logomachy a critique, in the Kantian sense of the term since it is concerned with the conditions of possibility of sense and how these conditions furnish limiting laws. With Mill's definition in mind, logomachy could, therefore, be understood as inverting the usual inquiry of philosophy of technology that explores the *logos* of *techne* so as to explore the *techne* of the *logos*, with *techne* here understood in its widest sense as *a treatise on the means through which something may come into being*—what is sometimes simply understood as an art. Art, here, is, therefore, meant in the same way that Kant's third *Critique* is a critique of the art or power of judgment: a *Kritik der Urtiels-kraft*, with *Kraft* holding both the meaning of an art or a technical treatise as well as the power through which something comes into being. Outlining, or transducing, the laws of logomachy might then be understood as outlining the *art of sense* as, indeed, the Port-Royal Logic describes

9 Jean-Hugues Barthélémy "Note 2", in Gilbert Simondon, "The Position of the Problem of Ontogenesis," trans. Gregory Flanders, *Parrhesia* 7, (November 2009): 14.

10 John Stuart Mill, *A System of Logic: Ratiocinative And Inductive (Vol. 1 of 2)* (London: John Parker, 1851), 18

itself, that is, as *l'Art de Penser*.

Succinctly, then, logomachy as a logic or art of sense seeks to determine 1) how sense emerges (through what systems); 2) in accordance with what laws; 3) the boundaries or limits of these laws; and 4) the practical and political implications of them. As far as (1) is concerned, logomachy is said to be a metastable system of sense that is comprised of (at least) three constitutive metastable systems of meaning or reference (*Bedeutung*, as it would be for Frege): a metastable system concerning the objects or referents of sense, the perception, representation and internal and external memory of these objects, and the semiotics or signification of these objects through signs or strings of signs. Together, these metastable systems form a metastable *system of systems*, the synthetic metastability of which is a priori and conditions the emergence of sense.[11] As indicated above, the leading question for this specific article is: Is it possible to transduce logical laws that more adequately account for how things are thermodynamically in the world? By the end of the article, I will have answered this question by thermodynamically transducing the laws of logic or thoughts—the law of identity, the law of contradiction, and the law of excluded middle—so that they accord with thermodynamics states of being such as thermal equilibrium, instability, bifurcation and metastability, thereby offering working definitions of the logical laws of logomachy. That is, I will have outlined (2) transduced the laws of logomachy through a reflection across thermodynamics, Simondon, Heraclitus and the laws of thought, with each "domain" providing guiding principles, concepts, and problems that, when thought together, will enable the formulation of the laws in accordance with which sense emerges. As far as (3) and (4) are concerned, that is, the limits of these laws and their practical and/or political application, what I have started calling *logomachics*, these will not be outlined in any detail in this article; however, I nonetheless hope that what is practically at stake will begin to emerge as the other points are theoretically dealt with.

Stability, Metastability, and Instability in the Natural Sciences:

Metastability, understood as an energetic system state that is in-between, *meta*, stability (thermal equilibrium), and instability (system bifurcation), for example, a ball stuck in a trough, sand piles and glasses, has seen increased use in contemporary philosophy primarily due to the renewed interest in the work of Simondon. It is, however, a term that finds its conceptual origins in chemistry (mostly metallurgy and mineralogy), thermodynamics,

11 Like Frege, it is possible for sense to emerge without objective reference. For example, in literature, there are no actual references only significative references. It is also possible for sense to emerge without signification, for example, the recognition of an object of sense without a sign.

cybernetics, and other systems theories. One of the first complete theoretical discussions of metastability was formulated by Norwegian-American chemist and Nobel prize winner Lars Onsager. In 1931, the term "steady-state systems" was used by Onsager to describe a process akin to thermodynamic metastability.[12] Doron Sagan and Eric D. Schneider write that Onsager discovered that "an open system with moderately steep gradients will slow to a steady state of minimum entropy production."[13] In the presence of ample available energy, an open thermodynamic system may maintain a relatively constant state without falling into a state of permanent stability, otherwise known as thermal equilibrium. In contrast, in a closed system, the entropy of the system (the dissipation of energy between two thermodynamic systems with different initial internal energies) will inevitably increase to the point that work is no longer possible. As entropy increases, both the past (exhaustion of energy differences) and the future (quantity of energy differences remaining to produce work) unfold as the system moves from the difference: $T_h \neq T_c$ toward the identity: $T_h = T_{c.}$

While this overall tendency toward stable thermal equilibrium (the second law of thermodynamics) cannot be violated—the universe consists of a closed adiabatic thermodynamic system since the total quantity of internal cosmic energy remains identical (the first law of thermodynamics)—"open systems" can follow a temporal structure that allows for the local deferral of thermal equilibrium. In short, an open system means that the "metastability" of the difference between the two actual energies that produce work can be maintained, and a system can remain in a persistent state that is *not* the "state of least energy." Sagan and Schneider give the following example of an open metastable system: "a simple example of metastability is a Ping-Pong ball suspended in the air by a column of air blowing from a vacuum cleaner exhaust. Such a demonstration can be seen in the appliance departments of some large stores. The white ball wobbles slightly, floating on a stream of air blowing up from beneath."[14] The difference between higher energy states and "state of least energy" is likewise essential when defining what a metastable system consists of. If we take Sagan and Schneider's example, when the ping-pong ball is floating, the ball is said to have a higher energy state than when the ball falls to the ground. This higher energy state is achieved due to the relative space-time position that the ball possesses. When floating, the ball is in a relatively higher energy state than when on the ground due to the potential energy supplied by the vacuum cleaner (which gets its energy from a chain of entropic displacement that goes from the plug in the wall to the burning of fossil fuels via the spinning of a generator). What *maintains* this metastable state locally (the fact that the ball remains floating) is the continued energy transfer of the air from

12 Dorion Sagan and Eric D. Schneider, *Into the Cool: Energy Flow, Thermodynamics, and Life* (Chicago: University of Chicago Press, 2006), 80.

13 Sagan and Schneider, *Into the Cool*, 80.

14 Sagan and Schneider, *Into the Cool*, 79.

the vacuum cleaner exerted against the ball. If the vacuum cleaner were to disappear, or if the ball were pushed, it would inevitably fall to its "state of least energy", equalising the difference between the relative position of the ball in the air with the ground. For this reason, a metastable system can be described as a system that is *not yet in a state of least energy* since once it reaches this state of least energy, it becomes absolutely stable.

Two other scientific concepts comparable to metastability are "*homeostasis*", coined by American biologist Walter B. Cannon in 1932, and Nicolis and Prigogine's "dissipative structures", formulated in the 1970s.[15] Its use in Simondon (from 1954 onwards), and thus the textual source of its use in contemporary philosophy, is Norbert Weiner's seminal 1948 *Cybernetics: Or Control and Communication in the Animal and Machine*. Here, Weiner uses the concept of "metastable" and "homeostatic" to mean more or less the same system state.[16] Before going on to Simondon's conceptual usage of metastability, it is important to consider these three sources since they clarify the rationale behind metastability's distinction between stability and instability in the sciences. This is done in order for this logic to later present the concepts and issues necessary for its application to philosophical semantics.

Cannon, in the introduction to *The Wisdom of the Body*", states that he wishes to use the term "*homeostasis*" to refer to biological states that remain "relatively constant" but that is also distinct from stable or "stagnant" "closed systems" at equilibrium:

> The constant conditions which are maintained in the body might be termed equilibria. That word, however, has come to have fairly exact meaning as applied to relatively simple phyisco-chemical states in closed systems, where known forces are balanced. The coordinated physiological processes which maintain most of the steady states in the organism are so complex and so peculiar to living beings – involving as they may, the brain and nerves, the heart, lungs, kidneys and spleen, all working cooperatively – that I have suggested a special designation for these states, homeostasis. The word does not imply something set and immobile, a stagnation. It means a condition – a condition which may vary but which is

15 Walter B Cannon, *The Wisdom of the Body* (New York: W.W. Norton and Company, 1932); G. Nicolis and I. Prigogine, *Self-Organisation in Nonequilibirum Systems: From Dissipative Structure to Order through Fluctuations* (New York: Wiley, 1977).

16 Norbert Weiner, *Cybernetics: Or Control and Communication in the Animal and Machine* (Cambridge: The M.I.T Press, 1948), 58–59. While there is no evidence that Simondon found the term in Jean-Paul Sartre's 1943 *L'être et le néant*, it is worth noting that Sartre uses "metastable" to mean comparably a "precarious" psychic structure that, while still "durable," is nonetheless subject to collapse. Jean-Paul Sartre's 1943 *L'être et le néant* (Paris: Gallimard, 1943), 84.

relatively constant.[17]

Though unfamiliar with Onsager's work on steady-state systems, Cannon uses conceptual terminology similar to Onsager. Homeostasis is a coordinated system of open biological processes that maintain an organism in a "steady state" that is *not* at equilibrium. Cannon documented that such a state of non-equilibrium—one where all forces were *not* "balanced" (i.e., not at maximum entropy)—could only be maintained by an available energy source external to the organism: "food" and "oxygen" for organic systems. Due to the biological nature of these investigations, Cannon also recognised that homeostatic systems need to be maintained "relatively constant" to guarantee the organism's survival. As Weiner argues in *Cybernetics*, homeostatic consistency is vital to the "healthy" functioning of the organism.[18] Extreme fluctuations in specific processes—for example, the internal temperature of the organism—would result in the collapse of specific biological systems.

Similar to the logic at work in both Onsager's "steady-state systems" and Cannon's homeostasis, Weiner distinguishes metastability (again, the examples are biological) from stability: "We may well regard living organisms, such as Man himself, in this light. Certainly, the enzyme and the living organism are alike metastable: the stable state of an enzyme is to be deconditioned, and the stable state of a living organism is to be dead."[19] Metastability is here distinguished from stability, with stability signifying the organism's death and metastability, like homeostasis, ensures the maintenance of life and the deferral of death.

Related to the maintenance of life, Weiner's use of "metastable" also concerns what he describes as the capacity for enzymes to decrease or slow down the rate of entropy (with entropy here equivalent to the movement toward stability qua death). Using Maxwell's demon as an analogy, he writes: "There is no reason to suppose that metastable demons do not exist; indeed, it may well be that enzymes are metastable Maxwell demons, decreasing entropy, perhaps not by the separation between fast and slow particles but by some other equivalent process."[20] Metastability is, as such, for Weiner a condition of the *continuation of the organism's sameness through time through the deferral of entropy increase*. As he puts it, "catalysts and Man alike have sufficiently definite states of metastability to deserve the recognition of these states as relatively permanent conditions."[21] That is, metastability is the condition of possibility of *relative sameness* of the system, which means that the system maintains an energetic internal difference that sustains the system as *relatively permanent*

17 Cannon, *The Wisdom of the Body*, 24.
18 Weiner, *Cybernetics*, 114.
19 Weiner, *Cybernetics*, 58.
20 Weiner, *Cybernetics*, 58–59.
21 Weiner, *Cybernetics*, 58–59.

through time, i.e., it is not in *a stable state of equilibrium*, where the system collapses nor is it in an *unstable state of system bifurcation.*

Considering stability, metastability *and* system bifurcation, G. Nicolis and Prigogine accomplished the conceptual and mathematical generalisation of open thermodynamic systems in the late 1970s. During his 1977 Nobel Prize lecture, Prigogine describes "dissipative structures," his analogical concept for steady-state dissipative systems. Again, like homeostasis and Weiner's metastable demons, Prigogine distinguishes them from structures at equilibrium:

Thermodynamic equilibrium may be characterised by the minimum of the Helmholtz free energy defined usually by:

$$F = E - TS$$

> Are most types of "organisations" around us of this nature? It is enough to ask such a question to see that the answer is negative. Obviously, in a town, in a living system, we have a quite different type of functional order. To obtain a thermodynamic theory for this type of structure we have to show that non-equilibrium may be a source of order. Irreversible processes may lead to a new type of dynamic state of matter which I have called "dissipative structures".[22]

For Prigogine, therefore, "dissipative structures" are structures, both living and non-living, that are far from equilibrium (far from stability), but which irreversibly exchange energy with their environment to maintain their structure—"non-equilibrium may be a source of order". Like metastability and Onsager's steady-state systems to which Prigogine often refers, these structures are "ordered" to the extent that structures such as towns and organisms can be delimited. Still, their organisation derives from irreversible entropic processes that increase the disorder external to them—structure comes at the expense of destructuring. Or, to cite the title of Isabelle Stengers and Prigogine's book, there is *order out of chaos*.[23]

Critical for Nicolis and Prigogine, these structures are subject to thermodynamic "fluctuations" that oblige them to *bifurcate*. As they write in their ground-breaking 1977 *Self-Organisation in Nonequilibrium Systems: From Dissipative Structure to Order through*

22 I. Prigogine, "Time, Structure and Fluctuations," Nobel Lecture, 8 December, 1977.

23 While dissipative structures are mostly understood by Prigogine as *far from equilibrium*, metastability is a state property that refers to a system state that is not at equilibrium. That is, a system can be referred to as metastable both near to and far from equilibrium is a certain stability is achieved between system inputs and outputs.

Fluctuations:

> The purpose of bifurcation theory initiated by Poincaré and developed further by Andronov and his school, Hopf, Krasnosel'skii, and others, is to develop methods enabling one to: (a) demonstrate rigorously the existence of branching of solutions for certain critical values and (b) construct, in an approximate fashion, analytic and convergent expressions for certain important types of solution emerging at the bifurcation points.[24]

There are two points concerning bifurcation theory that Nicolis and Prigogine highlight, the first relates to the "existence of branching solutions", and the second relates to the "types of solution" that occur at the bifurcation points. The existence of branching solutions refers to the fact that systems whose structures are metastable are often subject to alterations or fluctuations regarding incoming values, whether those values constitute an increase or decrease in energy flows, the addition of chemical products that alter the thermodynamic properties of the system (enzymes for example), or the system's movements in spacetime (something that changes the potential energy of the system). When these values reach a critical point, the system's metastability is faced with a "problem"; the system's structure bifurcates to "solve" the alteration in the values. Following the second law of thermodynamics, the system restructures itself so that energy can continue dissipating. The clearest example of system bifurcation, also used by Simondon, is the introduction of a crystal germ into a supersaturated solution. The saturated solution is in a metastable state, and the alteration in the system—the critical point qua problem—occurs when an external chemical product is introduced into it. The system reorganises itself through dissipation into the new crystalline form to solve this problem.[25]

In his Nobel prize lecture, Prigogine writes that "bifurcation introduces in a sense "history" into physics."[26] Suppose the system's stability at thermal equilibrium equates to the end of this history. Metastability then means the deferral of the system's internal movement along the arrow of time. Time's arrow is stretched. While it might appear as though the necessity of the movement from difference to identity can be interminably halted, metastability and the deferral of equilibrium *always comes at the expense of exergy*. Exergy is a very useful term introduced by Zoran Rant in 1956 to mean something equivalent to Gibbs free energy, energy-not-yet-dissipated, or negentropy.[27] It is useful

24 Nicolis and Prigogine, *Self-Organisation in Nonequilibirum Systems*, 77.

25 Though it must be mentioned that Simondon, as Stengers points out, does not discuss the dissipative nature of this "jump". Indeed, Simondon is rather quiet about entropy and dissipation in general, preferring "degradation". See Esra Atamer "Dissipative Individuation," *Parrhesia* 12, (2011): 57–70.

26 Prigogine, "Time, Structure and Fluctuations".

27 *Zoran Rant, "Exergie, Ein neues Wort für 'technische Arbeitsfähigkeit,'" Forschung Auf dem Gebiete des*

because it terminologically allows us to split energy into *exergy*, not-yet-dissipated and *anergy* already-dissipated-energy. The metastability of any local open system pushes that which is external to it, the exergy that feeds the metastable system further along its own temporal arrow. Entropy is *displaced* to an external system to maintain an internal system; *entropic displacement* occurs via the destruction of negentropic exergy and the production of entropic anergy. Time moves not in a circle nor a line but as a conical spiral, each turn constituting the exhaustion of the exergy necessary for the line to continue along its vector. Upward local spirals always come at the expense of a larger general downward spiral.

Metastability in Simondon:

As mentioned, metastability is a fundamental concept in the work of Simondon that most likely textually derives from his reading of Wiener.[28] The importance of turning to Simondon before moving to Heraclitus is, as also mentioned in the introduction, Simondon explicitly questioned how a metastable logic of sense might be formulated, affirming that metastability renders the law of identity and the excluded middle null and void. Summarising many of the points about metastability from above, Cécile Malaspina writes, "Metastability is the dynamical suspension of a system between two forms of equilibrium, between entropic dispersion and structural inertia. It was Gilbert Simondon's merit to have introduced the concept of metastability to the philosophical corpus by making it the cornerstone of his theory of individuation."[29] The most concise description that Simondon gives of metastability can be found in the "Introduction" to *L'Individuation à la lumière des notions de forme et d'information*. Here, an ontological description is given:

> Individuation could not be adequately thought out and described because only one form of equilibrium was known, stable equilibrium; metastable equilibrium was not known; being was implicitly assumed to be in a state of stable equilibrium; yet stable equilibrium excludes becoming, because it corresponds to the lowest possible level of potential energy; it is the type of equilibrium that is reached in a system when all possible transformations have been achieved and no more force exists; all potentials have actualised, and the system, having reached its lowest energy level, can no longer be transformed again. The ancients only knew

Ingenieurwesens 22, (1956): 36–37.

28 After consulting with Jean-Hughes Barthelemy, the conclusion we came too was that Simondon's first published citations in 1954 of "métastabilité" come from Weiner and are most likely the source. See Gilbert Simondon, "Prolégomènes à une refonte de l'enseignement" in *Sur la technique (1953-1983)* (Paris : Presse Universitaire Paris, 2014), 233.

29 Malaspina, *An Epistemology of noise*, 73.

> instability and stability, movement and rest; they did not clearly and objectively know metastability. To define metastability, it is necessary to involve the notion of the potential energy of a system, the notion of order, and that of increasing entropy; it is thus possible to define the metastable state of being, which is very different from stable equilibrium and from rest, which the Ancients could not involve in the search for the principle of individuation because no clear physical paradigm could for them enlighten its use.[30]

In this summary of metastability's conceptual history (or lack thereof), Simondon argues that the ancients only had concepts for stability and instability since no physical paradigm was offered to them that might enlighten and demand the invention of a third in-between term. In the note to this paragraph, Simondon relaxes his argument by adding that there did "exist, for the ancients, intuitive and normative equivalents" to metastability. As can be gleaned from the following unpublished summary of *L'Individuation*, the ancients referred to in this note by Simondon are the Ionian presocratics:

> This system state—unknown to the Ancients, or somewhat forgotten after having been sensed by the Ionian Physiologues in the doctrine of *phusis*—is that of a metastable equilibrium. Metastability differs from stability and instability in that it is rich in potentials and cannot be thought as being completely given in an instant, simultaneous through a relation with itself.[31]

For Simondon, then, the conceptual difference between stability and metastability should be understood as the difference between a stable system where transformation is no longer possible because its preindividual "potentials" have been exhausted and a metastable system where (as Simondon writes in the notes to the above paragraph) "information understood as negentropy" can metastabilise the difference between actual energies, maintaining the system.[32] A metastable system is, therefore, between (*meta*) system stability (thermal equilibrium) and instability (system bifurcation). Metastability constitutes the maintenance of being through becoming. It temporally differs from entropic

30 Simondon, *L'Individuation*, 26.

31 Simondon "Summary of Individuation" in Nathalie Simondon, "Some Reflections on the Life and Work of Gilbert Simondon," trans. Joe Hughes and Drew Burk, http://gilbert.simondon.fr/content/biography, accessed 10th October 2022.

32 Simondon, *L'Individuation*, 26. While the notion of information used by Simondon is complex and deviates from its theoretical (Information Theory) and common usage, it should be noted that, here, information functions negentropically as exergy. It is also fairly evident from the introduction to Simondon's *On the Mode of Existence of Technical Objects* that Simondon subscribes to the idea that information may not only metastabilise local open systems but that it may offer some form of an answer to how the universal tendency toward thermal equilibrium may be avoided. As above, if one were to mount a criticism of Simondon, it would be here.

collapse qua stability and system bifurcation qua instability. Discussing Simondon's example of crystallisation, the physical model that he uses to base his transductive analysis of individuation, Daniela Voss writes: "The condition for the emergence of a crystalline structure is the metastability of the system, which can be defined as the maintenance of an energy state that is different from the resting state in that it allows for processes of transformation under certain energetic conditions."[33]If metastability allows for "transformation under certain energetic conditions", this is because preindividual potentials, what could be thought of as exergy, have yet to be exhausted. That is, within a metastable state, bifurcation from the current individualised metastable state to another metastable individualised state is still possible because the system is not yet at its lowest energy state. Preindividuality could thus be thought of as a set of possible individuations that may still be individualised, and this possibility is grounded on the no-yet-exhausted nature of the exergy inherent to the system.

One of the reasons why, as Malaspina writes, metastability is at the heart of Simondon's theory of individuation is that it offers a conception of the individual as a transformative "operation" not as an "individuated being", whether that be a substantial individual (a unity in and of itself) or a hylomorphic individual (an individual individuated through the coming together of matter and form). Metastability is an ontological concept that can conceive both the *being* and the *becoming* of the individual as partaking of the same energetic system.

Simondon, Metastability and the Laws of Thought:

Critical to the question of whether a logic of sense can be constructed from metastability, Simondon consistently, throughout his work, suggests rejecting the three laws of thought as put forward by the history of logic (the law of non-contradiction is not included but can be inferred from the other two). For instance, Simondon writes:

> A deepened thought of metastability as a condition of individuation requires the rejection of the principle of the excluded middle and the logic of identity; the complete being, which is to say, the preindividual being, is more than a unity and more than an identity, it is other than itself. The logic of the excluded middle and of identity is a logic of stable states, able to intervene only after individuation; it does not bear on the complete being, but on an impoverished being, dephased in

33 Daniela Voss, "Simondon on the Notion of Problem: A Genetic Schema of Individuation," *Angelaki*, 23, no.2 (2018): 97.

relation to itself, the individuated being as individual.[34]

Simondon's reference to the laws of thought here is more than likely Aristotelian given his extensive engagement with Aristotle's metaphysics, particularly his attack on Aristotle's hylomorphism in *Individuation*. While it might, therefore, seem appropriate to cite Aristotle's formulations, I have instead chosen to quote Russell since his definitions are by far some of the easier to grasp in so far as Russell outlines what is at stake both logically and *ontologically*. Moreover, while Simondon repeats the claim that logic of the excluded middle and of identity do not hold once metastability is considered, there are no extensive citations of Aristotle to back his claims. I will, nonetheless, place Aristotle's formulations in the footnotes for ease of referencing. If metastability and thermodynamics, more widely, is to be transduced into a novel logic, it is important that what things are actually like in the world has its influence on logic that outlines the laws pertaining to what propositional claims can be said about how those things actually are in the world and he laws that govern those claims.

In his 1912 *The Problems of Philosophy*, Russell defines the three laws of thought in natural language. Though related, these definitions should be distinguished from the earlier eight primitive principles, as laid out by Russell and Whitehead in Volume 1 of the 1910 *Principia Mathematica,* since they do not serve as a minimum set of axioms for formal logic.[35] Written in natural language, these laws of thought describe the ontological "fact concerning the things in the world:"[36] (1) *The law of identity*: "Whatever is, is."[37] (2) *The law of noncontradiction*: "Nothing can both be and not be."[38] (3) *The law of excluded middle*:

34 Simondon "Summary of Individuation," http://gilbert.simondon.fr/content/biography

35 Bertrand Russell and Alfred North Whitehead, *Principia Mathematica* 1 (Cambridge: Cambridge University Press; 1967), 91.

36 Bertrand Russell, *The Problems of Philosophy* 72, (Oxford: Oxford University Press, 1997), 40.

37 "First then this at least is obviously true, that the word "be" or "not be" has a definite meaning, so that not everything will be 'so and not so.' Again, if 'man' has one meaning, let this be 'two-footed animal'; by having one meaning I understand this:—if 'man' means 'X', then if A is a man 'X' will be what 'being a man' means for him. (It makes no difference even if one were to say a word has several meanings, if only they are limited in number; for to each definition there might be assigned a different word. For instance, we might say that 'man' has not one meaning but several, one of which would have one definition, viz. 'two-footed animal,' while there might be also several other definitions if only they were limited in number; for a peculiar name might be assigned to each of the definitions. If, however, they were not limited but one were to say that the word has an infinite number of meanings, obviously reasoning would be impossible; for not to have one meaning is to have no meaning, and if words have no meaning our reasoning with one another, and indeed with ourselves, has been annihilated; for it is impossible to think of anything if we do not think of one thing; but if this is possible, one name might be assigned to this thing." *Aristotle, Metaphysics, Book IV, Part 4 (translation by W.D. Ross).*

38 "It is impossible, then, that 'being a man' should mean precisely not being a man, if 'man' not only signifies something about one subject but also has one significance [...] And it will not be possible

"Everything must either be or not be."[39] Formally or *logically*, the law of identity is written as a=a or x: x=x; it defines self-identity. That is, for all things that are x, x is x. This is not logically equivalent to x=y since while x and y might refer to the same thing, they are not symbolically identical and cannot be reduced to x. The law of noncontradiction (LNC), formally, ~ (*p*. ~ *p*), negatively forbids an identity between p and not p. Logically, this means that contradictory propositions "*p is the case*" and "*p is not the case*" cannot be concomitantly true. The law of excluded middle, formally ~*p* ∨ *p,* is a law of bivalence and can be derived from LNC. Logically, p is either true or not true. Its bivalence distinguishes it from LNC because one of two cases must be true: if p is true, then not p is not.

The philosophical problem these laws pose concerns whether there is an identity between their logical and ontological expressions (this is the same in Aristotle). For Russell, at least in the *Problems of Philosophy*, truthful thinking relies on the mutual accordance of the premises and the thing to these laws, rendering these laws ontologically deductive. Russell writes, "when we think in accordance with them, we think truly."[40] Therefore, any proposition concerning worldly things that do not logically and ontologically conform to these laws is false. Regarding this accordance between logic and things in the world, Frege agrees. For example, in "On *Sinn* and *Bedeutung*", he concludes that "the truth value of a sentence" is concerned only with the relation to its objective "*Bedeutung* [referent]".[41] This mutually shared position concerning the necessity of a mediated correlation between object and proposition is called, after Saul Kripke, the mediated reference theory or the "Frege-Russell view."[42] Its importance for philosophical semantics is that it enables one to distinguish between, for example, proper names and propositions that refer to existing things and names and things like Ulysses, which do not refer to any existing thing but that can be spoken of with meaning.

In distinction to a theory of the laws such as George Boole's, where "the knowledge of

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to be and not to be the same thing, except in virtue of ambiguity, just as if one whom we call 'man,' and others were to call 'not-man'; but the point in question is not this, whether the same thing can at the same time be and not be a man in name, but whether it can be in fact." *Aristotle, Metaphysics, Book IV, Part 4.*

39 Russell, *The Problems of Philosophy*, 41. 'But on the other hand there cannot be an intermediate between contradictories, but of one subject we must either affirm or deny any one predicate. This is clear, in the first place, if we define what the true and the false are. To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, and of what is not that it is not, is true; so that he who says of anything that it is, or that it is not, will say either what is true or what is false.' *Aristotle, Metaphysics, Book IV, Part 7.*

40 Russell, *The Problems of Philosophy*, 41.

41 Gottlob Frege, "On *Sinn* and *Bedeutung*,"in *The Frege Reader*, edited Michael Beaney (Blackwell Publishing, 1997), 157.

42 Saul Kripke, *Naming and Necessity* (Oxford: Blackwell, 1980), 27

the laws of the mind does not require as its basis any extensive collection of observations, and it is not confirmed by the repetition of instances,"[43] a mediated theory of reference relies to a certain extent on epistemology. What can be said to be true about things in the world is contingent on what is known to be true. While this can lead to an extreme form of anti-realism or intuitionism where truth is contingent on sense perception, the insistence that logic and ontology should not be separated assists in developing a metastable logic of sense in so far as what is at stake for Simondon is the extent to which things in the world can be said to accord with the classical laws of thought as laid out above. Even though the Frege-Russell view requires material mediation, it also takes the *stability* of the objects of sense as a given. For example, in contrast to Frege's notion of sense and idea (*Vorstellung*), reference (*Bedeutung*) designates the "same thing" in the world regardless of the signs or string of signs used.[44] A famous example is that of the morning and evening stars. For Frege, there is no consideration that the difference in time and space between morning and evening might affect the truth value of the *Bedeutung*.

For Simondon, again, most likely via as his engagement with Aristotle, these laws must be rethought since they can only be applied to things in the world that are stable individuals devoid of preindividual potential or any capacity for bifurcation. They apply, therefore, only to stable systems that are at equilibrium. That is, identity is the state of an individual that no longer has any capacity to transform and whose preindividual potentialities are exhausted. It is an individual that is identical to what it is (1) and excludes any possibility of being anything else (3), that is, being what it is not (2). An individual in such a state that conforms to the three laws of thought has reached the end of its history. That which it was ever going to be, it has become. Only at the point of its nonbeing does it concord with these laws. Paradoxically, according to these laws of thought, things in the world are thought truthfully or refer with validity only when they are no longer. If, however, an individual, according to Simondon's ontogenetics, is understood as being concurrent to its process of individuation, one must include into any complete notion of "being" preindividuality, since preindividuality pertains to the individual's possible posterior and ulterior phases as well as its participation in other transindividual realities. *Therefore, being is more than its unity, identity, and other than itself.*

Simondon's rejection of the laws of thought raises the question, initially introduced in the introduction: Is it possible to formulate a logic of sense that pertains to things in the world as metastable? I argue that by returning to the work of Heraclitus, and especially his notion of *lógos,* such a logic of sense can be recovered and then reformulated. As Scottish Australian philosopher, John Anderson writes in his *Lectures on Greek Philosophy*:

43 George Boole, *An Investigation on the Laws of Thought* (Cambridge: Cambridge University Press, 2009), 3.

44 Frege, "On *Sinn* and *Bedeutung*," 157.

> If we take logic to deal with the processes of thought or with reasoning valid and invalid on the part of persons, then we should have to admit that Heraclitus and his predecessors were not concerned with logic. But if we realise that logic has to deal with the conditions of existence and that it is only on the basis of such a theory that we can distinguish between sound and unsound reasoning, then we can see that physical objects are also logical objects and that a discussion of their characteristics may well be a logical discussion. [45]

In agreement with Anderson, I will demonstrate in the rest of the article that at the inception of the history of *lógos*, a logic pertaining to the physical objects of sense as metastable was thought. This thought will aid in the transduction of the laws of logomachy.

The Heraclitean *Lógos*:

The *lógos*'s etymological relation to logic has meant that its conventional definition has come to mean something akin to *valid rational thought expressed in words.* Indeed, *lógos* is often translated as each one of these words individually: "validity", "reason", "thought", "expression", and "word." Consequently, the *lógos*'s conceptual history has been reduced to its relation to propositional truth concerning the stability of being. Indeed, it has much to do with Jacques Derrida's notion of logocentrism that the *lógos*'s multifaceted and complex meaning has come to be disregarded. This reduction to something like logical propositional truth can be seen at work in the exergue to *Grammatology*: "*The history of metaphysics* which, despite all the differences, and not only from Plato to Hegel (passing even through Leibniz), out of its apparent limits, from the pre-Socratics to Heidegger, has always assigned to the logos the origin of truth in general."[46]

Derrida's definition of *lógos* as the "truth of truth" or "truth in general" obviates the different uses and conceptualisations of *lógos* that have existed throughout the history of philosophy. This preclusion of different philosophical understandings of *lógos* has meant that the *lógos* in continental thought post-Derrida, as Simon Wortham defines it, has come to mean simply "the desire for an ultimate origin, telos, centre or principle of truth which grounds meaning" and little else.[47] It is by returning to the notion of *lógos* as it is understood by Heraclitus, a figure whom Derrida never rigorously engaged with but who was the first to conceptualise *lógos*, that a different notion of *lógos*, and from this a logic

45 John Anderson, *Lectures on Greek Philosophy* 1928 (Sydney: Sydney University Press, 2008),

46 Jacques Derrida, *De la Grammatologie* (Paris: Minuit, 1967), 1–12.

47 Simon Wortham, *The Derrida Dictionary* (London: Bloomsbury, 2010), 89.

of sense, can be conceived. As I will demonstrate, Heraclitus' *lógos* can be understood as thermodynamic. It points toward logomachy, a logic of sense that considers metastability.

To begin, it must be noted that Heraclitus' varying use of the word *lógos* makes it challenging to discern what it pertains to in the fragments beyond syntactic and semantic ambiguity. Even in fragment DK1, which is often translated as the *lógos* is "forever," *aiei*, the predicate "forever" in Ancient Greek, could quite as quickly pertain to the ignorance of those that pretend to listen to it and not the *lógos* itself.[48] Aristotle, in *Rhetorics*, was the first to point this out. Commentary on this fragment has often chosen one or the other interpretation. Summarising this interpretive contention, Charles H. Kahn writes (citing much of the literature on this topic):

> What Aristotle noticed, in one of his rare comments on another philosopher's style, was that the word *aiei* 'always, forever' in this opening sentence can be construed either with the words that precede ('this *lógos* is forever') or with those that follow ('men always fail to comprehend'). Aristotle offers no opinion on the construction beyond the appropriate remark that such ambiguity makes Heraclitus hard to read (*Rhet.* III.5, 1407bllff., = DK 22.A4). But modern scholars have felt obliged to take sides, either in favor of the former construction (which was long predominant, and has been defended recently by Gigon, Verdenius, Frankel, Guthrie, and West), or in favor of the latter (which was urged by Reinhardt, Snell, Kirk, Marcovich, and Bollack-Wismann, among others). [49]

Instead of choosing a side, Kahn argues that "what this division of opinion shows is that, as Aristotle observed, there is good reason to take the predicate 'eternity' both ways."[50] Challenging interpretations such as Eva Brann's, where the *lógos* is said to "bring everything to unity, to oneness", any simple unity of the *lógos* is undermined by the very meaning of the Heraclitean *lógos* itself. The *lógos* cannot merely be synonymous with substantial unity or metaphysical stability since it pertains to an ambiguous plurality of significations. As Kahn writes, the *lógos* can be said to pertain to "the discourse of Heraclitus, the nature of language itself, the structure of the psyche and the universal principle in accordance with which all things come to pass."[51] The fact that the Heraclitean *lógos* refers to the

48 Charles H. Kahn, *The art and thought Of Heraclitus: An edition of the fragments with translation and commentary* (Cambridge: Cambridge University Press, 1979), 29. I am using Kahn's English translation of the fragments, citing the page in the footnotes. However, as is common practice, I am including the Diels-Kranz fragment number in parentheses. Heraclitus is DK 22. and is followed by either A "Life and Doctrines," B "Fragments," or C "Imitations."

49 Kahn, *Heraclitus*, 93.

50 Kahn, *Heraclitus*, 93.

51 Kahn, *Heraclitus*, 94.

conflictual linguistic structure of the fragments themselves (*lógoi*) also undermines any claim that the Heraclitean *lógos* is comparable to Parmenides' Being or Plotinus' One (both of whom reject language as a means of expressing Being). As Nietzsche points out in his *Philosophy in the Tragic Age of the Greeks*, children playing at building and destroying sandcastles know more about the *lógos* through "play" than philosophers do through "metaphysical thoughts."[52] The *lógos* refers, instead, to a mode of thinking or writing that is neither strictly "rational", "unified", nor "determinedly" truthful (as per the Russell-Frege view) but instead takes the very equivocality and conflictuality of language as the so-called "truth" of its medium. As Blanchot writes, Heraclitus' *lógoi* "does not say *(oute legei)* nor hide *(oute kruptei)* but indicates *(semainei)*". [53] And that which it indicates is conflict.

Since *polemos* and *eris* function as synonyms for *lógos,* the Heraclitean fragments on war (primarily DK.22 B53 and DK.22 B80) determine how the *lógos unifies* through conflictuality. Heraclitus writes, "One must realise [*eídomai*] that war is shared, and Conflict is Justice, and that all things come to pass (and are ordained?) in accordance with conflict [*éris*]" (DK.22 B80).[54] Realising (*eídomai*), the same verb that Plato used for knowing the Forms (*eidoi*), is conditioned by conflict (*éris*). For Heraclitus, unity and conflictuality are concomitant. It is the conflictual relationship between separation and unification that enables a representative understanding of such opposites as death and life (DK.22 B88), youth and age (DK.22 B69), night and day, war and peace, and finally, winter and summer (DK.22 B47).[55]

While it might be possible to determine a Hegelian feature to this thought, Heraclitus's insistence on the primacy of conflict radically distinguishes him from such a recuperation. For Heraclitus, the *lógos* qua war determines the quality of the *lógos* itself. War is not just the reflected moment of the movement of the Concept toward absolute knowledge. To grasp the *lógos*, one must grasp the fundamental conflictuality of nature. As Nietzsche writes, "the one overall Becoming is itself law; *that* it becomes and *how* it becomes is its work."[56] This "how" of the "law" of the *lógos* is the conflictual work that the *lógoi* perform so that sense may appear. The Heraclitean *lógos* is, thus, comparable to the Saussurian claim that "in languages, there are only differences without positive terms."[57] In the *lógos* of Heraclitus, there are no determinate terms before the conflictual difference

52 Nietzsche, *Philosophy in the Tragic Age of the Greeks*, trans. Marianne Cowan (Washington, DC: Eagle Publishing, 1998), 62.

53 Maurice Blanchot, "Préface", in Ramnoux, *l'homme entre les choses et les mots*, xix.

54 Kahn, *Heraclitus*, 67.

55 Kahn, *Heraclitus*, 71.

56 Nietzsche, *The Pre-Platonic Philosophers*, trans. Greg Whitlock (Urbana and Chicago: University of Illinois Press), 63.

57 Ferdinand Saussure, *Cours de linguistique générale* (Paris: Payot, 1971), 166.

that constitute them. Only if Saussure's "structuralism" presents language as a static time-slice, then Heraclitus's flows. Indeed, if the war of opposites is to be taken to mean precisely that—war—then this conflictuality must be understood as subject to the energetic laws of exhaustion and resistance.

Quamity or Howness: The *Lógos* as Thermodynamic System State:

For Clémence Ramnoux, as it is for certain other classics scholars such as Theodoros Christidis, Heraclitean fire (*pyr*), that which is synonymous to the operations of the *lógos*, is understood as being thermodynamic in nature. Werner Heisenberg goes so far as to argue that "If we replace the word fire with *the word energy, we can almost repeat [Heraclitus'] statements word for word from our modern point of view.*"[58] In her book-length study of Heraclitus, *Héraclite ou l'homme entre les choses et les mots*, Ramnoux argues that the long-standing debate in Heraclitean exegesis concerning the *pyros tropai*, the "reversals of fire" (DK.22 B31) can be resolved if *pyr* is understood as adhering to a transformative, energetic law. [59] Explicitly, she argues that the *pyr* is the *lógos* and that, as and thermodynamic logic, it "enounces a principle of conservation," which is to say that it articulates the first law of thermodynamics.[60] She continues, "And we must distinguish what is conserved: 1° A quantum of fire (*pyr*) engaged in the circulation under several metamorphoses … 2° A quantum of each form in circulation and a constant proportion between them."[61] From this, the "quanta of fire" are thus called "quanta of energy" and constitute the manner through which the world is either "warmed-up" or "cooled down".[62] Ramnoux interprets, therefore, DK.22 B30 and DK.22 B 1 with quanta of energy in mind. Thus DK.22 B30, "The ordering, the same for all, no god nor man has made, but it ever was and is and will be fire ever living, kindled in measures and measures going out," [63] becomes the general energetic law of the cosmos itself; and DK.22 B31, "The reversals of fire: first sea; but

58 Werner Heisenberg, *Physics and Philosophy* (London: Penguin, 1989), 51.

59 Lassalle is considered too Hegelian by Ramnoux. As such, he has a visible and invisible notion of fire, which she does not support: "c'était en effet une idée de Lassalle que pyr désignait une forme invisible du feu, tandis que prestèr désignait de la flamme en circulation." Ramnoux, *l'homme entre les choses et les mots*, 78; Kirk's intervention is likewise considered too linear, "Si on choisit le schéma linéaire de G. S. Kirk, on ne distingue plus un Feu-fonds et des vapeurs incandescentes. On ne distingue donc plus un niveau de la circulation et un niveau de la révélation." Clémence Ramnoux, *Héraclite, ou l'homme entre les choses et les mots* (Paris : Société des belles lettres, 1959), 84.

60 Ramnoux, *l'homme entre les choses et les mots*, 78.

61 Ramnoux, *l'homme entre les choses et les mots*, 83.

62 Ramnoux, *l'homme entre les choses et les mots*, 83.

63 Kahn, *Heraclitus*, 45.

of sea half is earth, half lightning storm"[64], becomes understood as the transformative process of quanta of energy/fire changing phase. Although Heraclitus writes that these transformations are reversals (*tropai*), one way of understanding them would be perhaps as transformations of different energy flows. Different *logoi* or *proportions* (*lógos* likewise has this meaning, as Euclid uses it in the *Elements*) of the quanta of energy transform into other phasic qualities of matter/energy by either adding or subtracting heat/energy, thereby metastabilising into different phasic equilibria: solid (earth), liquid (sea), or gas (lighting).

Therefore, the *lógos* in Heraclitus is analogous to what, in thermodynamics, is called a *metastable thermodynamic system state*. Thermodynamic system states describe *how* the system is (in what condition it is in) at any given time, not *what* the system is, since it considers that things depend on a set of energetic variables. For example, ice as a system state of water is not ice for any strict ontological reason but because the relation between pressure, volume, entropy, and internal energy are so that water has metastabilised into such a state and remains as such for a given period. Since the emergence of the phasic state of water is contingent on the relation between different internal state variables (one could even talk of a *différance* between internal state variables), the system that constitutes the object water can only be said to offer meaning or reference concerning itself if certain energetic conditions remain metastable. Indeed, water as a chemical compound is likewise only a metastable state of the system, hydrogen and oxygen. And one could follow this logic down to the elemental particles themselves. This is why the ontological question "what is it" for things in the world, objects of sense, should be replaced with the transcendental question "how is it": how is it that such and such emerges and remains as such? In this case, *sameness*, the criteria by which judgment across a set of particulars is made possible, is not dependent on a quiddity or an essence, but something that could be termed a *quamity*, a howness—how something is (in what condition it is in) during a given period. Following this logic, the *lógos* qua sense is an emergent property whose sense-making is contingent on the metastability of an object's system state (phasic or otherwise). This analogy between the Heraclitean *lógos* and metastable system states is at work in several key Heraclitean fragments, particularly DK.22 B125, the *kykeôn* fragment and (DK.22 B12 and DK.22 B91), the river fragments.

64 Kahn, *Heraclitus*, 47.

Sameness and Minimal and Maximal Difference: The *kykeôn* and the River Fragments:

In his early seminar on Heraclitus' *lógos*, Heidegger explains how the etymological origin of *légein*, the ancient Greek verb that *lógos* stems from, signifies both a "laying out" and a "gathering."[65] In other words, internal to the *lógos* itself are two contradictory movements, one that gathers and unifies and another that scatters and dissipates. One of the ways that Heraclitus expresses such a contradiction in movement is by claiming that the *lógos* does not rest on stable ground, that it "rests by changing" (DK.22 B84a).[66] Ontologically, being can be conditioned by becoming. Logically, sameness can be conditioned by difference.

This tension inherent to the *lógos* is in the well-known fragment that discusses the substantial nature of the Greek drink *kykeôn*, a Greek beverage made of a mixture of barley, cheese, and wine. Often translated as "Even the [*kykeôn*] separates unless it is stirred" (*καὶ ὁ κυκεὼν διίσταται <μὴ> κινούμενος*),[67] the fragment is concerned with how motion is the condition, in a seemingly contradictory manner, of the unity of the drink. That is, as N. van der Ben writes, translating *kykeôn* as posset: "'the posset stops when it moves': when the circular motion has taken full hold of it, the posset 'stops' changing in any further way, having arrived at its final state qua posset."[68] Negatively, without movement, the *kykeôn* could not be what it is. That is, the state in which it is said to be the compound *kykeôn* and not the separate parts barley, cheese, and wine emerges from *how* it is stirred. Thermodynamically, to metastabilise the *kykeôn,* which means to stop the drink from separating so that it remains in a phasic metastable liquid thermodynamic system state, one needs consistently to supply free energy to the system by stirring it. Without the action of agitation, the drink would no longer constitute unity. The movement or energetic work of agitation permits the unity of the drink to endure. The *kykeôn* rests by changing; its being is maintained through becoming. The *kykeôn* hence functions as an example of how objects in the world are metastable and how a logic of sense that allows for judgement can be transduced therefrom. This is to say, the capacity to judge the *kykeôn* as an object of sense—to be able to think, say or write something akin to "that is *kykeôn*" with validity—the quamity of the *kykeôn* has to be such that its system state is in a metastable state of *sameness*. Objective judgements pertaining to objects of sense are possible only when they remain the *same* as themselves.

65 Heidegger, "Lógos", in *Early Greek Thinking*, trans. David Farrell Krell and Frank A. Capuzzi (San Francisco: Harper, 1985), 76.

66 Kahn, *Heraclitus*, 53.

67 Kahn, *Heraclitus*, 65.

68 N. van der Ben, "Theophrastus, De Vertigine, Ch. 9, and Heraclitus Fr. 125," *The American Journal of Philology* 109, no. 3 (Autumn, 1988): 401.

This logic of metastable sameness is also at work in the well-known Heraclitean fragments concerning the river (DK.22 B12 and DK.22 B91). As Cleanthes, the 3rd Century Greek Stoic quotes Heraclitus as saying: "As they step into the same rivers, other and still other waters [*hetera kai hetera hydata*] flow upon them" (DK.22 B12).[69] The metastable "sameness" (*autoisin*) of the river as an object of sense remains the same by being continually replenished with different waters (*hetera hydata*). As they flow into the river, the waters push against the banks, and the banks hold the water in. This mutual modulation between the water and the bank constitutes the form of the river. Simondon would write that this modulation is the process of individuation from whence the individual emerges *a presentae*. There is, therefore, a play between "*autos*" and "*hetera*", "sameness", and "difference." The river, like the *kykeôn*, rests (it remains the same river) by changing waters. The work of the source's flow in conjunction with the banks of the river, like the stirring of the *kykeôn*, maintains the metastability of the river's sameness. Suppose the river's source were to stop flowing or the banks were to give in under the pressure of an increase in flow; the metastability of the river would enter a state of instability and bifurcate. A different, new river might even be formed. The waters that feed the river must, therefore, remain *minimally different* from each other so that the quamity of the river, its system state, remains the same. As with the case of the formation of a new river, *maximal differences* are, therefore, the condition of bifurcation.

The notion of sameness used here must be distinct from identity.[70] Identity refers to a metaphysical claim that contains no "degree" of difference and can only be logically "true" outside of space and time.[71] Unlike the Frege-Russell view cited above, I claim that it would be wrong to refer to a thing in the world as *identical* to itself, it is possible to refer to a thing in the world as being the *same*. Sameness is, therefore, contingent not on any logical or ontological identity but on minimal internal energetic differences such that the quamity (how it is) of the object of sense remains metastable. The morning star is not identical to the evening star, they are not *referentially* identical; but Venus's quamity has remained in a minimally different state for thousands of years. Its orbit has not maximally deviated, nor has its volume or surface temperature. The morning star and the evening star are thus the same. Sameness contains differing amounts of difference. While this may appear similar to Deleuze's claims in *Différence et répétition,* the difference between identity

69 Kahn, *Heraclitus*, 53.

70 This is far from being the case for all philosophers. See: Harold Noonan and Ben Curtis, 'Identity', The Stanford Encyclopedia of Philosophy (Summer 2018 Edition), URL = <https://plato.stanford.edu/archives/sum2018/entries/identity/>. '"Identity" and "sameness" mean the same; their meanings are identical.'

71 Walter Benjamin points this out in a fragment from 1916, "Theses on the Problem of Identity" in *Selected Writings Vol. 1: 1913-1926*, eds. Marcus Bullock and Michael W. Jennings (London: Harvard University Press, 2004), 76.

and sameness and the thermodynamic logic behind it complicates Deleuze's argument that "the Same" (*le Meme*) is a quality of identity.[72] Identity can have no corresponding concepts since anything that deviates from it as identical admits difference, this is an old problem, one that is discussed at length in Plato's Parmenides. As with the case of the river, it continually flows with "different" waters and thus cannot be understood as identical to itself. Yet it may still be understood as the "same". Heraclitus' choice of the dative *aûtoisin* over *homóisin* reflects the difference between identity and sameness since *homós* relates to *ousía*, containing within it no "otherness" or difference. By contrast, the *aû* in *autos,* meaning "back again" but also "other," describes the metastability of sameness through the "recursive" maintenance of minimal differences, as Yuk Hui might write.[73] However, because the quamity of a system state depends on the supply of free energy into the system and because the supply of free energy is entropically finite, no system can recursively maintain its sameness infinitely. Therefore, the inevitable collapse of any system is an inherent property of metastable sameness itself.

The *lógos* must not, therefore, be understood in terms of substantiality or as "the self-presence of full self-consciousness" or even the "truth of truth," as Derrida argues. The *lógos* emerges as a system state contingent on the degree of energetic difference inherent to the object of sense. Because all system states are entropically finite, *logoi* are likewise finite.

Conclusion: The Three Laws of Logomachy:

Above, the question was asked: Is it possible to formulate a logic of sense that pertains to things in the world as metastable? By investigating the logical and temporal structure of metastability in conjunction with Simondon's rejection of the three laws of thought and Heraclitus's *lógos* as it pertains to the metastability of objects and the emergence of sense as a system state, an answer to this question has been transduced in the form of the three laws of logomachy:

(1) *The law of metastable sameness*: "However something is, is because its *sameness* (being) is metastable."

(2) The law of metastable contradiction: "metastability maintains *sameness* while concomitantly conditioning the possibility of *bifurcation* (becoming) and the necessity of *collapse* (nonbeing)."

72 Giles Deleuze, "L'image de la pensée," in *Différence et répétition* (Paris: PUF, 2015), 174.

73 Yuk Hui, *Recursivity and Contingency* (Rowman & Littlefield Publishers, 2019).

> (3) *The law of minimal and maximal difference*: "Nothing is identical to itself; there are only minimal (sameness) and maximal energetic differences (difference)."

These laws are logical in that they facilitate valid judgment and are ontological in that they express how things are in the world. For example, if one were to make the judgment (what Kant would call a determinate and empirical judgment) "that something *is* something" (propositional logic), the validity of that judgment, in so far as a proposition can be made about something in the world, is dependent on that object being in a metastable state of *sameness*. In other words, in the propositional statement, "That is a table", the table cannot be on fire, it cannot be reduced to ash, nor can it be chopped up and used to make a chair since all of these changes would constitute *maximal differences*: "That is a table" would no longer be valid. Furthermore, it is inevitable that through wear and tear, a table's *sameness* is likely to alter (it no longer has a functioning draw, for example) and that maintenance becomes necessary. However, maintenance understood here as replacing a part with another part (the draw), gives way to *metastable contradiction*. In other words, the table is bifurcated by being maintained as the same. Therefore, one might say, "This is no longer the same table." Lastly, there will be a time when the table can no longer be maintained, or it's not chosen to be repaired, and the acceleration of collapse will take hold. Here the proposition becomes its negation: That is not a table" or "There is no table."

Written in natural language, these laws may now function as the guiding principles for further examination into other systems of sense, such as perception, memory, recognition, and signification, the other metastable systems of logomachy. These other metastable systems, systems that together allow for the emergence of sense, play their part in the practical application of logomachy, logomachics. Logomachics will offer philosophical semantics the tools necessary for analysing how, why, and through what means sense is maintained, manipulated, and falls to ruin.

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TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

Confronting the Technical Aporia: Heidegger's and Stiegler's Technics-thinking

Franziska Aigner

Abstract:
Martin Heidegger and Bernard Stiegler have both famously argued that philosophy has hitherto been incapable of seeing, recognizing, or remembering technics. Both thinkers confronted this technical aporia by putting forward their own thought on technics, arguing to find themselves in a historically singular position from which technical thought proper can, for the first time, be questioned and invented. This article shows how both Heidegger's and Stiegler's conceptual projects are supported by a two-fold reading of the history of philosophy as at once devoid of technical thought proper, while at the same time harbouring, but only ever implicitly, the resources for thinking and remembering said technics. Their readings of the work of Immanuel Kant will be shown to be exemplary in this regard. This article ultimately concludes that, as a result of both Heidegger's and Stiegler's particular self-positioning within the history of technical thought, neither of them could recognize the technical thought proper within that history that they were at the same time so urgently looking for. Only in this way can the radical oversight regarding, for instance, Kant's explicit writings on technics proper make sense.

Keywords:
technics, Martin Heidegger, Bernard Stiegler, history of technical thought, Immanuel Kant

1. Introduction

The twentieth century was witness to an outburst of continental thought on technics and technology. Among a whole array of perspectives, Martin Heidegger and Bernard Stiegler surely stand out as two of the most lucid and fruitful contributions. In their respective works, Heidegger and Stiegler have both famously argued that philosophy has hitherto been incapable of seeing, recognizing, or remembering technics. Both thinkers confronted this technical aporia by putting forward their own thought on technics[1]. While Heidegger took the route of questioning, arguing that the right question concerning technics has not

1 I will employ the terms technical thought, technics-thinking as well as thinking of technics throughout this article, drawing on the German notion of *Technikdenken,* in order to highlight both Heidegger and Stiegler's essentially post-metaphysical "recovery" of technics within twentieth century European philosophy.

ISSN 2773-0875

yet been asked, Stiegler aimed to confront said technical aporia, which he considers to be the consequence of the repression of technics by philosophy, by way of remembering, that is, inventing technical thought anew.

The following article, containing a critical reading of Heidegger's and Stiegler's respective technical thinking, will show that and how their conceptual projects on technics are essentially supported and warranted by their readings of the history of philosophy, the role of which this article will argue to be two-fold. While on the one hand, and up until their own respective interventions, the history of philosophy is read by both Heidegger and Stiegler as the history of philosophy's confusion, forgetting, repression and thus ultimately aporia of technics, that same history of philosophy harbours, but only ever implicitly, the resources for thinking and remembering technics. Only by way of this double articulation, do Heidegger's and Stiegler's own, explicit projects on technics become possible. This article will trace this two-fold articulation of the history of philosophy and problematize the relegation of the history of philosophy to a merely implicit resource for the future of technical thought.

In the following pages, the double-articulation of the history of philosophy by Heidegger and Stiegler will be inquired into in two parts. The first part will introduce Heidegger's explicit technical thought in his *On the Question Concerning Technology*, before reconstructing the outlines of Heidegger's account of the history of technical thought up until his own intervention. By way of Heidegger's critique of Ernst Jünger, special attention will be paid to Heidegger's characterization of his own historical time, both concerning its nature as well as what can and needs to be done in the historical present. In a final moment, the first part of this article will then turn to Heidegger's reading of German enlightenment thinker Immanuel Kant as the example *par excellence* of the double-role played by the history of philosophy in Heidegger's engagement with technics. By reading Heidegger's *The Question Concerning Technology* with and through *The Question Concerning the Thing* this article will show that and how, according to Heidegger, it was in fact Kant, who first articulated the essence of modern technics as "enframing" (Gestell) under the name of his "Transcendental Analytic". At the same time, however, this article will show that despite the crucial role given to Kant by Heidegger in the move from modern metaphysics to technics, Kant is ultimately portrayed as merely "suffering" from, in the sense of being determined by, enframing, rather than thinking it. This article thus argues that Heidegger transforms Kant into a symptom, possibly the symptom of modern technics, thereby mirroring his problematization and critique of Ernst Jünger. Only by way of this symptomatic reading of Kant can Heidegger hold on to his claim to be in the historically singular position from which technical thought proper can, for the first time, be inquired into.
The second part of this article will complement the preceding account of Heidegger's

technical thought by way of a critical reading of Bernard Stiegler's *Technics and Time* series. While Heidegger argued that the right question concerning technics has not yet been asked, Stiegler engages philosophy's technical aporia from a different angle, essentially arguing that the history of philosophy is nothing but the history of the repression of technics by philosophy. Following a first reading of Stiegler's concept of technics in *Technics and Time 1*, including his critique of Heidegger who he argues to have himself "forgotten" about technics, this article will then move on to trace Stiegler's account of the history of philosophy as well as the periodization categories employed in *Technics and Time 3*. Immanuel Kant will once again function as the example par excellence for the role of the history of philosophy in Stiegler's argumentation. This article will show how Stiegler argues that Kant was incapable of seeing the essentially technical constitution of consciousness, referring at once to the consciousness of Kant the writer himself, as well as Kant's elaboration of consciousness undertaken in the *Critique of Pure Reason*. However, while on the one hand *Technics and Time 3* subsumes Kant's transcendental philosophy as part of philosophy's age-long repression of technics, this article will show that the structural role of Stiegler's engagement with Kant for the entire *Technics and Time* series is nothing but astonishing. Not only did Stiegler's engagement with Kant produce a restructuring and overall rethinking of the entire *Technics and Time* series, but Stiegler's reading of Kant was then positioned as nothing less than the introduction to it. This article will show how Kant is once again said to have "suffered" from philosophy's repression of the technical constitution of its own consciousness rather than thinking it, while at the same time preparing nothing less than the ground for Stiegler's own intervention. In both Heidegger and Stiegler, Kant is thus discussed as essentially incapable of seeing, understanding, let alone thinking technics, while at the same time articulating nothing less than modern technics for both these thinkers, but only ever implicitly.

This article thus aims to show how, despite the differences in each thinker's respective articulation of philosophy's technical aporia, Heidegger and Stiegler share the common claim that up until their intervention, there has only ever been an implicit or repressed technical thought. Following this claim as well as their respective self-positioning within this history of technical thought, each thinker thus claims to be in a historically singular position from which technical thought proper can, for the first time, be developed, questioned, problematized, exhumed and invented. The aim of this article is to problematize both Heidegger's and Stiegler's account of the history of technical thought, showing how exactly due to their respective self-positioning within the history of technical thought, neither of them could, in a somewhat tragic turn of events, see the explicit technical thought within the history of philosophy that they were at the same time so urgently looking for. Only in this way can the oversight of Kant's own explicit writings on technics make sense. This article works through both Heidegger and Stiegler's reading of Kant because, such is my underlying argument, he lucidly exemplifies both their relationships

to the history of philosophy. By returning to and problematizing Heidegger and Stiegler's accounts of the histories of technical thought that underlie and ultimately make possible their respective conceptual projects on technics, this article calls for an inquiry into "minor" histories of technical thought and the future of conceptual projects on technics that these histories make possible.

2. Martin Heidegger and the question of technics

In the 1954 seminal essay, entitled *The Question Concerning Technology* (*Die Frage nach der Technik*),[2] Martin Heidegger famously characterised modern technics as what "sets upon man, i.e., challenges him forth, to reveal the real, in the mode of ordering, as a standing reserve. Enframing means that way of revealing which holds sway in the essence of modern [technics] and which is itself nothing [technical]."[3] With these famous words, Heidegger articulated the threat posed by modern technics. This threat is said to be the consequence of the curiously un-technical essence of technics, already indicating that this will not be a discourse on machines and tools: for Heidegger, if one remains within a so-called "technical" discourse on technics, primarily concerned with the concrete technical object, "we remain unfree and chained to [technics], whether we passionately affirm or deny it."[4] In order to bring forth the sought-after free relation to technics, Heidegger argues it instead to be necessary to shift the discussion from the concrete technical object in its relation to the human to that of the essence of technics in its relation to *Dasein*.

What is at stake in Heidegger's approach is ultimately not a rejection of technics. In his posthumously published notes on technics, entitled *Techne und Technik*, he explains that his "thinking is not *against* technics […] but against the superficiality and naivety [*Ahnungslosigkeit*] with which we consider technics."[5] His point is, then, that despite the fact that technics is everywhere and in everyone's mouths and minds, it is subject to the

2 Martin Heidegger, *The Question Concerning Technology,* trans. William Lovitt (New York & London: Garland Publishing, 1977). This essay is derived from material that Heidegger first presented at his 1949 Bremen lecture entitled *Das Gestell*. The title is usually translated as *The Question Concerning Technology*, but in order to uphold the conceptual distinction between the German terms *Technik* and *Technologie*, which was fully in place at the time of Heidegger's essay, I will henceforth translate the German term *Technik* with the English neologism *technics*, which is also employed in the English translations of Bernard Stiegler's works.

3 Martin Heidegger, *The Question Concerning Technology,* 20.

4 Martin Heidegger, *The Question Concerning Technology,* 4.

5 Martin Heidegger, "Vorstudien zum Technik-Vortrag," in *GA Band 76,* (Frankfurt aM.: Vittorio Klostermann, 2009), 347. My translation from hereon. In Heidegger, *GA Band 76*, 373, Heidegger further writes: "Die Technik ablehnen? Ist um nichts weniger töricht als die Sonne ablehnen. Was soll diese Ablehnung? – eine Selbsttäuschung!"

general thoughtlessness that he diagnoses in the historical moment at large. And thus, the right question concerning technics has not yet been asked. "The question concerning technics. The tone lies on the *question*. It is necessary to develop it above all. To endure the question. The question is more pressing than technics itself."[6] Differentiating between the right and the true, in the sense that the right makes accurate observations without, however, revealing inner truth, Heidegger consequently aims to inquire in and through what is right in order to arrive at the truth of technics.[7] To this end, Heidegger works through two common approaches to technics, the instrumental and the anthropological approach. According to both approaches, technics is a means (an instrument) for the human to bring about an end, and thus an essentially anthropological characteristic.

From *Techne* to Technics

Heidegger begins his discussion of the anthropological and instrumental discourses on technics in reference to the ancient Greek Aristotelian distinction between *techne* and nature (*physis*), taking place within an ontological discussion of technical bringing forth (*poiesis*) on the one hand, as well as in contradistinction to the systematic and unchanging Greek notion of science (*episteme*), its epistemological counterpart. What is famously at stake in both these determinations according to Heidegger, is revealing (*entbergen*, *aletheia*).[8] In his post-humously published notes *Techne und Technik,*[9] the ancient Greek notion of *techne* is at the same time differentiated from modern technics by way of the machine (*die Kraftmaschine*). No longer characterized as "the imitation of handicraft and the natural process,"[10] the machine has a "motoric character which is essentially related to the generation of energy,"[11] meaning that it generates *Kraft* and thus energy rather than force, since the modern machine is thermodynamic in character. While the above section from *Techne und Technik* was already drafted around the year 1940, the same argument will be employed later in *The Question Concerning Technology*.[12] Modern technics is here primarily characterized as a demand directed at nature "to supply energy that can be extracted and stored as such."[13] In this essential demand of generating and storing energy, modern technics is fundamentally distinguished from its pre-modern predecessor by the

6 Heidegger, *GA Band 76,* 358.

7 Heidegger, *The Question Concerning Technology*, 6.

8 Heidegger, *The Question Concerning Technology*, 13-14.

9 Heidegger, *GA Band 76,* 401. The cover of the first Fascicle containing the manuscript is entitled *Technik 1940*.

10 Heidegger, *GA Band 76,* 309.

11 Heidegger, *GA Band 76,* 308.

12 The essay *The Question Concerning Technology* is derived from material that Heidegger first presented at his 1949 Bremen lecture under the name *Das Gestell* before being published in 1954.

13 Heidegger, *The Question Concerning Technology*, 14.

thermodynamic revolution. At the same time, however, Heidegger claims that modern technics retains its function of revealing, nonetheless. But rather than revealing as a mode of bringing forth, modern technics reveals as a mode of challenging (*herausfordern*).[14]

Modern technics remains a mode of revealing because it challenges the real to reveal itself as what Heidegger calls a standing reserve (*Bestand*). What this means is that through modern technics the real no longer comes into view as an object (*Gegenstand*), but instead as what he famously calls a standing reserve (*Bestand*). The modern world, Heidegger claims, can only come into view by being put in reserve, subjected to acts of "unlocking, transforming, storing, distributing and switching."[15] As a standing reserve, the real no longer stands against us the same way that an object (*Gegenstand*) does, but instead has been "ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering."[16] The name standing reserve "designates nothing less than the way in which everything presences that is wrought upon by the challenging revealing."[17] The mode of existence of that which has been challenged and revealed by modern technics is subsequently no longer objective, but a standing reserve.

Heidegger's posthumously published collection of notes on technics includes the following remarkable passage on the essence of technics in its relation to the human: "The essence of technics is nothing human, but technics belongs to the human because the human belongs to the essence of technics. Depending on the essential form [*Wesensgestalt*] of technics, the affiliation of the human to the essence of technics is different and, accordingly, the nature of his technical acts [*technischen Tuns*] is different."[18] While the essence of technics is here explicitly said to be neither technical nor human, the human is at the same time said to "belong" to the essence of technics in different, that is, changing, ways. Heidegger's point here is that there is no un-mediated relation between "the human" and technics.[19] This very point was also made by Ernst Jünger in his 1932 essay *The Worker* (*Der Arbeiter*), who claimed that "man is bound up with [technics] not directly, but indirectly."[20] For Jünger, the relation between the human and modern technics is mediated by a metaphysical figure (*Gestalt*), which he named the worker, and technics is the mode in which this figure of the

14 Heidegger, *The Question Concerning Technology*, 14.
15 Heidegger, *The Question Concerning Technology*, 16.
16 Heidegger, *The Question Concerning Technology*, 17.
17 Heidegger, *The Question Concerning Technology*, 17.
18 Heidegger, *GA Band 76,* 339.
19 Heidegger, *GA Band 90. Zu Ernst Jünger* (Frankfurt a.M.: Vittorio Klostermann, 2004), 287. My translations from hereon.
20 Ernst Jünger, *The Worker*, trans. Bogdan Costea, Laurence Hemming (Evanston: Northwestern University Press, 2017), 97.

worker mobilizes the world.[21] Heidegger engaged with Jünger's writing throughout his life, and was particularly fond of *The Worker.* "Band 90" of the *Heidegger Gesamtausgabe* contains the posthumously published comprehensive collection of Heidegger's notes on Jünger, where we find an important passage from 1954, the same year that *The Question Concerning Technology* was published. Here, Jünger's claim about the mediated relation between the human and technics is explicitly discussed in contradistinction to a conference paper written by the quantum physicist Werner Heisenberg, who claimed that "the proposition that man faces only itself is valid in a much broader sense in the age of technics."[22] Responding to Heisenberg, Heidegger asks "who is this man [*Mensch*] – that meets himself," and a few lines further down he continues by asking *"man*, whether such a thing is possible at all? And *if* thought possible – if not in this opinion the greatest delusion."[23] *On the Question Concerning Technology* explicitly references the same sentence from Heisenberg, but here Heidegger omits any explicit reference to Jünger. Heidegger now writes that when called upon by enframing to reveal the real as a standing reserve, the human is itself threatened with disappearing into the standing reserve. And once faced with this threat, "man, precisely as the one so threatened, exalts himself to the posture of lord of the earth. In this way the impression comes to prevail that everything man encounters exists only insofar as it is his construct. This illusion gives rise in turn to one final delusion: It seems as though man everywhere and always encounters only himself."[24] Heidegger's point here is very much in line with Jünger, meaning that it only appears as if modern technics has made the world into the mirror-image of man, while in fact, man is called upon by enframing in a specific way, which Jünger called the figure of the worker and which Heidegger can here be seen to call the figure of the lord of this earth (*Gestalt des Herrn der Erde*). Being mediated in its relation to the world by such a figure means that the human can no longer reflect itself anywhere in its inner being. Consequently, the human is essentially endangered by modern technics in its truthful relation both to itself as Dasein as well as to everything else that exists.

Heidegger, Jünger, the Nature of the Historical Present and What is to Be Done

Band 90 of the *Heidegger Gesamtausgabe* shows that Heidegger engaged with Ernst Jünger's writing from as early as 1932, and continued to do so until the end of his life.[25] With both

21 Ernst Jünger, "Der Arbeiter" in *Sämtliche Werke, Zweite Abteilung Essays II* (Stuttgart: Klett-Cotta, 1981), 77. My translations from hereon.

22 Werner Heisenberg, "Das Naturbild der heutigen Physik" In *Die Künste im technischen Zeitalter*. (München: R. Oldenburg, 1954), 42. My translation

23 Heidegger, *GA Band 90,* 297.

24 Heidegger, *The Question Concerning Technology*, 27.

25 Heidegger, *GA Band 90.*

thinkers living through the far reaching technological change imparted on the world by the industrialized warfare of the First and Second World Wars, including nuclear warfare, the emergence of Fordism and the production line, Heidegger admired Jünger, who fought as a soldier during the abysmal First World War and experienced its large-scale technological developments on the front line. For Heidegger, Jünger essentially experienced his life through the fundamental insight that was first carved out by Nietzsche's metaphysics.[26] Jünger, he writes, "gained a foothold in the actuality [*Wirklichkeit*] that Nietzsche has suffered in thought."[27]

Furthermore, however, Heidegger does not see in Jünger only a soldier who lived and suffered the material reality of what Nietzsche had anticipated in thought, but also someone who then, in a second step, was able to find "the strength and determination of reflection and of the word."[28] For Heidegger, Jünger is thus at once a highly decorated soldier during the *Materialschlacht* (battle of materiel) that was the First World War and a literary genius who was able to give word to "the historical ground of the essence of the completed era of the modern age [*Neuzeit*]"[29] Jünger's writing, and in particular his essay *The Worker* (*Der Arbeiter*), is read by Heidegger as the key to reflecting on the historical present in its most inner truth. It is by way of the encounter between Heidegger and Jünger, that Heidegger's account of both the history of technical thought as well as Heidegger's account of the nature of the historical present, in which both Jünger and Heidegger lived and wrote, will unfold in the following. Since how is one to understand Heidegger's claim that Jünger articulated the "completed epoch" of modernity, when Jünger himself explicitly aimed to bring a new reality into view, which Jünger believed to have just begun, and which he discussed under the name of the worker, total mobilization, and will to power?

Despite the explicit aim and content of Jünger's *The Worker,* Heidegger claims that Jünger did not articulate the beginning of anything new, but that his contribution was rather the astute and lucid articulation of the completion of the modern epoch.[30] For Heidegger understood his time to be the fulfilment of a process that had long been underway and that is now, finally, coming to a close under the name of modern technics. Thus, while for Jünger his time was the beginning of a new millennium and epoch, Heidegger believes Jünger's *Worker* to have articulated the conclusion and end of the modern epoch. At the heart of Heidegger's reading of Jünger thus lies an underlying disagreement with Jünger's

26 Heidegger, *GA Band 90,* 217. Also see p.218: "Jünger did not only carry the book entitled *Nietzsche, The Will to Power* in his knapsack - but he was affected by the fire and blood, by death and work, by the silence and thunder of the battle of materiel *as appearances of the will to power.*"

27 Heidegger, *GA Band 90,* 214.

28 Heidegger, *GA Band 90,* 218.

29 Heidegger, *GA Band 90,* 37.

30 Heidegger, *GA Band 90,* 37.

interpretation of the historical nature of their time.

Further to this point stand the two authors' respective methodologies and the resulting self-reflexive conclusions regarding their own function and vocation within the historical present. There are, Heidegger claims, two possible relations to Nietzsche. One can either take root and settle in the reality (*Wirklichkeit*) as will to power that was first revealed to us by Nietzsche. Or one can try and overcome this reality.[31] According to Heidegger, Jünger's contribution was precisely to take root within the space first carved out by Nietzsche.[32] From within that space, Jünger begins to describe what he sees and experiences, and this he is said to do in the clearest and most precise of ways. That same astute use of observation and description which is admired on the one hand, is however on the other hand also the focus of Heidegger's point of critique. Description, Heidegger argues, "inscribes ourselves into what belongs to this real [*diesem Wirklichem*]."[33] The problem that ensues for Heidegger is that Jünger himself takes on the character of that very reality which he is trying to describe. Subsequently, his thinking is said to become calculation (*Rechnen*)[34] and a "calculating opinion [*rechnendes Meinen*],"[35] until finally, Heidegger argues that Jünger's thinking itself gains the "character of work [Arbeitscharacter]."[36] Heidegger's diagnosis of Jünger's thought as work, calculation and in the last instance technical/instrumental reason, leads him to formulate the following conclusion. While on the one hand, Heidegger charges Jünger with first giving word to the "the historical ground of the essence of the completed era of the modern age,"[37] he is at the same time critiqued and characterized as suffering from the essence of modern technics, that is, enframing, whereby Jünger's work itself must be read as a symptom, rather than self-reflexive account of, modern technics. Jünger is said to "carry out […] the lead [*Hinführung*] to the real [*das Wirkliche*] of the will to power and is ruthlessly serious about this real."[38] Moreover, Heidegger charges Jünger with being guilty of having brought about "the utmost culmination and unrestrained expansion and unleashing of what we have to recognize as the reality of the 'modern age' [N*euzeit*], which has already lasted for 300 years."[39] In so perfectly and precisely describing the reality he finds himself in, Heidegger argues that Jünger ends up affirming, furthering, and unleashing the very reality he initially set out to critique.

31 Heidegger, *GA Band 90,* 214.
32 Heidegger, *GA Band 90*, 215.
33 Heidegger, *GA Band 90,* 255.
34 Heidegger, *GA Band 90,* 265.
35 Heidegger, *GA Band 90,* 265.
36 Heidegger, *GA Band 90,* 227.
37 Heidegger, GA Band 90, 37.
38 Heidegger, *GA Band 90,* 213.
39 Heidegger, *GA Band 90,* 258-9.

What becomes clear at this point, then, is that Heidegger's ruthless critique of Jünger allows for insight into Heidegger's account of the historical present, as well as his own vocation within that present. The question of what can and needs to be done as well as in what way is pressing for Heidegger, who understands his time to be that of a transition (*Übergang*). On the one side of this transition, he places metaphysics, which is completing itself. On the other side of the transition, he places a "new time", which, however, has not yet begun.[40] Our vocation, he then writes, is to bear witness to this transition. Heidegger's characterization of his time as transitory in nature illuminates why *The Question Concerning Technology* self-reflexively understood itself as merely preparing (*vorbereiten*) a new, and ultimately free, relation between technics in its essence and *Dasein*. In contradistinction to Jünger, Heidegger's methodology aims to prepare, rather than describe a different time through the act of questioning. "If we are able to inquire into the essence of technology properly, the questioning changes into the discussing saying [*das erörternde Sagen*], the thinking changes. We no longer move in the representation of objects [...]. We are on the way - where to? Such thinking is no longer enframeable [*stellbar*] in and through enframing [...]."[41] Heidegger's proposition is thus, that asking about the essence of technics sends us on a journey towards a different kind of thinking which, differently to Jünger's methodology, is precisely not enframeable (*stellbar*) and who's endpoint cannot be predetermined from where we currently find ourselves. What is clear, then, is that the path that Heidegger aims to embark on could not stand in starker relief to Jünger's descriptive, laborious method, which is said to have not only greatly misinterpreted the temporal nature of the historical present, but further, in this misinterpretation, ended up affirming and unleashing the very reality he set out to critique.[42]

Heidegger's History of Technical Thought: From Metaphysics to Technics

Despite Heidegger's ruthless critique of Jünger's method and self-reflexive position within the movement of history, Heidegger nevertheless grants Jünger an important position within his account of the history of technical thought. Concerning Heidegger's account of the history of technical thought, including his periodization claims, it is important to keep in mind that he differentiates between the chronologically right and the historally (*geschichtlich*) true.[43] What this means is that when considered chronologically, the emergence of modern technics post-dates the emergence of modern natural science,

40 Heidegger, *GA Band 90,* 282.

41 Heidegger, *GA Band 76,* 339.

42 In his later book *An der Zeitmauer*, Jünger returns to and develops the themes of the worker further, as he becomes more critical of the age of the worker and moves closer to Heidegger's position. See Jünger*, An der Zeitmauer* (Stuttgart: Klett-Cotta, 2013).

43 Heidegger, *The Question Concerning Technology*, 21.

because modern technics is dependent on the exact natural sciences for its functioning.[44] Subsequently, modern technics emerged two centuries after the advent of modern science, with the invention of the modern machine (*Kraftmaschine*), and thus around the year 1750. This chronological history of the emergence of modern science followed by modern technics is most certainly right. There is plenty of material evidence in the form of concrete technical objects to support it. But is it also true?

Heidegger's critique of the chronological periodization of the advent of modern technics hinges, once again, on the difference and overlap between the concrete technical object and the essence of technics. While the modern machine, meaning the concrete modern technical object, most certainly matters, it is necessary to keep in mind that it is ultimately the phenomenal manifestation of the essence of modern technics. And this very essence, Heidegger claims, already "holds sway" in physics. "Modern physics is the herald of Enframing, a herald whose origin is still unknown."[45] The essence of modern technics is thus, according to Heidegger, already "active," so to speak, in the modern exact sciences, which emerged during the seventeenth century, before coming into the open with the modern machine. What this means, then, is that what chronologically appears as later (that is, modern technics), in truth and when considered in terms of its inner essence, predates modern science.[46] Heidegger thus claims that the essence of modern technics first emerged during the seventeenth century with modern physics, after which, two centuries later, the concrete technical object emerged, by way of modern natural science, in the form of the modern machine.

In his posthumously published notes on technics, Heidegger further qualifies the relation between modern technics and modern science. They are both said to derive from the same metaphysical root (*dieselbe metaphysische Wurzel*).[47] At the same time, there is an asymmetry between metaphysics' two descendants, since modern technics does not only derive from metaphysics, but is furthermore "the actual completion of 'metaphysics'."[48] In its last stage, metaphysics is here famously said to determine itself as technics.[49] Subsequently, and when considered from the historial rather than the chronological point of view, the question concerning technics turns out to be nothing but the question concerning metaphysics. What this means for our purpose here, then, is that our inquiry into Heidegger's account of the history of technical thought demands nothing less than

44 Heidegger, *The Question Concerning Technology*, 21.
45 Heidegger, *The Question Concerning Technology*, 22.
46 Heidegger, *The Question Concerning Technology*, 23
47 Heidegger, *GA Band 76*, 299
48 Heidegger, *GA Band 76,* 294.
49 Heidegger, *GA Band 76,* 285.

an inquiry into the history of metaphysics, since in its final stage metaphysics becomes technics.

However, working with a category as broad as metaphysics goes beyond the limits of this present discussion. The following discussion will subsequently employ a more restricted notion of metaphysics, namely that of modern metaphysics and with it, philosophical modernity. In his notes on Jünger, Heidegger writes that philosophical modernity was "opened" with Machiavelli's 1532 *Il Principe,* while the closing figure is none other than Jünger's *The Worker*.[50] In between the prince and the worker, Heidegger positions Descartes and Newton. Descartes, because Heidegger agrees that Descartes performed the "foundation of modern mankind [*Grundlegung des neuzeitlichen Menschentums*]"[51] and modern thought with his *Discourse on the Method*,[52] the essential feature of which *The Question Concerning the Thing* characterizes as "the mathematical" (*mathemata*).[53] While the first effects of the mathematical are said to have arisen during the late scholasticism of the fifteenth century, and thus sufficiently earlier than the previously mentioned seventeenth century, Descartes's contributions in the seventeenth century allowed for the mathematical to be further clarified and determined. Complementing Descartes, Newton is credited with having subsequently produced the "first systematic and creative conclusion" [54] of modern metaphysics with his *Principia Mathematica* in 1686/87.

In a next step, Heidegger then goes on to introduce a new protagonist into the question of metaphysics qua the question of technics. Immanuel Kant, and specifically his 1781/1787 *Critique of Pure Reason*, is introduced by Heidegger as performing a crucial role within the movement of modern metaphysics to technics and exemplifies Heidegger's broader two-fold relation to the history of technical thought. Heidegger claims that from its outset the *Critique of Pure Reason* already takes place in a world of mathematical-physical objects, never even questioning whether there could be another access to the world of things than the one prescribed by Newtonian science. The *Critique of Pure Reason* is thus said to essentially lay open and further inscribe the modern foundational attitude (*Grundstellung*) which remains the "basic historical and spiritual stance [*geschichtlich-geistige Grundstellung*], which supports and determines us today."[55]

50 Heidegger*, GA Band 90,* 80.

51 Heidegger, *GA Band 76,* 152.

52 Heidegger, *GA Band 76,* 152.

53 Martin Heidegger. *Die Frage nach dem Ding. (*Tübingen: Max Niemayer Verlag, 1987), 74.

54 Martin Heidegger, *The Question Concerning the Thing,* transl. J. Reid, B. Crowe, (London: Rowman & Littlefield, 2018), 52.

55 Heidegger, *The Question Concerning the Thing*, 38.

Heidegger and Kant

The important question here is, then, how to conceive of the relation between the mathematical, as the characteristic feature of modern metaphysics, and what was discussed earlier as enframing, that is the essence of modern technics. The work best suited to addressing the question of the relation between enframing and the mathematical in the Heideggerian corpus is without doubt the 1962 *The Question Concerning the Thing,* the reworked, published transcript of what was initially presented by Heidegger as a lecture course in the winter semester of 1935/36. This work is thus situated at once before and after the 1954 *The Question Concerning Technology*, to which it stands in a quasi-complementary relation. *The Question Concerning the Thing* not only asks the metaphysical question par excellence – what is a thing? – but narrows this question: it asks what is, and how something can become a thing for us in the modern period. And since, as shown earlier, the standing reserve is seen as the mode of existence of things subjected to enframing, the question is, then, if and how *The Question Concerning the Thing* allows us to narrate the history of metaphysics as the movement from the objective mode of existence (*Gegen-Stand*) to that of the standing reserve (*Be-Stand*).

Heidegger begins his inquiry into the thing by pointing out the intrinsic historial dimension of thingness. The old metaphysical question "What is a thing?" here immediately turns out to be a historial question, asking how something can become a thing for us in and for a specific time. The hypothesis put forward by Heidegger is, that when it comes to the modern age, the "thingness of things" is determined by the mathematical (*mathemata*), which is "that 'in' things [*jenes >>an<< den Dingen*] which we really already know; hence, what we do not first have to fetch from things, but what we bring along with us in a certain way."[56] The mathematical is thus the thingness of things which *a priori* allows things to come into view as things for us in the modern period.

From the point of view of the mathematical, "the givens of everyday getting around in the world [*das umgänglich alltägliche gegebene*] are construed as mere material and splintered into a manifold of sensations,"[57] which, once ordered and organized, can then come into view as an object of mathematical-physical science. In *The Question Concerning the Thing*, "material" thus designates material for the *a priori* forms of the mathematical sketch of the thingness of things. But, is this consideration of something as sheer material not also precisely what Heidegger had in mind in *The Question Concerning Technology*, when he wrote that "man's ordering attitude and behavior display themselves first in the rise of modern physics as an exact science?"[58] The notion of "material" is here the hinge

56 Heidegger, *The Question Concerning the Thing*, 50.

57 Heidegger, *The Question Concerning the Thing*, 145.

58 Heidegger, *The Question Concerning Technology*, 21.

between both the mathematical sketch of the thingness of things, which orders "material" according to its a priori forms, and enframing, which challenges the real to reveal itself as a standing reserve and thus as "material" for further ordering and organization. Reading Heidegger's *The Question Concerning the Thing* with and through *The Question Concerning Technology*, we can see that Kant's *Critique of Pure Reason* describes nothing less than the ordering attitude (*bestellendes Verhalten*) of the mathematical sketch, for Heidegger, which in *The Question Concerning Technology* is also called enframing.

We can add to this that the relation between the mathematical and enframing is further confirmed by Kant's self-professed aim in his "Transcendental Analytic" to replace "the proud name of ontology [with] the more modest title of a transcendental analytic."[59] The "Transcendental Analytic", and specifically the section entitled "Analytic of Principles", is the very place in which Kant lays out what Heidegger calls the mathematical sketch (*Entwurf*) of the thingness of things. When thinking the perspective of Heidegger's reading of Kant performed in *The Question Concerning the Thing* together with Kant's self-professed aim, the Kantian move from metaphysics to the "Transcendental Analytic" is thus, in essence, the very moment in which modern thought self-reflexively did away, so to speak, with metaphysics. Thus, while on the one hand the question of metaphysics has always already been the question of technics, on the other hand the Kantian intervention into the history of metaphysics by way of his "Transcendental Analytic", which lays open the mathematical sketch of the thingness of things that at heart is nothing but enframing and thus the essence of modern technics, marks the very moment in which metaphysics "became" technics. Consequently, thinking the Kantian intervention from Heidegger's point of view, the "Transcendental Analytic" could or rather should have been called "Transcendental Technics".

On the one hand, then, we can say that from the perspective of Heideggerian thought, Kant marks the moment in which metaphysics "became" technics. On the other hand, the fact that Kant called his intervention "Transcendental Analytic" rather than "Transcendental Technics" means that Kant ultimately misunderstood the nature of his own intervention. Must Kant, in a similar way to Jünger, who in the Heideggerian account finally concluded and fulfilled the move from modern metaphysics to technics, then not also be read as having described and further inscribed the modern foundational attitude? Kant's explicit aim in the *Critique of Pure Reason* is to show that and how there can be no other access to the world of objects than the one prescribed by the conditions of possibility of the objects of experience put forth in the "Transcendental Analytic" and which Heidegger calls the

59 Immanuel Kant, *Critique of Pure Reason,* transl. Paul Huyer, Allen W. Wood, (Cambridge: Cambridge University Press, 1998), CPR A247/B304.

mathematical sketch of the thingness of things.[60] [61] This is the case, because according to the Kantian so-called "Copernican revolution", it is the objects that must conform to our forms of cognition, rather than the other way around. In a similar way to Jünger, we must consequently conclude that Kant essentially "suffers" from enframing, rather than thinking it, as he inscribes and consolidates the modern foundational attitude as our only possible access to the world of things. Consequently, the insight into the mathematical and enframing provided by Kant is merely symptomatic, transforming Kant into a symptom, possibly *the* symptom of modern technics, who articulates, but only implicitly, the "basic historical and spiritual stance [*geschichtlich-geistige Grundstellung*], which supports and determines us today."[62]

Consequently, then, Kant occupies a central but two-fold role in Heidegger's account of the movement of metaphysics to technics. While Kant articulates the modern foundational stance, he is at the same time credited with no "proper" insight into it. Essentially, however, Heidegger's symptomatic reading of Kant only makes sense under the assumption that Kant never put forth any explicit writings on technics himself. As German philosopher Gerhard Lehmann first pointed out, however, Kant's last, unfinished manuscript, the *Opus Postumum*,[63] contained the manuscript of what would have become Kant's critique of technical-practical reason, had he lived to complete it.[64] The fact that Heidegger referred to the *Opus Postumum* on numerous occasions[65] proposes that this eclipse was not simply a matter of Heidegger "not doing his reading". Furthermore, any quick defence of Heidegger's omission by way of the argument that Kant's explicit technical thought might simply have contained "bad" technics—further proving that Kant indeed forgot the question of Being as technics—has, since Lehmann, also been put into question by Yuk Hui. Hui follows Gilbert Simondon in arguing that it was in fact already in the earlier 1790 *Critique of The Power of Judgment* that Kant explicitly "thought" technics.[66] [67] Rather,

60 Kant, CPR B163

61 Except for beautiful and living things described in Kant's later, 1790 *Critique of the Power of Judgment.*

62 Heidegger, *The Question Concerning the Thing*, 38.

63 Immanuel Kant, *Opus Postumum*, trans. by E. Förster, M. Rosen (Cambridge: Cambridge University Press, 1993).

64 Lehmann, Gerhard, "Die Technik der Natur" in *Beiträge zur Geschichte und Interpretation der Philosophie Kants.* (Berlin: Walter de Gruyter & Co., 1969), 293.

65 There are, however, plenty of references to the *Opus Postumum* in Heidegger's lecture course on Schelling and German Idealism (1941-1943), cf. Martin Heidegger, *GA Band 86: Hinweise und Aufzeichnungen*, 246; Heidegger, *Die Frage nach dem Ding,* 53

66 See Yuk Hui, *Recursivity and Contingency* (Washington D.C.: Rowman&Littlefield Publishers, 2019).

67 See also Franziska Aigner, *Kant and Technics: From the Critique of Pure Reason until the Opus Postumum*. (PhD Thesis, Kingston University London, 2020). <https://eprints.kingston.ac.uk/id/eprint/47553/>

the preceding engagement with Heidegger aims to suggest that it was in fact Heidegger's damning diagnosis, according to which the right question of technics had not yet been asked, and his consequent self-positioning within the history of philosophy, which led Heidegger, in a somewhat tragic turn of events, to further conceal technical thinking prior to his own intervention. For Heidegger, the history of philosophy, lucidly demonstrated by his reading of Kant, is read as devoid of technical thought proper, while it implicitly harbours the seeds for Heidegger's technical thought alone.

II. Stiegler and The Repression of Technics

While the first part of this article showed that for Heidegger the right question concerning technics had not been asked prior to his own intervention, this second part will show that and how Bernard Stiegler repositioned the narrative of philosophy's technical aporia as a problem of repression. *Technics and Time, 1: The Fault of Epimetheus* (*La technique et le temps, 1: La faute d'Epiméthée*)[68] opens with a familiar refrain: technics "is the unthought."[69] However, a new undertone can be detected in Stiegler's particular reiteration. The problem here is not of living in a technological world devoid of the adequate conceptual tools for addressing it. It is not that philosophy is out of time with technics, or that it simply forgot about technics. Rather, Stiegler frames the relation between philosophy and technics as one of repression: "At its very origin and up until now, philosophy has repressed technics as an object of thought,"[70] meaning that technics "is not un-identified in the sense in which something forgotten is not thought: it is largely thought and felt to be unthinkable."[71] The way that justice is to be done in the face of this long history of philosophy/repression according to Stiegler, is by exhuming technical thought as a mode of inventing it anew.[72] Stiegler stages his own intervention into the history of technical thought as an act of liberation, in which technics is finally to be set free.

Stiegler's project of the liberating of technics proceeds by way of cross-reading twentieth century French paleoanthropology on the one hand, and ancient Greek mythology as philosophy's pre-history on the other, so as to critique and reshape the canonical texts

68 forming the first part of his *Technics and Time* series, was published in 1994, in the wake of deconstruction and at the time of a French resurgence of interest in Simondon's work.

69 Bernard Stiegler, *Technics and Time, 1. The Fault of Epimetheus,* transl. R. Beardsworth, G. Collins (Stanford: Stanford University Press, 1998), ix.

70 Stiegler, *Technics and Time 1*, ix.

71 Bernard Stiegler, *Technics and Time, 3. Cinematic Time and the Question of Malaise,* transl. S. Barker, (Stanford: Stanford University Press, 2011), 176-177.

72 Stiegler, *Techncis and Time 3,* 142: "I mean 'invention' in the archaic sense of 'exhumation' ('in-vention of the holy cross')."

through which technics has hitherto been determined. Firstly, and following the French paleoanthropologist André Leroi-Gourhan, who famously put forward the thesis of the "originary characterization of the anthropological by the technological,"[73] Stiegler argues that technics is the originary prosthetic supplement of the human. With a strong Derridean inflection, Stiegler's claim is that this supplement does not replace something that has gone astray and is now lacking. The argument is rather that the human is in "default of origin,"[74] in the sense of originarily being without either quality and predestination.

Secondly, this default of origin is then further determined by way of the ancient Greek myth of Prometheus and Epimetheus, which Stiegler reads through Jean-Pierre Vernant's interpretations of Plato and Hesiod. In this myth, Prometheus' brother Epimetheus forgot to give attributes to the human despite having been charged with the distribution of qualities to all beings. In order to make up for the initial fault of his brother, Prometheus engages in the cunning theft of fire from Hephaestus so as to provide the human with a prosthetic supplement after the fact, thereby doubling up on the initial fault of Epimetheus. The concept of prosthesis developed by Stiegler through a reading of these two texts engages the human in a threefold relation. It firstly establishes a spatial relation, in the sense that the human is placed in front and outside of itself: "In order to make up for the fault of Epimetheus, Prometheus gives humans the present of putting themselves outside themselves."[75] At the same time prosthesis also establishes a temporal relation in a double sense. The prosthetic both sets in advance – in the sense of what lies in the past – as well as giving the human the capacity of anticipation and foresight, and thus its relation to the future as its ultimate possibility.[76] In this temporal relation, Stiegler argues that technical prosthesis in fact functions as a special kind of memory, which he calls epiphylogenesis.[77] Epiphylogenesis designates the accumulation of individual experiences and traces inscribed and collected in technical artefacts, through which they are passed on through time. As such, the technical artefact functions as an external memory-support of a past that none of "us" have lived, but which is inherited and adopted as "our" own: it is our "already there." Essentially performing a powerful critique of Heidegger's notion of the "already there,"[78] Stiegler ultimately argues that Heidegger has forgotten the originary prostheticity of the "already there" that is essentially constitutive of Dasein.[79] The implication of Stiegler's point is indeed powerful, as it follows that despite Heidegger's technical critique of Kant's "Transcendental Analytic", and in moving from Kant's

73 Stiegler, *Technics and Time 1*, 25.
74 Stiegler, *Technics and Time 1*, 114.
75 Stiegler, *Technics and Time 1*, 193.
76 Stiegler, *Technics and Time 1*, 152.
77 Stiegler, *Technics and Time 1*, 140.
78 Stiegler, *Technics and Time 1*, 16.
79 Stiegler, *Technics and Time 1*, 244.

"Transcendental Analytic to his own "Existential Analytic" in *Being and Time* (*Sein und Zeit*),[80] Heidegger has himself forgotten the technical prostheticity constitutive of Dasein. What remains to be said by way of this introduction to Stiegler's account of technics, is that his concept of prosthetic external memory support puts forward a quasi-transcendental account of technics. As both in front and outside of "us" while also being our "already there," the technical prosthetic mediates our relation to the world in the sense of first giving us access to the world in the sense of a pro-position. Technics, Stiegler writes, "is what is placed before us [*la technique est ce qui nous est pro-posé*] (in an originary knowledge, a *mathesis* that "pro-poses" us things)."[81] Stiegler can thus be seen to at once follow Heidegger's reading of *mathesis* as enframing (*Gestell*), while at the same time pushing Heidegger's thought outside of itself. For Stiegler, technics *is* always and essentially transcendental *mathesis*, an "originary" knowledge that opens us onto the world. His engagement of the concept of epiphylogenesis at the same time however suspends the very distinction between the transcendental and the empirical. The prosthetic, always encountered in the empirical world and thus in a sense *a posteriori*, at the same time precedes "this consciousness in time as the possibility of its already-there,"[82] thereby revealing the apriority of the transcendental to be the strange after-effect of the prosthetic.

Stiegler's Account of the History of Technical Thought

Stiegler's liberation of the concept of technics has so far been seen to proceed by way of a transdisciplinary determination, at once critiquing and aiming to reshape the western philosophical canon held to be responsible for the repression of technics up until Stiegler's own intervention. Complementing his reading of paleoanthropology, Stiegler's engagement of the Promethean myth stages a return to the "beginning" of the western philosophical canon, that is, the moment of philosophy's self-constitution via the repression of technics in classical Greece. "At the beginning of its history philosophy separates *tekhne* from *episteme*, a distinction that had not been made in Homeric times. The separation is determined by a political context, one in which the philosopher accuses the Sophist of instrumentalizing the *logos* as rhetoric and logography, that is, as both an instrument of power and a renunciation of knowledge."[83] In an attempt to cleanse itself from the danger of instrumentalization, philosophy pitches scientific knowledge against technical knowledge, and through this opposition technical knowledge will become disparaged for several centuries to come. Stiegler then points out that the issue with the

80 Martin Heidegger, *Sein und Zeit* (Tübingen: Max Niemeyer Verlag, 2006).

81 Stiegler, *Technics and Time 1*, 235.

82 Stiegler, *Technics and Time*, *3*, 141.

83 Stiegler, *Technics and Time 1*, 1.

Platonic resolution to the problem of instrumentality is that it is based on a fundamental misinterpretation. If *logos* is indeed in danger of being instrumentalized, this is because the possibility of instrumentalization is inscribed in *logos* itself, rather than being an effect of a corruption by *technics*. The fundamental problem, then, is not the relation that *logos* does or does not have to instrumentality, nor is it instrumentality itself. Rather, Stiegler locates the fundamental problem in the misconception and consequent reduction of the instrument "to the rank of means,"[84] resulting in the subsequent attempt to altogether distance oneself from the instrumental, together with the political intention to master it. Following philosophy's first, fateful self-constitution by way of the repression of technics, Stiegler follows by way of two broad periodization categories. Firstly, he engages the notion of philosophical modernity, with Descartes and Kant as opening and closing figures, and secondly the "old metaphysical doxa,"[85] with Aristotle and Kant as the two, respective orienting figures. The following will critically engage both these periodization categories, carefully tracing out Stiegler's multi-layered argument about the emergence of the conditions of possibility for technical thought proper, that, in the last instance, make Stiegler's own intervention possible.

Stiegler's brief account of philosophical modernity begins with the seventeenth century and Descartes, who first posited the "I think" as the constituting subject that faces an object constituted by the subject, and which is, in a further step, to be mastered by the subject through the instrument of technics. But while this new consciousness of the "I think" had been in effect since the seventeenth century, Stiegler's claim is that it was only fully "authorized"[86] by the subsequent technoscientific modernity that set in with the nineteenth century, characterized by the thermodynamic and industrial revolutions. Stiegler's claim about the relation between philosophical and technoscientific modernity is complex. Firstly, and in reference to the Enlightenment project of public education and discourse, his claim is that the "I think" and its complementary discourse of technical mastery over nature was "concretized and generalized during the nineteenth century at the heart of the first Industrial Revolution."[87] As such, his argument is here one of historical continuity between the philosophical invention of modern consciousness and its large scale implementation two centuries later, giving rise to the technical consciousness that would essentially drive technoscientific modernity. Alongside the role played by public education, the full authorization of modern consciousness also stands in an important relation to the thermodynamic concepts of energy and metastability, thoroughly unsettling, and in fact reversing, the old metaphysical order, according to which stability was the rule

84 Stiegler, *Technics and Time 1*, 206.
85 Stiegler, *Technics and Time 3*, 67.
86 Stiegler, *Technics and Time 3,* 197.
87 Stiegler, *Technics and Time 3,* 145.

and change the exception.[88] It was thus not until the thermodynamic claim of a thoroughly unstable world in which change is the norm, that the idea of an all-powerful subject, who ventures to transform this formless, chaotic nature, was brought full circle.[89]

Stiegler follows up his argument on the continuity between the philosophical invention of modern consciousness and its large-scale implementation two centuries later by arguing that the same technoscientific modernity which first completed philosophical modernity would however also lead to the eventual break with the modern subject position and the accompanying understanding of science and technics that has been in place from Descartes until Kant. Stiegler's argument here is that the experience of technoscientific modernity, of living in a technological world in which technics seems to have gone out of control and can no longer adequately be understood as the application of science, revealed—to the "naked eye"[90]—the problems with the modern understanding of technics. Stiegler's reading of the history of technical thought is here supported by a phenomeno-materialist argument which one also finds in the work of Gilbert Simondon, according to which it was the invention of modern, technical machines and the phenomenological experience of living amongst those machines that demanded the elaboration of a new thought of technics.[91] As Stiegler writes: "Since the Industrial Revolution, 'technical becoming' […], has compounded its systematic dimensions, becoming visible to the naked eye in various ways and sensible to the bodies and minds devastated by an entire universe of hellish machines."[92] Stiegler's point is thus that, prior to the experience of the industrially produced technical system, the inventiveness, evolutionary logic, and systematic dimension characteristic of technics proper had not been thinkable. For Stiegler, it is thus the industrially produced technical object, which is the condition of possibility of a "new" technical thought. Consequently, Stiegler argues that it was only in the nineteenth century that the possibility of a "techno-

88 Stiegler, *Technics and Time 3,* 92.

89 See also Alvin Toffler, "Science and Change" in Isabelle Stengers & Ilya Prigogine, *Order out of Chaos* (London: Verso Books, 2017), xiii

90 Stiegler, *Technics and Time 3,* 188.

91 In *On the Mode of Existence of Technical Objects* Gilbert Simondon argues that insight into technical operation proper could remain structurally unquestioned until the invention of post-artisanal technical objects. While in artisanal, pre-modern times, it was indeed the human who was responsible for the mediation between form and matter, with the the advent of the technical machine taking over the responsibility of mediation, the representation of the "way of functioning that coincides with technical operation, which accomplishes it" was necessarily put into question. See Gilbert Simondon, *On the Mode of Existence of Technical Objects*, transl. Ceclie Malaspina, John Rogove (Minneapolis: Univocal Publishing, 2017), 249.

92 Stiegler, *Technics and Time, 3*, 188.

logy that would constitute a theory of the evolution of technics,"[93] first became possible.[94] This new technical thought is thus conceptualized by Stiegler as the after-effect of the phenomenological experience of living amongst "hellish machines." What follows from this first *opening* of the possibility of techno-logy is, however, first a nihilist techno-pessimistic discourse, from Nietzsche's will to power, to Husserl's *Crisis of the European Sciences*, until Heidegger's account of technics as *Gestell*, all of which broke with the historical link between technics and objectivity, as well as the modern understanding of science, put in place by philosophical modernity.[95]

The second periodizing category employed by Stiegler is that of the "old metaphysical doxa"[96] which, according to Stiegler, spans the entirety of the history of western philosophy that opens with Aristotle and closes, once again, with Kant. Stiegler here writes that "at least from Aristotle to Kant, technics […] arises from neither the practical domain as such nor the theoretical domain, in which it is cancelled."[97] He then goes on to insist that "no dynamic proper exists for Aristotle, any more than for any other metaphysician – nor thus for Kant: this is their common feature."[98] What is shared by Aristotle and Kant is thus an understanding of technics in terms of a means/ends rationality devoid of the systematicity of science and devoid of a universal tendency driving technical evolution from within. Given their vastly different historical contexts, Stiegler points out that Aristotle and Kant are nevertheless differentiated by the modern concept of science. While both Aristotle and Kant consider science to be "what announces and formalizes the real *as what cannot be otherwise*,"[99] modern science sees in technics an "application of science,"[100] while, for Aristotle, technics was still constituted in opposition to science.

In a problematic move on the part of Stiegler himself, his designation of the second periodization as the "old metaphysical doxa" must, however, be seen to reduce practically all of the history of philosophy, from Aristotle to Kant, to a problem of conjecture and belief.[101] Doxological critique was historically employed by Plato in order to separate *logos*

93 Stiegler, *Technics and Time, 1*, 2.

94 For Stiegler, Karl Marx's *Grundrisse* was the first to begin work on the theory of the evolution of technics. See Stiegler, *Technics and Time, 1. 2.*

95 Stiegler, *Technics and Time, 3,* 172.

96 Stiegler, *Technics and Time, 3,* 67.

97 Stiegler, *Technics and Time, 3,* 67.

98 Stiegler, *Technics and Time, 3,* 188.

99 Stiegler, *Technics and Time, 3,* 193.

100 Stiegler, *Technics and Time, 3,* 189.

101 In both *Technics and Time 1,* 3 and Bernard Stiegler, *Pharmacology of Spirit*, transl. D. Ross (Cambridge: Polity, 2017), 295, Stiegler employs the ancient Greek term *doxa* in line with the Platonic distiction between *episteme* and *doxa*, that is, knowledge and belief or opinion. See for instance Plato *Republic* 476e–480a

from its instrumentalization by the sophists.[102] In a strange turn of events, Stiegler thus employs the same metaphysical distinction between philosophy and sophism, or science and technics, that he himself aimed to displace otherwise. It nonetheless performs a powerful function within Stiegler's account of the history of technical thought. Essentially, Stiegler argues that this "old metaphysical doxa" came to a close after Kant. Stiegler's account of the end of metaphysics thus differentiates itself from that of Heidegger. As the previous section has shown, Heidegger located his own intervention at the long tail end of the completion of metaphysics which is to be brought about by his discourse of questioning, while according to Stiegler, the conditions of possibility for a post-metaphysical technical thought were opened by Marx after the "old metaphysical doxa", which closed with Kant. Stiegler's account of the history of technical thought can be seen to move through the history of European philosophy in broad strokes, beginning from the argument that after philosophy's self-constitution by way of the repression of technics in ancient Greece, it was not until the thermodynamic and industrial revolutions of the 19th century, that contemporary thought on technics proper first became possible. And while Marx first opened the possibility of theorizing the systematicity and evolution of technics, Heidegger still forgot about the technical prostheticity constitutive of *Dasein* seventy years later in his *Being and Time*. In his own project of, at last, exhuming/inventing technical thought proper, Stiegler had initially envisioned his *Technics and Time* project to encompass three volumes in total. However, upon embarking on the third volume, he encountered a problem of connection, a "connective fault."[103] This problem of connection, he goes on to argue, could only be resolved through an in-depth engagement with the very "heart of modern philosophy": Kant's *Critique of Pure Reason*. Stiegler explains that it was his engagement with Kant which finally allowed him to recognize and work through this "connective fault", that is, how to bring into view "the focal point of the very idea that, despite many attempts had escaped me [Stiegler]."[104] Following a reading of the *Critique of Pure Reason*, Stiegler thus decided, in the year 2000, to push back what was initially supposed to have been the third and last volume of the Technics and Time series to a fifth position, inserting new third and fourth volumes. How, then, could Kant, who in the preceding discussion was shown to occupy the problematic closing positions in both the categories of philosophical modernity and the old metaphysical doxa before the conditions of possibility for technical

102 See for instance Jessica Moss, *Plato's Epistemology: Being and Seeming* (Oxford: Oxford University Press, 2021), 151, who translates from Plato, *Sophist 234c-d "*[The sophist can] bewitch people who are young and standing still further from the truth of things, showing them spoken images about everything, (a) so as to make the things spoken *seem* true, and the speaker [seem] to be the wisest of all about everything… [But when later the students] grasp clearly the things that *are*, they will (b) change their former *doxai*."

103 Stiegler, *Technics and Time, 3*, p xii.

104 Stiegler, *Technics and Time, 3*, p xii.

thought proper were even opened, possibly help Stiegler in his project of the liberation of technics proper?

Stiegler and Kant

The new, third volume of *Technics and Time* occupies a convoluted position in relation to the overall *Technics and Time* series. Structurally speaking, there are two aspects to Stiegler's engagement with Kant. Firstly, and most importantly, Stiegler's engagement with Kant demanded, as we have seen, nothing less than the restructuring and overall rethinking of the entire *Technics and Time* series, which now spans a total of five rather than merely three volumes. Secondly, however, Stiegler's reading of Kant now explicitly prepares the ground for and serves as the introduction to the entire *Technics and Time* series. Essentially performing a reading of Kant, *Techncis and Time 3* is said to be both autonomous of the series while at the same time functioning as an introduction to the preceding two volumes.[105]

On the level of conceptual engagement, Stiegler's reading of Kant's *Critique of Pure Reason* centres on four main points: synthesis, schematization, orientation, and finally critique. Of these four issues, it will be the question of synthesis "that will constitute the heart of the reflections [Stiegler] offer[s] here through a reading of Kant's *Critique of Pure Reason*."[106] In line with the argument that the *a priori* is the after-effect of prostheticity, Stiegler accuses Kant of not having seen how, behind the a priori three-fold synthesis of consciousness loomed always already a fourth synthesis. This fourth synthesis, Stiegler argues, is technological and synthetic, in the sense in which "we call the artifice of prosthetic replication 'synthetic.'"[107] Stiegler's point is thus that Kant himself always already relied on a number of technical "retentional instruments,"[108] and that it is precisely due to these material, technical traces that Kant's conscious activity first became accessible to both himself as well as his public. Functioning as a prosthetic milieu, at once consciousness and its other,[109] Stiegler argues that the unity of Kant's own thought is only accessible to Kant through his books, notes and other technical traces, functioning as the understanding's "veritable crutch."[110] While Kant always relied on this fourth, technological synthesis, he nevertheless remained incapable of seeing, understanding, or thinking it in his transcendental idealist insistence on the interiority of phenomena.

105 Stiegler, *Technics and Time, 3*, xi.
106 Stiegler, *Technics and Time, 3*, 1.
107 Stiegler, *Technics and Time, 3*, 141
108 Stiegler, *Technics and Time, 3*, 144.
109 Stiegler, *Technics and Time, 3*, 49.
110 Stiegler, *Technics and Time, 3*, 48.

Stiegler's second point of engagement with Kant sets off from Adorno and Horkheimer's critique of the culture industry in their 1944 *Dialectic of Enlightenment.* Their critique of the culture industry, and specifically Hollywood cinema, hinges on the claim that its "prime service to the customer is to do his schematizing for him [*sic*]."[111] Hollywood cinema is here said to have finally deciphered and gained control over what, according to Kant, was a "hidden art in the depth of the human soul."[112] Stiegler's engagement with Adorno and Horkheimer's argument on schematization asks how it is possible to schematize for someone else. Essentially employing the Kantian methodology of inquiring into the conditions of possibility while at the same time arguing against Kant, Stiegler's claim is that it was first Kant who did not acknowledge the primordial role that mnemotechnical retentions (technical objects) have always already played in the constitution of consciousness. Stiegler thus ventures to show how image and schema, material trace and concept are co-emergent and interrelated, the reality of which is said to have escaped both Kant as well as Adorno and Horkheimer. Neither of them recognized the "technical substratum"[113] of the "third" provided by the schema. For Stiegler, then, there can only be such a thing as an industrial schematism "because the schematics are originarily, in their very structure industrializable: they are functions […] of technics, technology, and, today, industry."[114]

Stiegler's third and fourth points of engagement with Kant equally do not stop short of being thoroughly unsettling. In naming the *Critique of Pure Reason* "Critique," without a grammatical proposition that would concede the possibility of there ever being other possible critiques of pure reason, Kant put forward the performative claim to have completed the project of reason's critique once and for all. However, in his discussion of the current technoscientific paradigm, Stiegler joins in the choir of post-Kantian thinkers who challenge this Kantian position. Stiegler's particular reiteration is that when it comes to technoscience, by which he means contemporary scientific practice, the relation between the real and the possible has essentially been reversed. This is the case because technoscience, rather than describing or accounting for an already existing reality, aims to "create a new reality."[115] As such, the Kantian founding distinction between theory and practice, including the restrictions put on theoretical reason, is not only transcended but essentially invalidated. The questions at stake in Stiegler's discussion of technoscience firstly point to the necessity of a new, post-Kantian critique informed by technics, which, secondly, asks about the conditions of possibility of judging the technological fictions

111 Theodor W. Adorno and Max Horkheimer, *Dialectic of Enlightenment,* transl. John Cumming (New York: Continuum, 1989), 124.

112 Kant, CPR A141/B181.

113 Stiegler, *Technics and Time, 3*, 42.

114 Stiegler, *Technics and Time, 3*, 41.

115 Stiegler, *Technics and Time, 3*, 191.

produced by technoscientific practice as a problem of how to orientate oneself in the "darkness of scientific possibles."[116]

Throughout this four-partite, critical discussion of Kant, Stiegler refers to Kant's explicit writings on technics only once in order to underscore his point that Kant indeed mistook the relation between science and technics as a problem of mere application.[117] Concluding that Kant had little to say about technics himself, Stiegler then posits Kant as the closing figure of both his periodization categories preceding the possibility of techno-logy. At the same time, however, the preceding discussion has shown just how important Kant was for Stiegler's own technics-thinking. It was Stiegler's engagement with Kant, that first revealed to Stiegler the "connective fault."[118] And it was Kant, who, in the following, catalysed the complete restructuring of the *Technics and Time* series, with the third book, containing Stiegler's reflections on Kant, being repositioned as the introduction to the entire, newly restructured series. Thus, similarly to the preceding discussion on Heidegger, Kant occupies once again a two-fold position. At once denied insight into technics, Kant at the same time prepares the ground and catalyzes Stiegler's own intervention.

Concerning Stiegler's engagement with Kant on the level of conceptual content, one is reminded of Heidegger's symptomatic reading of Kant. While Heidegger argued that Kant could not see, understand, or think the technical nature of the *a priori*, in Stiegler's narrative Kant is read as the last pre-industrial thinker, who so powerfully repressed the technical conditions of possibility for both synthesis, schematization, orientation, as well as critique in the last instance. Taking Stiegler's discourse of technical repression to its logical consequences, it indeed appears that Kant could not "know" anything about the technical constitution of schematization. According to Freud, a forgetting accompanies repression, due to which "the motives for the prohibition (which is conscious) remain unknown; and all attempts of disposing of it by intellectual processes must fail."[119] And indeed, when faced with the question of laying open the mysterious process of schematization, Kant could only characterize it as a "hidden art in the depth of the human

116 Stiegler, *Technics and Time, 3*, 191.

117 Immanuel Kant, "On the Common Saying: That may be correct in theory, but is of no use in practice." In *Practical Philosophy,* transl. M. Gregor (Cambridge: Cambridge University Press, 1996), 277. "Now if an empirical engineer tried to disparage general mechanics, or an artilleryman the mathematical doctrine of ballistics, by saying that whereas the art of it is nicely thought out it is not valid in practice since, when it comes to the application, experience yields quite different results from theory, one would merely laugh at him (for, if the theory of friction were added to the first and the theory of the resistance of the air to the second, hence if only still more theory were added, these would accord very well with experience)."

118 Stiegler, *Technics and Time, 3*, xii.

119 Sigmund Freud, *Totem and Taboo,* transl. J. Strachey (London: Routledge Classics, 2004), 35.

soul."[120] It is this very unthinkability of technics, which Stiegler ultimately has in mind, when he writes that once repressed, technics "is not un-identified in the sense in which something forgotten is not thought: it is largely thought and felt to be unthinkable."[121] Consequently, then, while catalyzing Stiegler in articulating the mnemo-technical nature of schematization, Kant is at the same time not read as a thinker of technics. Instead, Kant "unthought" technics in all of its aspects: heavily relying on mnemo-technical prosthetics, technics is said to have remained an implicit object of thought for Kant. Thus, in a similar way to Heidegger, Kant is read by Stiegler as conditioned by and thus ultimately suffering from rather than thinking technics, as well as philosophy's age-old repression of it. It is not until his own intervention, that technics, according to Stiegler, is liberated at last.

3. Conclusion

The preceding discussion has traced both Heidegger's and Stiegler's arguments according to which technics articulates the limits of philosophical thought understood as metaphysics. If philosophy is to finally open itself up to technics it will have to undergo a radical transformation, with specific programmes for this transformation to be found in their respective projects on technical thought. As this article traced, the history of philosophy is thus read as the history of philosophy's technical aporia by both Heidegger and Stiegler. At the same time, however, that same history of philosophy was shown for Heidegger and Stiegler to nevertheless contain, but only ever implicitly, the seeds of technical thought proper. This two-fold role played by the history of philosophy was exemplified by way of Heidegger's and Stiegler's respective readings of one of philosophy's most prominent thinkers, who supposedly could not think technics: Immanuel Kant. Both Heidegger and Stiegler were on the one hand shown to argue that Kant must ultimately be left behind, since Transcendental Philosophy marks a fundamental limit to technical thought proper. On the other hand, however, the preceding discussion has also shown just how important Kant is for both Heidegger's and Stiegler's conceptual projects on technics. For Heidegger, Kant's "Transcendental Analytic" laid open the *a priori* principles of the thingness of things, thus articulating the very moment in which metaphysics "became" modern technics as well as the basic historical and spiritual stance, which for Heidegger determined the historical present up until the twentieth century. Kant was here argued to have only implicitly articulated modern technics, without however self-reflexively "understanding" it. Within Stiegler's project, Kant was said to have "unthought" technics while at the same time always already relying on mnemo-technical prosthetics, in the form of notes, books, correspondences. At the same time, however, Kant was shown to have led to nothing less

120 Kant, CPR A141/B181.

121 Stiegler, *Technics and Time, 3,* 176-177.

than the restructuration of the entire *Technics and Time* series, at last enabling Stiegler to overcome a "connective fault" that had hitherto escaped him. Consequently, then, and despite the prominent place in both these accounts of technics, Kant is essentially not read as a thinker of technics himself. Instead, this article argued that and showed how he is read merely symptomatically. According to both self-proclaimed thinkers of technics, technics is philosophy's symptom, and Kant's transcendental philosophy is the symptom of a philosophy that could not think technics.

In concluding, there are two last points to be made regarding both Heidegger and Stiegler's double-articulation of the history of philosophy which this article has traced out so far. On the one hand, and first of all, this article aimed to show, by way of Heidegger and Stiegler's omission of Kant's explicit technical thought and combined with their relegation of Kant to a mere symptom, how their double-articulation of the history of philosophy as at once devoid *and* containing implicit seeds only, functioned somewhat as the condition of possibility for the individuation of their own technical thought. With this statement, I do not propose that their omission and symptomatic readings were done wilfully. Rather, their self-positioning within the history of technical thought meant that neither Heidegger nor Stiegler could see what they themselves were looking for (technical thought proper in the history of philosophy prior to their own intervention). Only this way, can one understand both Heidegger and Stiegler's claim that they found themselves in a historically singular position from which technical thought proper could, for the first time, be developed, questioned, problematized, exhumed, invented and liberated.

Following on from this first point, the second point addresses a wider issue. What follows from Heidegger and Stiegler's readings of the history of philosophy as only implicitly containing the seeds for their own technical thought proper, is that historical thought on technics, such as Kant's for instance, remained veiled, or in an unfortunate turn of events were veiled once again. To say with Heidegger and Stiegler that Kant does not speak of technics, "unthought" technics, or did not ask the right question concerning technics, ultimately means that Kant does not have a future beyond the status of the symptom granted to him. Heidegger and Stiegler's readings of Kant and their consequent development of their own technical thought out of their problematization of Kant's technical aporia would not be a problem if Kant had never written anything explicitly about technics proper. I have already pointed out that as early as 1938 Lehmann questioned Kant's status as having had nothing to say about technics proper, and since then Hui has undertaken similar critiques. I have myself argued elsewhere that there is indeed a proper thought on technics at stake in Kant's oeuvre, which reaches its clearest

expression in the last fascicles of the *Opus Postumum*.[122] Ultimately, however, this is not an article about Kant's technical thought. Rather, this article worked through both Heidegger and Stiegler's reading of Kant precisely because, such is my underlying claim, Kant exemplified both their relationships to the history of philosophy. And to employ Heidegger and Stiegler's concepts of technics means to work from within, at least, the outlines of their respective readings of the history of philosophy; that is, the supposed history of philosophy's technical aporia. By returning to and problematizing Heidegger and Stiegler's accounts of the histories of technical thought that underlie and ultimately make possible their respective conceptual projects on technics, what is at stake in this article is thus ultimately a call to inquire into 'minor' histories of technical thought that neither Heidegger nor Stiegler could see, and which might then, in a second step, be able to open different futures for technical thought.

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TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

From Simondon to Philosophical Relativity

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Preliminary Note Regarding Translation

Before I begin, it is worth noting that the translation of the French word *"signification"* poses several difficulties in relation to how it is employed in my work and thought. In order to construct a philosophy that does *not* constitute "knowledge" proper, the word *"représentation"* (representation) has been replaced by the word *"signification"*, which *also* refers, in French, to the word *"signe"* (sign). While I have translated "signification" into the English "meaning", the comparable English word "signification" should likewise be tacit. Similarly, the French word *"sens"* refers to sense-making and *not only* to "meaning". I have hence translated *"sens"* by "sense(-making)." As is always the case, *new philosophical* thought causes *new problems* of translation.

Introduction

I have previously called Gilbert Simondon's philosophical doctrine *"genetic encyclopaedism"*[1], as it can be distinguished from his lectures, and as it unifies his two doctoral theses: *Individuation in Light of Notions of Form and Information* and *On the Mode of Existence of Technical Objects*. The unity of these two theses was one of the many problems I encountered early on in my effort to exegete his work.[2] Now, this exegesis, although animated by the conviction that I could reveal all the strength and actuality of his thought, was always directed towards an *after*-Simondon. Even before my doctoral thesis, my work on Simondon was guided by the prospects of an encompassing refoundation, or a *secondarization* of Simondon's genetic ontology, which must become a *secondary problematics* and *no longer* the "first philosophy" that Simondon saw in it. Such a secondarization, which also implies a reconstruction of genetic ontology, happens within a new and global system whose first problematics is a post-Wittgensteinian as well as a post-Heideggerian *philosophical*

1 Jean-Hugues Barthélémy, *Simondon ou l'encyclopédisme génétique* (Paris: P.U.F., 2008).

2 Barthélémy, *Penser l'individuation. Simondon et la philosophie de la nature* (Paris: L'Harmattan, 2005); *Penser la connaissance et la technique après Simondon* (Paris: L'Harmattan, 2005). For a more pedagogical synthesis, see Barthélémy, *Simondon* (Paris: Les Belles Lettres, 2016 [2014]).

ISSN 2773-0875

semantics, and which bears the name "*Philosophical Relativity*"[3]. Two other names of this new philosophy are "system of *the individuation of sense(-making)*"[4] and "*human ecology*"[5]. These two names respectively emphasise its first or fundamental problematics, which is that of sense(-making), and its political purpose which is ecological[6]. And as the name "Philosophical Relativity" indicates in its own way, the particularity of such a new system is that it is *not* a system of knowledge, its globality being in reality the *most immediate consequence* of the *diffraction* of manipulated or used meanings. Such a diffraction is the remedy to their traditional *ob*-jectivation by the attitude of knowledge, *as well as to relativism itself* insofar as it is *still* a matter of the *ob*-jectivation of meanings by the philosophizing individual. An *internal criticism* of Simondon's genetic encyclopaedism will lead us to the idea that the new system of Philosophical Relativity is *both* global *and radically* anti-dogmatic. I will conclude by offering some consequences of the ontology thus secondarized, and these consequences will lead us back to the two questions of technology and desire—both stemming from a critical dialogue with Simondon as well as with Stiegler.

1. Internal Criticism of Genetic Encyclopaedism

In the last chapter of *Penser la connaissance et la technique après Simondon*, and again in chapter six of *La Société de l'invention*, I raised *two problems* with Simondon's genetic ontology, both of which are not reducible to paradoxes that could be resolved from inside the ontology itself:

a/ Simondon's genetic ontology, or "ontogenesis", is said to be "first philosophy", however, it is likewise presented as being based on "physical schemes of thought". There is an aporia here, especially if "first philosophy" is to be defined as a problematics that is based *on itself*; this having been the major characteristic of "first philosophy" since Aristotle's metaphysics. If metaphysics came "after" physics, it also went *beyond* the latter, and, this did not mean "from" physics but rather: with *an autonomy* that alone allows for the

3 Barthélémy, *Penser la connaissance et la technique après Simondon*. See also the second part of *La Société de l'invention. Pour une architectonique philosophique de l'âge écologique* (Paris: Éditions Matériologiques, 2018). The idea of Philosophical Relativity will be developed and expounded upon in *La Philosophie du paradoxe. Prolégomènes à la Relativité philosophique* (Paris: Éditions Matériologiques, 2023 - forthcoming).

4 Barthélémy, "Encyclopédisme et système de l'individuation du sens," *Klesis*, no. 42 (2018), doi: http://revue-klesis.org/pdf/Klesis-42-encycopedisme-06-Jean-Hugues-Barthelemy-Encyclopedisme-et-systeme-de-l-individuation-du-sens.pdf

5 Barthélémy, *Manifeste pour l'écologie humaine* (Paris: Actes Sud, 2022). See also Barthélémy, "From Genetic Encyclopaedism to Human Ecology", *Philosophy Today* 63, no. 3 (2019).

6 On these two points, see also Barthélémy, *Ego Alter: Dialogues pour l'avenir de la Terre* (Paris: Éditions Matériologiques, 2021).

treatment of *fundamental* questions that physics does not address. Physics, thus, could not provide a "first philosophy" with "schemes of thought" or *conceptual* paradigms, even if it could provide *analogical*, *methodological* and *teleological* paradigms (as it does for the new type of first philosophy qua a theory of knowledge as founded in the *Critique of Pure Reason*). In Kant's case, these were respectively: 1. the *Copernican* revolution; 2. the *Galilean* inclined plane; 3. *Newtonian* physics as philosophically founded by Kant's Critique. Thus, a "first philosophy" which would be based on physical schemes of thought or *conceptual* paradigms *derived* from physics would immediately *loose* its own status of first philosophy. Now, in the system of Philosophical Relativity whose program and structure I gave in 2018, "first philosophy" is to be understood as philosophical semantics qua *simple self-"knowledge"* in its own *non*-originarity; and genetic ontology, as a *second translation* of this, is *nothing more* than a unifying and *non-scientific but philosophical* synthesis of scientific knowledge. Indeed, the sciences, in their absence of unity, remain *methodologically autonomous* and *gnoseologically sovereign*;

b/ Simondon, immediately after having claimed the status of "first philosophy" for genetic ontology, adds: "Unfortunately, it is impossible for the human subject to witness its own genesis, for the subject must exist in order to think"[7]. There is an immediate difficulty here, because Simondon's link between the idea of "first philosophy" and the idea of witnessing one's own genesis means that, while condemning as vain the undertaking of the Husserlian phenomenologists, who want to witness their own genesis, Simondon *concedes* to them that witnessing one's own genesis *would indeed be* self-knowledge which a true first philosophy consists of. Simondon also intends to propose a form of radical reflexivity, since he claims that his genetic ontology is the overcoming of the face-to-face relationship between subject and object: the object of this ontology is the process of individuation, and the knowledge of individuation is itself, he says, "the *individuation of knowledge.*" But it is clear that this reflexivity *does not* consist in witnessing its own genesis. And since it is "unfortunate", as Simondon writes, that the subject cannot witness its own genesis, then the knowledge of individuation that is individuated in knowledge is a reflexivity *by default*.

Now, the global and radically anti-dogmatic system of Philosophical Relativity allows the construction of a self-"knowledge" that *does not* consist of witnessing one's own genesis, and that is translated into genetic ontology by a second step, thus solving both problems in one gesture. In what follows, I will present this new first problematics, called "philosophical semantics", starting from *other* motivations, linked to the current schismatic situation of Western philosophy and no longer to the internal criticism of Simondonian

7 Gilbert Simondon, *L'individuation à la lumière des notions de forme et d'information* (Grenoble: Millon, 2005), 285.

thought. I will then indicate the reasons why Simondon's genetic ontology seems to me to offer the *second* but adequate ontological *translation* of this new first problematics, an ontological translation that would be subject of course to some modifications during this refoundation and *reconstruction*. But before doing so, I will offer a very brief assessment of the state of Western philosophy today.

2. Western Philosophy Today: A Brief Overview

For a century, Western philosophy has been divided into two traditions that tend to ignore each other. The first, called "continental", has a long history. The second, known as "analytic", has existed for a century. Yet, despite their undeniable differences, these traditions share the property of providing, so to speak, as many philosophies as there are philosophers, with the difference that analytical philosophers tend to specialise on specific questions rather than proposing a "world view" and can thus more easily organise themselves into relatively united "camps", each claiming an "ism"—extensionalism *versus* intensionalism, realism *versus* nominalism, and so on. The time has passed, however, for this perpetual "battlefield" of philosophy to be overcome, as Kant wanted, through highlighting the conditions of possibility and the limits of knowledge. Today, Western philosophy can only invent *the reflexive unity of this self-singularisation—of this shared disagreement—which has always characterised it*. There will be no knowledge *as such*, but only a *simple self*-"knowledge" that singularises itself while offering a new terrain—or ground—for a dialogue that is not that of the deaf, but that works to think the *individuation of sense(-making).*

Analytical philosophy certainly aims to establish a dialogue between thinkers in the name of common principles of argumentation. Such principles are also present in much of the continental tradition, and the ability of analytic philosophers to engage in dialogue has more to do with an Anglo-Saxon academic state of mind—*not yet* that of their Austrian precursors Frege and Wittgenstein. It is by virtue of this state of mind that the analytic field can collectively dialogue around a single recently published article held to be a decisive contribution. This practice is not unrelated to the idea that knowledge *as such* is possible in philosophy, if one is patient and modest in one's aim, and if one's aim is itself "analytical" and not global. But there is an illusion here, as evidenced by the ephemeral and reversible character of the "decisive contribution" of this or that article, and this illusion was already one shared by Bergson, despite his insistence regarding the radical difference between analysis and intuition. Such an illusion consists in aiming at a knowledge that would be obtained by increasing approximation, *which is already the case for the most "exact" natural sciences*. Philosophy deludes itself about its vocation and its possibilities, for lack of having been able to reinvent itself after its failure in the path of

apodicticity opened by Plato.

Now, we will see that the path opened up and invented by Philosophical Relativity will consist in a return to *the most originary watchword* of philosophy, one which has unfortunately never been a *priority*. This watchword is that of *simple self-*"knowledge". The *new modality* of this self-"knowledge", of which the new first problematics offered to philosophy by Philosophical Relativity consists, will also allow philosophy *to assume once again its mission*, which does not consist in locking itself up in this or that so-called local knowledge, but in covering different fields of problems (epistemo-ontological, political-economic, pedagogical-axiological), starting from an attitude that is *not* an attitude of knowledge proper—a privilege granted to the sciences. To understand this, we must first rid ourselves of a *philosophical* bias that is dominant today: the bias according to which a global system would necessarily be a system of Knowledge, instead of its globality being *the very consequence of the abandonment* of the claim to knowledge proper. Philosophical Relativity will consist here in *redefining the different fields of philosophy* so that the globality of the philosophical system can become the *most immediate* consequence of such an abandonment of the claim to knowledge proper.

3. The Problem of Decentring

There is another path for philosophy than the two paths of apodicticity and increasing approximation, both of which are ultimately characteristics of the sciences—in which mathematical apodicticity functions not only as a pure instrument for physics, but as a "science of relations and virtual operations". This third way is that of the *"know thyself"* as it proceeds from a prior understanding of what is at its core, *and by difference*, the growing approximation of knowledge *proper* that is offered by the sciences. This is why it is necessary to think of the conditions by which the knowing subject of the sciences *differs fundamentally* from the philosophizing individual.

In order to come to what will make the *still unthought-of advantage* of the sciences with respect to philosophy, it is necessary to pose a *new philosophical problem* with respect to which one can indeed speak of a still unthought-of advantage of the sciences. If this problem is new, it is because the fundamental difference between philosophy and science will *not* be limited here to the question of objectivity. It concerns *another* advantage of the sciences, which has been *ignored* until now because this advantage has the *same conditions* as scientific objectivity. This new philosophical problem, which I believe to be *the most fundamental of all* because it engages the question of *method* in philosophy, is what I call *the cardinal problem of decentring*: it resides in the fact that the *attitude of knowledge*, insofar as it places the knowing subject and the known object face to face,

leads to the subject becoming *originary without its knowledge*, if it is not accompanied *by a methodological decentring of this subject*. Indeed, once the object is made *ob*-ject, it seems that the *sense(-making)* concealed by this object does *not* constitute the subject, which is thereby rendered *implicitly originary*. This problem is much more fundamental than that of so-called objectiv*ity*, which is a laborious conquest whose *first and much broader* condition is the *ob*-jectiv*ation* of manipulated—or used—meanings as they claim to be *equal* to the things they designate. By the word "meanings," I mean what philosophy, since Kant, has called "representations", a term that has *served* the attitude of knowledge that I wish to denounce in philosophy. It is the *ob*-jectivation of manipulated–or used—meanings, therefore, that I want to interrogate, because it makes human consciousness itself an *illusionning structure*.

Indeed, *all* human consciousness is *ob*-jectivating with respect to sense(-making) *as soon as it affirms something about something*. The problem here, which I have been posing since my doctoral thesis, is that of human consciousness in general understood as *a structure of erasure of its own finitude*. This *ob*-jectivation of manipulated—or used—meanings implicitly makes the human subject a being that would *not* be constituted by the sense(-making) of these meanings, thus a being that would be *originary* with respect to sense(-making). Thus, *before* the conquest of objectiv*ity*, the problem of the spontaneous *ob*-jectivation of meanings by human consciousness as intentionality and as a structure of erasure of its own finitude arises. My questioning here is not only reflexive, but *archi*-reflexive, because it does *not* concern the human subject thought by the philosophizing subject, but it concerns *the philosophizing individual himself or herself in his or her own relation to the meanings he or she manipulates—or uses*. This questioning is also radically *anti*-egological: Husserl spoke of a "natural attitude" of intentionality that forgets itself in its object. This attitude was defined by him as a forgetting, by intentionality, of its own *meaning-giving originarity*. On the contrary, I denounce a spontaneous and *implicit erasure*, by intentionality, of its own *non*-originarity. For the object in which it forgets itself is *also* spontaneously made *ob*-ject, by virtue of the *ob*-jectivation of the manipulated—or used—meanings, whose sense(-making) is implicitly made *non*-constitutive of the subject. Such is the structure of the erasure of finitude within human intentionality.

Now, the sciences have this *unthought-of virtue* that the *very conditions* of their objectivity *are also* the conditions by which, much more fundamentally, they can *avoid implying* the originarity of the subject implied by the *ob*-jectivation of the meanings manipulated—or used—by this subject. We can take physical knowledge as a paradigm here. Indeed, physical knowledge prevents the knowing subject from making itself originary without its knowledge, insofar as physics, a mathematical-experimental science, bases its approach on an *initial decentring* of this knowing subject, which *reconstructs* itself as a subject by passing through the double mediation of mathematics and instruments. Here, it is no longer

the psychic individual as such who *ob*-jectivates the manipulated—or used—meanings and who implicitly posits himself or herself as non-constituted by the sense(-making) of these meanings. The knowing subject of physics *ob*-jectivates the manipulated—or used—meanings *only under the constraint* of mathematical-instrumental decentring.

What about the philosophizing individual? He or she *ob*-jectivates the meanings he or she manipulates—or uses—as *equal* to their reference or denotation. But does he or she possess a *mode of decentring* that allows him or her *not* to become originary without its knowledge within his or her activity as a subject who *ob*-jectivates the manipulated—or used—meanings? The *second* Wittgenstein, that of the *Philosophical Investigations*, thought that the traditional philosophical "language game" led to hypostases, and that this game had to be brought back to ordinary language. The *last* Wittgenstein, in *Ueber Gewissheit*, questions the *spontaneous attitude* that is *common* to both ordinary and philosophical language games. He tries to define—in a way he admits to being confused—what the *unthought* is within such a spontaneous attitude. He takes examples that belong *at least as much* to ordinary language as to philosophical language, and that raise the question of whether it is possible to *extend* his questioning in the following way: any "S is P" proposition consists in *ob*-jectivating meanings in order to say what is real through them, *as if* the sense(-making) of these meanings was *not* what is *never* "there in front of" but what is individuated in me, who is not originary. *Traditional philosophy therefore only exacerbates an implicit self-absolutisation of the subject that is already present in the "natural" attitude*. It is therefore all the more legitimate to say that the philosophizing individual, in his or her practice of meanings, *and whatever the theses he or she defends*, has so far made himself or herself implicitly originary as non-constituted by the sense(-making) of the meanings he or she manipulates—or uses. *Not* possessing any means of *decentring*, the philosophizing individual has *neither* the means of guaranteeing the objectiv*ity* of his or her discourse, *nor* the means of *avoiding* the implicit self-absolutisation implied by the *ob*-jectiv*ation* of the manipulated—or used—meanings.

I would add that it is perhaps necessary to specify to what extent the decentring of the knowing subject is present, *in varying degrees and modalities*, in all the sciences. *Each* science has its *own* mode of decentring, which is appropriate to its specific object. Philosophy, on the other hand, is *devoid* of *any* mode of decentring, and for this reason is condemned to aim at something *other* than knowledge proper, at the risk, for the philosophizing individual, of *unknowingly* rendering himself or herself originary in the absence of decentring. For the decentring that guarantees the objectiv*ity* of the sciences is *also* what *protects* the knowing subject from making himself or herself implicitly originary at the moment of the *ob*-jectiv*ation* of the manipulated—or used—meanings: such is the fundamental point from which the *methodological decision* proper to Philosophical Relativity as a thought of the individuation of sense(-making) proceeds. It will be a matter of the *multi*-dimensional

diffraction of any manipulated—or used—meaning, which is never reduced to the sole dimension of the object of knowledge, this being nevertheless targeted through the meaning. What is at stake, in this, is the adoption of an *archi*-reflexive and *radically anti-natural* attitude.

4. Self-"knowledge" and the Individuation of Sense(-making): Reforming the Idea of a Philosophical System

Western philosophy, not having explicitly posed the question of the relationship of the philosophizing individual to the meanings he or she manipulates—or uses—or having done so only according to the "linguistic turn" of analytic philosophy, has not been able to distinguish itself from an enterprise of positioning philosophy as knowledge proper. The "linguistic turn" was intended to be a different way of taking a *reflexive* step back from phenomenology; what was at stake was the questioning of the *language* in which the philosophical operation itself is expressed. Apart from the path opened up by the second Wittgenstein, the linguistic turn claimed to be based on Frege's earlier propositional logic known as the "calculus of predicates". Such a logicist conception could only accentuate the illusion of philosophy as knowledge proper. And even with the second Wittgenstein and his heirs, philosophy has not been able to reconstruct itself in an *archi*-reflexive manner, that is to say, according to a systematicity that would be *the very consequence of the abandonment* of the claim to knowledge proper.

We therefore need a new kind of reflexivity, *paradoxical because radical*, which represents a *semantic* "double reduction": *any* meaning thought through a common name has *several* dimensions in its *sense(-making),* and the denoted *ob*-ject is *only one* of these dimensions. The double reduction consists in passing from the reality of the denoted object to the representation that denotes it, and then in passing from this representation to the *multi*-dimensional meaning that encompasses this dimension of the *ob*-ject and gives it sense(-making). This is a double operation by which the philosophizing individual is no longer confronted with *ob*-jectivated meanings, reduced to the sole object dimension they contain, and henceforth thinks of sense(-making) *in so far as it is individuated within him or her as non-originary subject*. Western philosophy, whether continental or analytic, far from constructing such a modest *self*-"knowledge", has persisted in wanting to know beyond the sciences, and this is why it has remained the "battlefield" denounced by Kant.

The ultimate consequence of this blindness is that, in the present era, the advances of cognitive sciences towards an understanding of the *interpenetration* of the dimensions of the being-subject (emotion, cognition, action) are leading to the *replacement* of philosophy by science, *whereas* philosophy *should* make it the motive for an awareness of its *true* role:

the invention of a simple self-"knowledge" through the multi-dimensional diffraction of manipulated—or used—meanings, according to an archi-reflexive method that is *symmetrical* and *complementary* to the scientific *ob*-jectivation of manipulated— or used—meanings. Thus, while science becomes capable, in its *ob*-jectivation of manipulated—or used—meanings, of showing that emotion, knowledge and action are dimensions of the being-subject that are *both* irreducible to each other *and constitutive* of each other, philosophy, for its part, can invent the means of *circumventing* the spontaneous *ob*-jectivation of manipulated—or used—meanings in order to render the philosophizing individual capable of thinking of himself or herself as *constituted by* the multi-dimensional sense(-making) of any manipulated—or used—meaning.

The identification of the different dimensions of sense(-making) that make up and constitute oneself involves the *redefinition* of the different domains of philosophy. These domains can no longer be posited *a priori*, for they must henceforth be defined *according* to the dimensions of sense(-making) that will have been identified as constitutive of the philosophizing individual, because they are individuated within him or her in order to engender him or her as *finite* or *non*-originary. The philosophical "system", in the classical meaning of this term, articulated domains of inquiry—ontology, ethics, and so on— *without* these domains *arising from* a multi-dimensional diffraction internal to any manipulated—or used—meaning. The meanings manipulated by the philosophizing individual were *ob*-jectivated or reduced to their single dimension of *ob*-ject, out of a concern to *know* something about something. The redefinition of the globality of the system as an immediate consequence of the abandonment of the claim to knowledge proper will therefore also be a redefinition of the domains of philosophy on the basis of the dimensions of sense(-making) brought out by the new problematics of archi-reflexive semantics as simple self- "knowledge". This simple philosophical self-"knowledge", which practices the multi-dimensional diffraction of manipulated—or used—meanings, is thus only the first, and *radically anti*-dogmatic, problematics of a global system composed of *translations* of this first problematics in *each* of the dimensions of sense(-making) that will have been revealed by it. Now, among these dimensions of sense(-making), there is the *epistemo-ontological* dimension of the *ob*-ject of knowledge, and it is here that Simondonian genetic ontology largely prefigures what will henceforth have to be thought of as the *ontological translation* of the first philosophical semantics.

5. Genetic Ontology as a Translation of a Philosophical Semantics

The Simondonian thought of individuation is a thought of the information process—with information being the formula of individuation. Now, as I showed in chapter five of *La Société de l'invention*, in Philosophical Relativity, information is precisely *one of*

the three most general dimensions of sense-making that are identified by the new semantic problematics. It is in fact the dimension of sense-making that has been privileged since Plato *within a Western philosophical tradition aimed at knowledge proper*, this dimension having in fact overshadowed the other two dimensions, which are nevertheless present in the *sense-(making)* of any manipulated—or used—meaning. These two other general dimensions of the sense-(making) of any manipulated—or used—meaning are: production for the satisfaction of *needs* and education as the transmission of *values*. Thus, for example, the meanings "tree", or "table", or "human", or "freedom" or "concept", make sense *both* as something that refers to an object of information, as something that satisfies certain needs and as something that conveys certain values.

The Simondonian thought of individuation, therefore, adequately *translates* the new first problematics *into* the ontological domain, by elaborating a "philosophy of information" whose thought of individuation is onto-genetic—in the sense of genesis. This thought *accounts ontologically for* the finitude or non-originarity of the subject which, in Philosophical Relativity, *obliges* us precisely *not* to start with ontology but with simple semantic self-"knowledge". The difference between multi-dimensional sense(-making) and the single dimension of the object has as its ontological equivalent the difference between *object* and *substance* (i.e., *within* this same dimension of the object). For Simondon, who did not have an archi-reflexive semantics, the ontologically principial difference between object and substance took the form of the difference between *individual* and substance.

Economic production, ontological information and axiological education are the three most general dimensions of sense(-making) that the new first problematics proposed by Philosophical Relativity identifies, insofar as any meaning manipulated—or used—by the philosophizing individual can be diffracted three-dimensionally according to these general dimensions. I will not explain here how I identify the dimensions of sense(-making) individuated in oneself as the dimensions of economic production, ontological information and axiological education. I will simply point out that it is decisive that the meanings that designate these dimensions of sense(-making) are meanings that designate *modes of action*. Indeed, the finitude or non-originarity of which we must become aware, and which is that of the philosophizing individual himself or herself, possesses a *structure of erasure* by which we *cannot avoid* to *ob*-jectivate the meanings we manipulate—or use—and thus to render ourselves implicitly originary. Now, meanings that designate modes of action have the particularity that, *even* when *ob*-jectivated, they *still* designate an object which *constitutes* the subject, since their denotations or references are modes of action.

Thus, philosophical semantics, which is archi-reflexive, is the new "first philosophy," which aims at a simple self-"knowledge" in which the philosophizing individual ceases to make himself or herself implicitly originary. This new fundamental problematics

bypasses the structure of erasure of finitude that is the illusionning structure of human intentionality. This new first problematics of philosophy identifies the three general dimensions of sense(-making) that makes oneself, and then translates this non-originarity of the philosophizing individual into *each* of the dimensions of sense(-making). In the dimension of ontological information, this translation produces a genetic ontology which is a thought of the individuation process, and this is why Simondon's genetic ontology is a particularly relevant first version here.

Now, genetic ontology, when it comes to the vital regime of individuation and the development of the psyche within it, *finds* the three-dimensional structure of sense(-making), but this time it finds it *ontologically* and no longer archi-reflexively, by positing that the animal *is* three-dimensional (action, perception, emotion). This three-dimensionality, now an ontological object, then leads by *complexification* to the three dimensions of economic production, ontological information and axiological education when we move on to the ontological analysis of the *transindividual* regime, of which Simondon posited a first theorisation. *Thus, an ontogenetic thinking of individuation leads to an ontological account of the non-originarity of the philosophizing individual, which was initially thought of in the archi-reflexive mode defined by the new form of self-"knowledge" proper to philosophical semantics.* Such is nature of the *secondarization by the encompassing refoundation* of genetic ontology within the global but radically anti-dogmatic system of Philosophical Relativity, which will have to reconstruct genetic ontology under the name of "philosophy of ontological information" while adding to it a "philosophy of axiological education" and a "philosophy of economic production".

I would therefore like to conclude with some remarks concerning the *modifications* introduced by this reconstruction of genetic ontology; these remarks will also concern the status of technology in Simondon, but also in Stiegler. First, Simondon, unlike André Leroi-Gourhan, did not think of the *articulation* of language and technology that made the genus *Homo* possible. In *On the Mode of Existence of Technical Objects*, Simondon does not propose a history of culture, but a genetic eidetics that constitutes a new phenomenology of mind. It thinks of the dimensions of culture as "phases" but distinguishes them from temporal "moments" and gives them the status of "essences". It is within this framework that he makes technology and religion into simultaneous, symmetrical as well as complementary phases, which arise from the de-phasing of the "primitive magical unity" of "being in the world". Now, this very specific approach prevents him from entering into what Leroi-Gourhan would inaugurate six years later, i.e., in 1964: the understanding that language is, on the level of a genesis—and this time, a historical one—a condition of the human being as fundamental as technology. Leroi-Gourhan spoke of language-technology (as technical system of objects) *coordination*, but today work in neuroscience encourages us to speak of a real *interpenetration* of language and technology *that pre-existed humans, but*

in a separate state. What we call the "*articulated* language" specific to human beings is *also* a language articulated *with technology*, and in such a way that language and technology form a real *interface* producing the transformation of each of the two: in *Homo*, the language of the primates became *grammaticalized* language, *i.e., technicised*, while the technology of the primates became a *system* of objects *referring to each other, i.e., symbolised*.

Before coming to the consequences of this for a critical dialogue with Stiegler, we can point out that the language-technology interface allows us to account ontologically for the *ob*-jectivating character of human intentionality for sense(-making). Here, what my philosophical semantics denounced as a structure of erasure of the non-originarity of the subject can receive an explanation, *but an ontological one*, which is *thus* philosophically *second* within the new global system of Philosophical Relativity, and *subject to the teachings of the sciences*. This ontological, and in this case onto-genetic, explanation is as follows: the techno-linguistically reconstructed subject that is *Homo* now possesses an *ob*-jectivating consciousness for the sense(-making) that he and the other animals experience, because in *Homo* language and technology have interpenetrated. Language and technology now form an interface that is *a double transcendence constitutive* of his being, but this double transcendence paradoxically makes him capable of *ob*-jectivating sense(-making) *as if* the latter were *not* constitutive of him. Such is the *structure of the erasure of non-originarity* that characterises human intentionality.

To conclude my remarks, I'd like to turn to the critical dialogue I've been having for years with Bernard Stiegler's thought. One of Stiegler's great merits is to have, in his own way, diagnosed very early on the crisis of reflexivity that I have been talking about since *La Société de l'invention*, and whose three forms I defined in a more pedagogical way in *Ego Alter* and then in my *Manifeste pour l'écologie humaine*. In Stiegler's terms, "systemic stupidity" has developed as a result of an "industrial political economy"[8] that has transformed the *essentially technological conditions of all human existence* into something that *destroys* not only *know-how* (knowing how *to make*) and *knowledge-desire* (knowing how *to desire*), but also *knowledge-thinking*[9] (knowing how *to think*). Such is the *generalised* process of progressive "proletarianization" by virtue of which a "pharmacology of the mind" is required, technology being *pharmakon*: both remedy and poison.

However, I must specify that the three *stages* mentioned in the process of proletarianization, *from which ultimately results* the "systemic stupidity" denounced by Stiegler, differ fundamentally from the three *simultaneous forms* of the crisis of reflexivity as I have thought of it since *La Société de l'invention*, and that stem from neoliberalism: the crisis of

8 Bernard Stiegler, *États de choc. Bêtise et savoir au XXIe siècle* (Paris: Mille et une nuits, 2012), 21.

9 See Stiegler, *La Société automatique*, *1 : L'Avenir du travail* (Paris : Fayard, 2015).

(political-economic) *ideologies*, the crisis of the (epistemological-ontological) *synthesis of knowledges*, and the crisis of (pedagogical-axiological) *exemplarity*. This difference is due to the fact that, unlike that of Stiegler, which is anthropo-techno-genetic, my fundamental problematics, the simple "knowledge" of oneself as non-originary, is the problematics of multidimensional sense(-making)—and of its crisis—, the three forms of the crisis of reflexivity being linked to the three dimensions of the sense(-making) that is never reduced to the sole dimension of the object of knowledge. A second fundamental difference is that, instead of proceeding to a critique of human Desire as the capitalist West has exacerbated it in the form of the desires for growth and consumption, Stiegler has *infinitised* Desire to make it what would mark the nobility of human Reason in its break with animality. Two points need to be made here.

First, the infinitisation of human Desire has nothing to do with the capacity of desire to change its object infinitely. Rather, it has to do with its capacity to aim at *infinite* or "non-calculable" *objects*, as Stiegler puts it: the Idea of Justice is the paradigm for Stiegler, and the field of law embodies that which transcends mere facts. Now, this capacity of human desire becomes in Stiegler the pretext to identify Desire with Reason itself, *via* the idea of "motive(s)" which is to say *both* the motivation coming from desire and "the reasons" animating Reason. Yet, Stiegler's critique of consumerism asserts that desire can "desublimate"[10]. But at the same time, Stiegler *refuses* to still call "desire" what has become "drive", *as if the essence of desire itself were to sublimate*.

This first point leads us to the second: it is because the essence of desire would be to sublimate that Stiegler makes Desire the mark of the human, without ever thinking of animal desire as it can develop beyond needs—the sphere of which, moreover, already exceeds simple vital needs. In Stiegler's work, there is *a residual anthropological cut*, and this cut is also revealed in his thinking about technology, which makes it *the condition, properly human, of desire itself*. This is due to the very specific way in which Stiegler transforms Leroi-Gourhan's theory of the genesis of the human. Instead of rethinking the "language-technology coordination" as a progressive interpenetration of a language and a technology that existed in a separate state in pre-humanity, Stiegler *absorbs* language *into* technology. Indeed, for him language itself becomes a form of technology, the latter being *that paradoxical essence by which the human constructs itself and has "no essence" or "no nature"*. Here, Stiegler, like his German contemporary Peter Sloterdijk, reaffirms and reformulates what was first affirmed and formulated by Sartre in an existentialist and not anthropo-techno-genetic context.

10 In Freud, "sublimation" is the fact that an unconscious desire finds a diverted satisfaction in adopting a cultural goal and higher than its initial goal. "Desublimation", a notion invented by the Freudo-Marxist Herbert Marcuse, is the reverse process, where desire becomes a primary drive.

Of course, Stiegler claims not to separate the human from the non-human animal, and this is why the anthropological cut must be called residual rather than assumed. But its residual character does not prevent it from being real, and *it is not enough to refuse the question itself*, as Stiegler has always done by brushing it aside, if one wants to escape this separation that has marked our entire tradition of Western thought up to Heidegger—from which Stiegler largely inherits by making the human a *non*-derivable "Who" *from* the non-human animal.

TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

Peter Sloterdijk's Philosophy of Technology: From Anthropogenesis to the Anthropocene

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Abstract:
In this article, we aim to expose the central tenets of the philosophy of technology which underlines the work of the German philosopher Peter Sloterdijk. Beginning from his early works and also mapping his philosophical influences, we show how he incidentally started theorising technology while still profoundly engaged with critical theory in the 1980s, but along the 1990s passed through an anthropological turn, which made possible a concept of technology that has its foundations in both Heidegger's existential philosophy and German philosophical anthropology in general, but also emphasising the long biological-evolutionary process of the human species itself. This perspective then enables us to formulate—starting from Sloterdijk's work—a powerful philosophical techno-anthropology that deals with the genesis of the human as a sphero-poietic species having evolved into a bio-sphero-poietic geoforce and with the future planetary challenges put in front of us by the Anthropocene. We thereby aim to contribute to current debates in the philosophy of technology, offering a techno-philosophical reading of an (in our view) decisive and yet underexplored author in this field.

Keywords:
Philosophy of Technology; Peter Sloterdijk; Anthropocene; Philosophical Anthropology; Contemporary Continental Philosophy.

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ISSN 2773-0875

Nous sommes sur un plan où il y a principalement la technique.
Peter Sloterdijk, *The Domestication of Being*

1. Introduction

While the German philosopher Peter Sloterdijk (Karlsruhe, 1947) is most generally known today as a theorist of culture, history and politics approached from an anthropological perspective, less attention has been given to the fact that his anthropology is decidedly informed by the premise that the *anthropos* as a cultural, historical and political being is fundamentally and irreversibly a *technical* creature. The grand sphero-logical and immuno-logical narrative of the evolution and history of humanity and the human condition in general that he develops in particular in his monumental *Spheres* trilogy is in fact a tale, as we will argue, of progressive *technical* distancing, insulation, mediation and immunisation of the evolving human species vis-à-vis the natural environment, a process that has thoroughly denatured the pre-human organism from which the human originated. Through this process, the human species increasingly expanded the artificial "interior spaces" or "immuno-spheres" in which it gestated over time as an ever more intelligent and cunninger, highly improbable yet utterly successful creature. However, this process also progressively increased its dependence on these technical interiors, which—moreover—have negatively affected the Earth's ecological systems to such an extent that today, in the so-called Anthropocene age, the very survivability of the human species has been called into question.

In this article we will delve into the (in our view) decisive yet somewhat underdeveloped technological dimension of Sloterdijk's understanding of the human endeavour, presenting him explicitly as a philosopher of technology. We thereby aim to make two basic contributions, both to the readers interested in Sloterdijk's work by itself and to those involved in recent developments in the philosophy of technology. Firstly, indeed, the literature devoted to expounding on Sloterdijk's philosophy is rich and diverse, ranging from monographs[1] to edited volumes[2] and journal special issues[3]. However, while some contributions[4] set out to discuss particular aspects of Sloterdijk's understanding of

1 Jean-Pierre Couture, *Sloterdijk* (Oxford: Polity, 2015).

2 Stuart Elden (ed.), *Sloterdijk Now* (Oxford: Polity, 2012); Willem Schinkel and Liesbeth Noordegraaf-Eelens (eds.), *In Medias Res: Peter Sloterdijk's Spherological Poetics of Being* (Amsterdam: Amsterdam University Press, 2011).

3 Patrick Roney and Andrea Rossi (eds.), "Sloterdijk's Anthropotechnics," *Angelaki: Journal of the Theoretical Humanities* 26, no. 1 (2021); Various Authors (eds.), "Special Issue on Peter Sloterdijk", *Cultural Politics* 3, no. 3, (2007); Various Authors (eds.), "The Worlds of Peter Sloterdijk", *Environment and Planning D: Society and Space* 27, no. 1 (2009).

4 Sylvia Blad, "The Impact of 'Anthropotechnology' on Human Evolution", *Techné: Research in Philosophy and Technology* 14, no. 2 (2010): 72–87; Sane van der Hout, "The Homeotechnological Turn:

technology, we are not aware of any work aiming to review his conception of technology throughout his whole oeuvre or to thematically interpret the latter as a philosophy of technology, as we set out to do here. Secondly, we aim to outline a theoretical framework exhibiting a strong and thorough conceptualisation of technology, both in ontological and anthropological terms, which shall allow us to engage with the hypothesis of the so-called constitutive technicity of the human as a species[5] and contribute to discussions related to the interface between philosophy of technology and the question of the Anthropocene, as it has been broadly discussed recently[6].

To achieve this objective, the current work is divided into three main sections. In the first one, we will show—very concisely—how Sloterdijk's work has become progressively more anthropological in focus since his bestselling 1983 debut *Critique of Cynical Reason*, a book that was still very much a work of historical and cultural criticism resonating with but also (meta-)critical vis-à-vis the Frankfurt School's tradition of critical theory. We will also briefly illustrate how in subsequent works such as *Thinker on Stage: Nietzsche's Materialism* and *Infinite Mobilization: Towards a Critique of Political Kinetics* Sloterdijk shows an increasing interest in theorising what Max Scheler referred to as "the human place in the cosmos" as well as what Hannah Arendt called "the human condition", only to make what might be called a genuine "anthropological turn" in the early to mid-1990s in crucial transitive books such as *Weltfremdheit* and *Im selben Boot: Versuch über die Hyperpolitik*. Then, we will explore Sloterdijk's main philosophical influences regarding his view on technology, such as Nietzsche, Heidegger, Foucault, Mühlmann, Günther and several evolutionary biologists and philosophical anthropologists. With this, it will be possible to observe how Sloterdijk's *onto-anthropology* is both a complex tapestry composed of manifold references and a discussion about the historical and ontological "nature" of the *anthropos* in terms of what Heidegger called *Dasein* as resulting from a technologically driven evolutionary process that produces the human as a progressively *aletheic*, i.e., world-open and world-forming creature "uncannily" open to the Being of beings.

In the second section, we will discuss how the concepts of immunology, spherology and anthropotechnology can be explored taking the technology question as the central perspective. It is in his magnum opus *Spheres*, a trilogy comprising no less than 2573

Sloterdijk's Response to the Ecological Crisis", *Environmental Values* 23, no. 4 (2014): 423–442; Sjoerd van Tuinen, "Transgenous Philosophy': Post-Humanism, Anthropotechnics and the Poetics of Natal Difference", in *In Medias Res: Peter Sloterdijk's Spherological Poetics of Being*, eds. Willem Schinkel and Liesbeth Noordegraaf-Eelens (Amsterdam: Amsterdam University Press, 2011), 43–66.

5 Véronique Havelange, Charles Lenay and John Stewart, "Les représentations: Mémoire externe et objets techniques", *Intellectica* 35, no. 2 (2002): 115–129.

6 Pieter Lemmens, Vincent Blok and Jochem Zwier, "Toward a Terrestrial Turn in Philosophy of Technology", *Techné: Research in Philosophy and Technology* 21, no. 2 (2017): 114–126.

pages in the original German version (its three volumes appearing consecutively in 1998, 1999 and 2004), but also importantly in his 2001 book on Heidegger, *Not Saved: Essays after Heidegger* and in *You Must Change Your Life: On Anthropotechnics*, published in 2009, that Sloterdijk mainly and extensively elaborates on those three central concepts. He does so in the form of a grand-scale "re-description" (Richard Rorty) or a "fantastical reconstruction"[7] of the human condition from its very origins with the first Hominins until the present moment when humans are about to become a planetary species, presenting this sphero-immunology as a post-metaphysical, indeed also post-Heideggerian theory of human existence or being-in-the-world as a thoroughly technically constituted and conditioned mode of being.

After providing this overall, although necessarily concise picture of Sloterdijk's philosophy of technology, we will move to a different topic in the third section. In it, we will zoom in on how Sloterdijk conceives of the current global ecological crisis and the planetary challenges presented by it while we enter the Anthropocene age from his sphero-immunological and onto-anthropological perspective, also explaining his understanding of planetary technology in terms of the technosphere. It will also become clear how the discussion about the so-called "globalisation" deeply relates to technology, the new climatic regime we are entering (as theorised by the French anthropologist and sociologist of science Bruno Latour) and the consequential necessity to switch from local cultural immune strategies to a global co-immunitary structure. According to Sloterdijk, this switch should give up on taking the planet as a passive background and initiate a transformation in what Heidegger would have called the essence of technology, from a brutal, exploitative and imperialistic *allotechnics* alien *to* and alienating *from* nature to an intelligent, caring and non-dominating *homeotechnics* mimicking and extending upon nature's own ways, which also implies the advent of a new, planet-oriented anthropotechnics, as we will show.

2. Foundations of an Onto-anthropological Perspective

2.1 The Presence of Technology in Sloterdijk's Early Work

Already in the *Critique of Cynical Reason*, a book that for the rest engages much more with literature, poetry and the visual arts in the social, political and economic context of the Weimar era, Sloterdijk presented critical remarks vis-à-vis the nascent philosophy of technology during the Interbellum, pointing out the role of technology and the philosophical reflection on it in the complex psychosocial scenario unfolding during this

7 Peter Sloterdijk, *Not Saved: Essays after Heidegger* (London: Polity, 2017), 97.

era—a scenario he characterised as that of a "technical surrealism"[8]. Still following in the footsteps of the tradition of the Frankfurt School, exemplified by Theodor H. Adorno and Max Horkheimer's seminal work from 1947, *Dialectic of Enlightenment*, there is an effort to point out the obscenity and mystification intrinsic to the enlightenment process, which could lead to the barbaric events of the first half of the 20th century[9]. Using a quite caustic language and style, *Critique of Cynical Reason* engages in a kind of philosophical performance inspired by Diogenes of Sinope and Friedrich Nietzsche, arguably the two authors closest to Sloterdijk's temperament and critical (i.e., kynical[10]) intent. Themes like the relation between the Third Reich propaganda and the marketing of prostheses for disabled people can illustrate what is developed there. At that moment, moreover, what was particularly interesting for Sloterdijk was seeing how technology is also an essential factor in producing a *critique* of culture and how it was ambivalently present in the discourses surrounding the emergence of totalitarian regimes in the Twentieth century.

Sloterdijk mentions in particular authors such as Hans Freyer and Friedrich Dessauer, who wholeheartedly embraced technology as quintessentially human and human-empowering, the former glorifying the technological will to power of the modern subject as marking the nobility of European mankind as "Man the Conqueror"[11], the latter presenting technology as the fourth human realm next to the three Kantian realms of natural science, ethics and aesthetics, i.e., that of inventions pre-existing in the realm of ideas but realised through human ingenuity and creativity[12]. Sloterdijk accuses these hyper-Promethean Weimar philosophies of technology of their reluctance to acknowledge any neediness or suffering as inseparably belonging to the human condition and of remaining blind to the destructive impacts of technology, instead presenting it as the panacea for all of humanity's problems[13]. He agrees with Dessauer though that technical inventions are to be understood as "ontological enrichments in the inventory of existence"[14], a thought that he will later submit against Heidegger's verdict of technologies as essentially impoverishing and undermining human existence[15]. However, in his critical observation that at the heart of Dessauer's theory of technology "stands a subject who can no longer suffer because

8 Sloterdijk, *Critique of Cynical Reason*, 457.

9 Theodor W. Adorno and Max Horkheimer, *Dialectic of Enlightenment* (London: Verso, 1997).

10 It is worth highlighting that Sloterdijk's conceptual difference between *cynicism* (a reading of modernity as production of split and melancholic individuals) and *kynicism* (a possibility of a genuine social and plebeian *critique*) is heavily influenced by: Heinrich Niehues-Pröbsting, *Der Kynismus des Diogenes und der Begriff des Zynismus* (Berlin: Suhrkamp, 1979).

11 Sloterdijk, *Critique of Cynical Reason*, 450.

12 Sloterdijk, *Critique of Cynical Reason*, 808–809.

13 Sloterdijk, *Critique of Cynical Reason*, 457.

14 Sloterdijk, *Critique of Cynical Reason*, 456.

15 Sloterdijk, *Not Saved*, 247.

it has become wholly prosthesis"[16], he is suggesting that this thought preludes at least to some extent the current high-tech fantasies of transhumanism and extropianism to create an invulnerable technologically enhanced "superhuman", fantasies which the later Sloterdijk rejects as highly impractical and implausible[17].

This critique of a subjectivity entirely geared towards empowering itself and transcending its finite nature through science and technology—in essence the project of modernity as formulated by Descartes: "becoming masters and possessors of nature"—is developed at full scale in Sloterdijk's paradigmatically postmodern 1989 book *Infinite Mobilization: Towards a Critique of Political Kinetics*. In this tome, entitled *Eurotaismus* in German, he renews the diagnostic of critical theory as a "critical theory of being-in-the-world" and an "analytics of coming-into-the-world"[18] by wedding it with Heidegger's existential analytic and thinking of Being, thereby also taking the essential critical "principle" from the "Freiburg School"' rather than from the Frankfurt School. Describing the basic process of modernity with a famous notion derived from Ernst Jünger in terms of *(total) mobilisation*, he argues that only the Freiburg School offers the resources for developing an effective critical theory—as both diagnostic and therapy—of mobilisation, to wit: Heidegger's thought of releasement *(Gelassenheit)*, as it fundamentally repudiates mobilisation *as such*, as opposed to suggesting an alternative counter-mobilisation, as per the Neo-Marxists[19].

The turn towards Heidegger and his Freiburg "school of serenity"[20] (*Schule der Gelassenheit*) manifests itself in the critique that the book offers of the modern, activist and productivist subject as the principle *movens* or active centre of—and, therefore, the source of both the danger of and the salvation from—all mobilisation[21]. Salvation from the catastrophic dynamics of modernity's runaway mobilisation presupposes subjects that stop agitating as the ontological agents of movement towards more movement and come to understand themselves not as the active perpetrators of mobilisation but instead as released "guardians" of the right movement[22], an expression echoing Heidegger's notion of *Dasein* as the "shepherd" or "guardian" of Being[23].

In order to understand the possibility of such a "turn"[24]—a notion again obviously

16 Sloterdijk, *Critique of Cynical Reason*, 458.
17 Sloterdijk, *Not Saved*, 127–128.
18 Sloterdijk, *Infinite Mobilization*, x.
19 Sloterdijk, *Infinite Mobilization*, 50–51.
20 Sloterdijk, *Infinite Mobilization*, 14.
21 Sloterdijk, *Infinite Mobilization*, 7.
22 Sloterdijk, *Infinite Mobilization*, 23.
23 Martin Heidegger, "Letter on Humanism", in *Basic Writings*, ed. David Farrell Krell (New York: Harper Perennial, 2008a): 245–246.
24 Sloterdijk, *Infinite Mobilization*, 81.

referring to Heidegger—Sloterdijk interprets the project of modernity with Heidegger as the poietic, foremost in the sense of technological and productivist, response of human beings to their precarious and burdensome existential condition of being-in-the-world as thrown into an indeterminate *open*, whereby he emphasises not so much the condition of mortality or being-towards-death, as Heidegger did, as that of natality or being-from-birth[25], i.e., of being-born and birthing-oneself understood in the existential sense of coming-into-the-world. Moreover, unlike Heidegger, Sloterdijk does not identify this open in a temporal sense with the future. Instead, he suggests understanding it in terms of the existential tension or uneasiness resulting from humanity's "ex-centric positionality"[26], thereby adopting a key term from Helmuth Plessner's philosophical anthropology[27].

It is this anthropological *Ur*-condition, preceding any temporal or spatial orientation, that prompts and accommodates human *poiesis*, doing both as technology and art, the former a pure production blind to the open and bent on domination, ultimately leading to total mobilisation, the latter a poetic creation attuned to the open and continuing by artistic means the natural and "motherly" or natal creativity from which it sprang itself[28]. When Sloterdijk asks the question in this context of whether something like a more gentle "poetic technology" would be possible[29], he might have been anticipating his later thought of a conatural and non-dominating *homeotechnics*, a notion to which we will return below.

What such a non-dominating technology would at least presuppose from his onto-kinetic existentialist perspective is the arrival of an "ontological ebb of subjectivity", an ebbing away that is of its mobilising fury[30]. Onto-kinetically as well as onto-anthropologically reinterpreting Heidegger's "turn" in this way as the coming to pass of "the subject's relaxation from its self-birthing overstretches"[31], he thus clears it from the "religious reverberation" it still possesses in Heidegger[32] and understands it as the subject's becoming aware of its original but forgotten "being-carried" by that from which it is itself birthed, i.e., from nature as *physis*—and not from Being, as Heidegger always insisted. This would allow for the overcoming of its "forgetting of letting oneself be carried" (better translated as "forgetting of being-carried" [*Getragenheitsvergessenheit*]), Sloterdijk's onto-kinetic reinterpretation of Heidegger's forgetting of Being[33]. This condition of being-carried by

25 Sloterdijk, *Infinite Mobilization*, 54.

26 Helmuth Plessner, *Levels of Organic Life and the Human: An Introduction to Philosophical Anthropology* (New York: Fordham University Press, 2019): 267–321.

27 Sloterdijk, *Infinite Mobilization*, 55.

28 Sloterdijk, *Infinite Mobilization*, 56–57.

29 Sloterdijk, *Infinite Mobilization*, 57.

30 Sloterdijk, *Infinite Mobilization*, 81.

31 Sloterdijk, *Infinite Mobilization*, 82.

32 Sloterdijk, *Infinite Mobilization*, 81.

33 Sloterdijk, *Infinite Mobilization*, 80.

nature, *physis* or the Earth is in a sense the revelation conveyed by the current global ecological crisis—as "the geological sublation of world history"[34]—which Sloterdijk describes in the penultimate chapter of the book.

In this section, he writes that for the historical process of infinite mobilisation that is modernity, the Earth appears as nothing but a stage and resource serving its own endless dynamism. Modernity as "metaphysics in action" and as "detachment of nature through technology" is radically anti-symbiotic with the biosphere, which gets ruined in the process as a consequence[35]. Anticipating the contemporary discourse on the Anthropocene by some two decades, Sloterdijk foresees the current crisis if not ultimate demise of modernity's project of infinite expansion as it runs itself into the ground by being confronted with the planet's finitude when he writes that "it is only in the moment when the play threatens to ruin the stage that the players are forced into a new self-perception"[36].

As an anthropocenologist *avant la lettre*, Sloterdijk writes that "what was once the scene becomes the theme of the plot. What served as a background comes to the forefront. What was present as a raw material emerges as product. What was previously stage becomes the play itself"[37]. No longer tolerating technological humanity's ignorance vis-à-vis its life-supporting role and potentialities, as he writes many years later in *What Happened in the 20th Century?*[38], this new scenario forces future humans to become symbiotic with the Earth again and to actively take care of its life-supporting capabilities. The human as the technically conditioned onto-logical creature must become the technically conditioned *and* conditioning eco-logical creature[39], or in the later terminology of *Spheres*, humanity's technological modus vivendi on the planet must be transformed from a sphero-poietic self-immunisation *against* "nature" into an oiko-poietic co-immunisation *with* "nature". As we shall see, this entails for Sloterdijk the transition from allotechnics to homeotechnics (notions that are explained below).

2.2 The Anthropological Turn

Although *Infinite Mobilization* already appeals to philosophical anthropology in a quite substantive manner to explain the project of modernity in all its multiple manifestations,

34 Sloterdijk, *Infinite Mobilization*, 133.
35 Sloterdijk, *Infinite Mobilization*, 138.
36 Sloterdijk, *Infinite Mobilization*, 139.
37 Sloterdijk, *Infinite Mobilization*, 139.
38 Sloterdijk, *What Happened in the 20th Century?*, 23.
39 Sloterdijk, *Infinite Mobilization*, 144.

it is only in the early 1990s that Sloterdijk makes an explicit move towards anthropological thinking, whereby technology still remains in the background but is implicitly assumed as the key to understanding the *anthropos* and the process of anthropogenesis. We will show this through a brief excursus into two exemplary publications of this period: *Weltfremdheit*, a book that addresses the varieties of humanity's existential "escapism", and *Im selben Boot: Versuch über die Hyperpolitik*, an essay on the political evolution of the human species.

Weltfremdheit aims to outline a "historical ontology of human facts"[40] and develop a "historical anthropology"[41], indeed "radical historical anthropology"[42]. This anthropology also understands itself explicitly—and in paying tribute to Nietzsche and Heidegger—as a "noble anthropology", which means an anthropology that studies the "phenomenon of man" (Teilhard de Chardin) from the perspective of its highest possibilities. It concerns itself, therefore, with the most eminent exemplars that the history of humanity—in both East and West—has seen appearing on the stage of history, i.e., foundational religious, philosophical, political or artistic figures such as Jesaja, Buddha and Christ, representing the extremes of human potential and operating at the frontiers of human transcendence. The latter is a phenomenon that Sloterdijk prefers to understand in terms of "excessive tension" (Überspannung[43]) or what he later in *You Must Change Your Life* describes—and tries to explain following Nietzsche in a purely immanent sense (in terms of "exercise")—as "vertical tension" (*Vertikalspannung*[44]).

Anticipating a central thought elaborated more fully in the *Spheres* trilogy, Sloterdijk argues in *Weltfremheit* that the human is a creature that "comes from the inside"[45], meaning first of all, very concretely, that it comes from the womb, indeed that it enters the world as the outside in exiting a prior, protective interior that is the uterus. Before "being-in-the-world", human beings exist as "being-in-the-mother"[46] and the *conditio humana* cannot be truly understood, therefore, without considering it a "uterodicy"[47]. We might characterise this as an interpretation of the existential meaning of the condition of "coming-into-the-world"[48] as a "coming-from-the-womb", which is exactly the goal of the project he will develop on a grand scale in his *Spheres* trilogy, in particular in the first two volumes.

40 Sloterdijk, *Weltfremdheit*, 11.
41 Sloterdijk, *Weltfremdheit*, 27.
42 Sloterdijk, *Not Saved*, 276 n59.
43 Sloterdijk, *Weltfremdheit*, 28.
44 Sloterdijk, *You Must Change Your Life*, 12–13.
45 Sloterdijk, *Weltfremdheit*, 191.
46 Sloterdijk, *Weltfremdheit*, 64.
47 Sloterdijk, *Weltfremdheit*, 190.
48 It is worth noting that this notion is already developed in a previous book (Sloterdijk, *Zur Welt kommen—zur Sprache kommen*), albeit in a different context.

Most generally, Sloterdijk understands the human as a being that is fundamentally characterised in its Being as a "being-in" (*In-sein*) that originates as a "being-in-the-womb" and attempts to reinstall this intrauterine condition postnatally in the outside world through the projective creation of artificial interiors or spheres—collectively constituting what we traditionally refer to as "cultures"—functioning as extrauterine protections or immune systems. This "sphero-poiesis", as he will later call it in the *Spheres* trilogy, is both a symbolic and a technical affair (as we will explain below) through which humans project the smaller inner spaces from which they originate, first of all the womb but in a general sense all microspheric environments such as a house or village, onto the larger outside world in the form of macro-spheres such as a city or a nation-state. As such, it can be described as a process of spatial "metaphorics", the projection or "carrying-over" of smaller and familiar interiors onto the uncanny exterior, in both symbolic-linguistic and constructive-technical sense.

Sloterdijk claims that human beings are "inner world beings" (*Innerweltwesen*) that do not exist, as Heidegger suggested, as "nakedly" standing-out-into-the-world as the transcendental clearing of Being (*Lichtung des Seins*), but who always reside in concrete, utero-mimetic and technically equipped spheres that mediate between "inside" and "outside" and that as such condition the clearing which Heidegger conceived of as the irreducible, unconditional condition of possibility of their existing Being (as *Dasein*). As Sloterdijk contends in *Weltfremdheit*: "although the physical and psychic life of humans presupposes that it abandons the womb behind it, existence is at the same time directed towards finding and preserving a 'being-in', and thus a womb-relation towards an embracing-surrounding (*Umgreifenden*), also in the waking state"[49]. The ongoing creation of ever more elaborate and encompassing artificial, womb-like interiors or envelopes and the fact that throughout their evolution and history human collectives have, therefore, constantly relocated into changing environments, uniquely distinguishes humans from all other animals as creatures of *metoikesis* or "resettlement" (*Umsiedlung*), condemned to the "ontological adventure" of being-there within the movement of coming-into-the-world[50]. The radical historical anthropology that Sloterdijk envisions based on this insight considers humans as deeply structural "element-changers" whose being-in-the-world, therefore, is struck with a permanent and insurmountable ambiguity[51].

Near the end of *Weltfremdheit*, Sloterdijk introduces a concept that will become crucial in later works for his radical historical understanding of the *anthropos* and the process of anthropogenesis, which is the concept of "luxury" (*Luxus*)—also referred to as "pampering" (*Verwöhnung*)—meaning a condition of comfort and abundance of which he argues that it

49 Sloterdijk, *Weltfremdheit*, 65, our translation.

50 Sloterdijk, *Weltfremdheit*, 84.

51 Sloterdijk, *Weltfremdheit*, 198.

is the key driver of hominisation or in other words forms the quintessential explanation for the ontological and *aletheialogical* exceptionality of the human animal. He explains humanity's openness for what Heidegger called the clearing or "unconcealment" of Being (*aletheia*) as the outcome of a long evolutionary process of "luxuriation", by which humans mutually protect, pamper and safeguard one another in collectively constructed and sustained "incubators"—*Brutkasten* (a term derived from Dieter Claessens): the cultural immuno-spheres in their anthropogenic operativity—through which they maintain a durable "secession from the old nature" (also a phrase from Claessens[52]).

This permanently maintained condition of *luxury* and *distance* vis-à-vis external nature has produced humans as the beings in which the Being of beings can "light up" so that beings can manifest themselves. These two phenomena—luxuriation and distancing—explain the gradual metamorphosis within the evolving human species from an animal wakefulness to a human world-openness[53]. What we usually call "cultures" are the late consequence, Sloterdijk argues, of thousands of years of such progressive intraspheric luxuriation and distancing from nature[54]. As we will see further below, these two processes are not only symbolically but also eminently technologically induced and supported.

Im selben Boot looks at humanity's political evolution from an anthropological perspective and starts from the assumption that politics has always been a matter of people adhering to "fantasies of unity"[55], arguing that political history, therefore, is the history of "self-fulfilling ideas'' and "operative fictions"[56]. In the creation and perpetuation of such fictions, media technologies play an increasingly crucial role. The first or original stage of politics is called *paleo*politics by Sloterdijk and is understood as "the reproduction of humans through humans"[57]. It appears when our ancestors start to distance and insulate themselves from "ancient nature" in what Charles Darwin called "hordes" through the use of "distance-technologies" such as palisades, fireplaces, torches and all kinds of tools and weapons[58]. These first human collectives represent "social islands" and can be understood as "ensouled spheres" lifted out from the environment through an invisible "distance-ring" protecting their inhabitants from external selection pressures—thereby producing a naturally improbable being that prevents conflict from outside and luxuriates internally[59]. It is in such spheres that proto-humans start to breed themselves through technically

52 Sloterdijk, *Weltfremdheit*, 334.
53 Sloterdijk, *Weltfremdheit*, 334.
54 Sloterdijk, *Weltfremdheit*, 335.
55 A concept further developed in Sloterdijk, *Der starke Grund, zusammen zu sein*.
56 Sloterdijk, *Im selben Boot*, 12.
57 Sloterdijk, *Im selben Boot*, 17, our translation.
58 Sloterdijk, *Im selben Boot*, 17.
59 Sloterdijk, *Im selben Boot*, 17.

and symbolically enabled luxuriation, slowly developing larger brains and transforming their paws into hands capable of evermore sophisticated operations. Thus, Sloterdijk understands *homo sapiens* as the result of a "revolutionary breeding of anti-naturalness in nature" via a "horde-internal incubator-evolution"—characterising the process of anthropogenesis as a successful history of luxuriant evolution[60].

The second stage of politics, which emerges with the arrival of the so-called "advanced civilizations" (*Hochkulturen*) and their theological and metaphysical worldviews, is interpreted by Sloterdijk as the reproduction of the goals of paleopolitics on a larger plane (that of cities and empires), i.e., as the art of "belonging together at large"[61]. It is here that politics in the *classic* sense of *politeia* enters the stage and what this entails anthropologically and anthropotechnically is the reshaping of the familial herd animal *homo sapiens* into a *zoon politikon* equipped to exist in the extensive "social uterus" (Adolf Portmann) that is the city-state, through an assemblage of educational anthropotechnics (term explained further below) which Plato in his *Politeia* has referred to as *paideia*[62] and which Sloterdijk characterises here as a "shepherd's craft" (*Hirtenkunst*)—anticipating the remarks on Plato made in his controversial lecture *Rules for the Human Park*[63]. The age of advanced civilisations is also the age of class structures dividing collectives into lords and servants, the former elevating themselves via privileged literary "technologies of the self" while subjecting and instrumentalising the latter through "technologies of power" (both theorised explicitly by Foucault), thereby raising the intensity of luxuriation within the upper classes to a hitherto unprecedented level, giving rise to the exceptional individuals described in the noble anthropology explored in *Weltfremdheit*, but also causing immiseration and massification in the lower classes[64].

The third stage of politics emerges when the size of human groupings grows exponentially with industrialisation and globalisation (the terrestrial stage of which for Sloterdijk starts already in the Sixteenth century with the so-called Age of Discovery) and the collapse of classic metaphysical orientations. This third stage, *hyper*-politics—appropriate for the age of a planetary techno-industrialism which has engendered the so-called Anthropocene—is still to a large extent *in statu nascendi* and resisted by collectives persevering in traditional, local political arrangements such as the nation-state[65]. Humanity currently experiences the "format stress" that accompanies every expansion of spheres which for Sloterdijk forms

60 Sloterdijk, *Im selben Boot*, 19–20.
61 Sloterdijk, *Im selben Boot*, 27, our translation.
62 Sloterdijk, *Im selben Boot*, 32–33.
63 Sloterdijk, *Im selben Boot*, 37.
64 Sloterdijk, *Im selben Boot*, 42–45.
65 Sloterdijk, *Im selben Boot*, 57.

the key dynamic of human evolution and history as "planetarisation stress"[66]. The great task our planetarising species is confronted with as it endangers the very conditions of its survival on the planet as its ultimate life support system is to transform itself from the careless and destructive mass of "last men" (Nietzsche) constituting the current "monster-international of end users"[67] with its entropic, ego-centred and short-term consumerist lifestyles, into a genuine planetary collective that is able to envision and craft new ways of life—understood as exercises for acquiring and reproducing "good habits"—that allow its sustained presence on the planet, i.e., a new art of reproducing humans through humans.

Such planetary hyperpolitics would be a continuation or rather resumption of paleopolitics by other means[68]. This would entail the universal duty of a renewed "practicing oneself in the forgotten art of enduring"[69] from now on pursued on the largest scale possible, in the sense of a truly planetary or planet-oriented anthropotechnics. This presupposes a transformation of the global consumerist technosystem of levelling mass media towards a diverse panoply of massively distributed yet individuating digital network technologies supporting the required coming-into-being of caring and co-perceptive, eco- and geo-conscious "glocal" collectives capable of establishing a true "world culture"[70] or "world civilisation", the advent of which is something that Sloterdijk[71] considers unavoidable and also explicitly affirms.

In *Medien-Zeit: Drei gegenwartsdiagnostische Versuche*, indeed, he argues that the ultimate task and meaning of today's digital mass media thusly considered lies in their sphero-immunological vocation to function as the imminent medium of a global "informatic synchronisation". Moreover, this synchronisation—which will be later developed in *In the World Interior of Capital*—enables the singular world-horizons of all the regional cultures of the past to be brought together and politically-existentially coordinated within a *common, inevitably technically constituted world-horizon*—which is the only possibility for humanity's collective future on the planet to be effectively imagined and designed[72].

From all of the above, we can see that during the 1980s and 1990s there is a progressive distancing from the Frankfurt School in Sloterdijk's thought and an increasing interest in the human as a long-range process of biocultural dimension. This change has a great impact on his perspective on technology, which opens for a consideration of it in an

66 Sloterdijk, *Im selben Boot*, 53, our translation.
67 Sloterdijk, *Im selben Boot*, 59, our translation.
68 Sloterdijk, *Im selben Boot*, 80.
69 Sloterdijk, *You Must Change Your Life*, 489.
70 Sloterdijk, *Rage and Time*, 229.
71 Sloterdijk, *Medien-Zeit*.
72 Sloterdijk, *Medien-Zeit*, 89.

evolutionary-anthropological sense. However, this transition alone is not sufficient to clearly explain what is Sloterdijk's understanding of technology, since there is still no discussion about what are his major influences and how he engages with them.

2.3 Philosophical Influences

Sloterdijk's intellectual and literary sources are diverse and multifarious. In this section, we will briefly overview the philosophical references which, we believe, exert a major influence on his philosophy of technology. Thus, we will address, firstly, his reception of the thought of Nietzsche, Heidegger and Foucault. Secondly, we will discuss his interest in philosophical anthropology. Thirdly, we will touch upon his reception of two relatively less-known thinkers whose thought exerts a significant influence on Sloterdijk nonetheless, i.e., the German philosophers Heiner Mühlmann and Gotthard Günther.

Nietzsche is arguably Sloterdijk's most important philosophical reference. Starting from his monograph *Thinker on Stage*, devoted to a kynical reinterpretation of Nietzsche's philosophy in the light of cybernetics, references to Nietzschean thinking appear in virtually all of Sloterdijk's texts, as well as Nietzsche's humour and literary style. What Sloterdijk calls Dionysian materialism in that book, he claims, has "become virtually second nature to me, and if I didn't use the expression often, that's because I'd formed the habit of considering all my problems and all my interventions in the *affective* light of this concept"[73]. Relative to Sloterdijk's philosophy of technology, we believe that Nietzsche's influence is especially relevant in at least two regards.

Firstly, Sloterdijk[74] takes inspiration from texts such as *On Truth and Lies in a Nonmoral Sense*[75] to highlight what he calls the "autoimmune" function of intellect. According to Nietzsche, indeed, human intelligence is mostly devoted to crafting reassuring illusions granting sense to our otherwise meaningless existence, thereby preserving and enduring life. However, it may sometimes also debunk these beliefs' illusory and relative character, thereby exposing our lives to the groundlessness of our knowledge about the world. Here, inspired also by Sigmund Freud's concept of narcissistic offence[76], Sloterdijk draws an analogy with technoscientific development. As he argues in his essay *Wounded by*

73 Sloterdijk, *Living Hot, Thinking Coldly*, 320.

74 Sloterdijk, *Living Hot, Thinking Coldly*.

75 Friedrich Nietzsche, *On Truth and Lies in a Nonmoral Sense* (East Sussex: Delphi, 2017).

76 Sigmund Freud, "A Difficulty in the Path of Psycho-Analysis", in *The Standard Edition of the Complete Psychological Works of Sigmund Feud*, ed. James Strachey (London: Hogarth Press, 1955), vol. 17, 137–144.

Machines[77], some advances in science and technology, such as the neuroscientific insights into the foundations of cognition, may jeopardise our anthropocentric narcissism by relativising our place in the world and downplaying our cognitive faculties' alleged uniqueness and exceptionality. Thus, while technoscientific development is usually deemed to improve our living conditions, it may also render us more insecure about what it means to be humans.

Secondly, Sloterdijk attributes to Nietzsche the major merit of having discovered the pervasiveness of the phenomenon of ascesis, "one of the most wide-spread and long-lived facts there are"[78], which Sloterdijk[79] aims to generalise and positively reconsider in terms of anthropotechnics. According to him, indeed, "asceticism in the fundamental sense does not reject the will; it is, on the contrary, an expression of a strong pooling of will, an energetic summary of all partial drives in a single ray of will"[80]. Following Nietzsche, Sloterdijk interprets, therefore, ascetic practices as systems of anthropotechnics, thereby highlighting our capability to mould our own psychophysical constitution through the feedback effects of such technically supported exercises.

Heidegger also exerts a major influence on Sloterdijk, arguably second only to Nietzsche's impact, and Sloterdijk's philosophy may be regarded as a thorough reinterpretation and critical appropriation of Heidegger's main intuitions, especially those coming from *Being and Time* as well as his later meditations on the essence of technology in *The Question Concerning Technology*. Firstly, indeed, Sloterdijk[81] aims to fill in what he believes to be some hermeneutic gaps in Heidegger's existential analytic, balancing off Heidegger's emphasis on temporality with an appreciation of spatiality as a constitutive feature of human existence. Or his appraisal of mortality with a reconsideration of natality and the movement of "coming-into-the-world" as an equally important feature of *Dasein*'s existential kinetics, discussed above.

Secondly, Sloterdijk[82] aims to short-circuit Heidegger's distinction between the ontic and ontological dimensions of human existence, showing how ontic, i.e., empirical, concrete and accidental dynamics may bear ontological value, that is to say, contribute to constituting our existence's fundamental structures, both temporal and spatial[83]. And, in turn, how

77 Sloterdijk, *Not Saved*, 217–236.

78 Nietzsche, *On the Genealogy of Morality*, 85.

79 Sloterdijk, *You Must Change Your Life*, 29–39.

80 Sloterdijk, *Infinite Mobilization*, 74–75.

81 E.g., Sloterdijk, *Not Saved*, 1–48.

82 Sloterdijk, *Not Saved*, 89–148.

83 In this respect, Sloterdijk's work strongly echoes that of Bernard Stiegler, as we hope to show in a later article.

Dasein's ontological traits are grounded on and originated from ontic phenomena. Starting from this perspective, Sloterdijk criticises Heidegger's notorious acrimony towards the empirical sciences, especially biology and anthropology[84]. According to Heidegger, indeed, such "positive" sciences would not contribute to philosophical inquiry, but would rather receive from it their foundation. Conversely, Sloterdijk regards the relationship between science and philosophy as more mutually constitutive and beneficial, integrating and corroborating his philosophical analyses with scientific finds.

Thirdly, as we have already touched upon above, in "thinking with Heidegger against Heidegger"[85], Sloterdijk sets out to overturn one of the main tenets of Heidegger's philosophy, i.e., the originary, irrecoverable and, therefore, inexplicable character of the *Lichtung*, i.e., human existence's receptiveness to the difference between beings and the event of Being as what renders these beings manifest to us. Thus, Sloterdijk inquires into the evolutionary origin of our ontological condition, investigating how a prehuman environment (*Umwelt*) could become a human world (*Welt*) "only under the retroactive effect of spontaneous proto-technologies"[86]. While, according to Heidegger[87], the question of the becoming-human of the animal can only be posed subsequently to having conceptualised the respective essences of "the human" and "the animal", Sloterdijk[88] aims to understand the difference between the human and the animal lifeform starting from the (techno-)evolutionary emergence of the former out of the latter.

Sloterdijk[89] has been concerned with Foucault's philosophy since the beginning of his intellectual itinerary. In particular, he regards Foucault's insights as pivotal to understanding how individuals subjectivize and *are* subjectivised thanks to their relation to technologies[90]. In *Discipline and Punish*, for instance, Foucault emphasises how disciplinary power segments, organises, domesticates and homologates bodies, eliciting coercive collective subjectivation. Instead, in later lecture courses such as *The Hermeneutics of the Subject*, Foucault focuses on how techniques of the self may also yield to the empowerment and emancipation of individual subjectivity. Thus, Sloterdijk recognises in Foucault's work the whole spectrum of what he calls anthropotechnics, i.e., the production of subjectivity through the repetition of technical practices.

Philosophical anthropology, an approach developed in Germany starting from the first half

84 E.g., Heidegger, *Pathmarks*, 39–62.
85 Sloterdijk, *Not Saved*, 96.
86 Sloterdijk, *Not Saved*, 96.
87 Heidegger, *The Fundamental Concepts of Metaphysics*, 178–180.
88 Sloterdijk, *Not Saved*, 89–148.
89 Sloterdijk, *Michel Foucaults strukturale Theorie der Geschichte*.
90 Sloterdijk, *You Must Change Your Life*, 148–159.

of the Twentieth century and canonically featuring thinkers such as Max Scheler, Arnold Gehlen and Helmuth Plessner, is another major source of inspiration for Sloterdijk. We believe one may regard Sloterdijk himself as representative of a contemporary reappraisal of philosophical anthropology. Especially, borrowing this approach's more confident attitude towards the empirical sciences, Sloterdijk[91] aims to combine Gehlen's[92] concept of world-openness—coming, in turn, from Scheler[93]—with Heidegger's existential analytic, investigating the evolutionary origin of our capability to appreciate beings in their manifestation *to* us *as* beings.

Relative to the philosophy of technology, Sloterdijk[94] takes inspiration especially from Gehlen's emphasis on the role played by cultural practices[95] in shaping and moulding our psychophysical constitution to submit his theory of human constitutive technicity. Moreover, Sloterdijk is also influenced by relatively less well-known representatives of philosophical anthropology. For instance, he borrows the paedomorphic understanding of the human lifeform as underdeveloped at birth and thereby requiring extrauterine gestation from the Swiss zoologist Adolf Portmann[96]. And from the German sociologist Dieter Claessens[97], who is inspired, in turn, by the analyses carried out by the German anthropologist and bacteriologist Paul Alsberg[98] and by the US evolutionary biologist Hugh Miller[99], Sloterdijk draws the fundamental idea of human evolution as triggered by distancing and insulation from exogenous selection pressures by technical means—a viewpoint already expressed in *Weltfremdheit* and *Im selben Boot*, as we have seen above. Starting from this perspective, Sloterdijk submits that technologies exert organic functions in place of biological organs and thereby transform these organs accordingly.

Importantly, Sloterdijk aims to overturn one of philosophical anthropology's main tenets, i.e., what he calls *miserabilism*, i.e., the understanding of humans as deficient beings[100].

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91 Sloterdijk, *Not Saved*, 89–148.

92 Arnold Gehlen, *Man: His Nature and Place in the World* (New York: Columbia University Press, 1988).

93 Max Scheler, *The Human Place in the Cosmos: Studies in Phenomenology and Existential Philosophy* (Evanston: Northwestern University Press, 2008).

94 Sloterdijk, *Not Saved*, 89–148.

95 Gehlen, *Man*.

96 Adolf Portmann, *A Zoologist Looks at Humankind* (New York: Columbia University Press, 1990).

97 Dieter Claessens, *Das Konkrete und das Abstrakte: Soziologische Skizzen zur Anthropologie*, 2nd ed. (Berlin: Suhrkamp, 1993).

98 Paul Alsberg, *In Quest of Man: A Biological Approach to the Problem of Man's Place in Nature* (Oxford: Pergamon, 1970).

99 Hugh Miller, *Progress and Decline: The Group in Evolution* (Oxford: Pergamon Press, 1964).

100 Sloterdijk, *Weltfremdheit*, 56.

According to this viewpoint, championed by Gehlen[101], humans would lack the means of biological adaptation to their environment and would, therefore, need to resort to culture in order to survive. Sloterdijk[102] thoroughly criticises this conception and submits that the human lifeform should rather be conceived of as a "luxury being"[103], i.e., as a "pampered" organism benefiting from enhanced unburdening from environmental selection pressures—a perspective, as shown above, that is prefigured already in his early works. Thus, our biology is the evolutionary outcome, rather than the cause, of our technical behaviour, which has selected for a biological setup suitable to produce, use and transmit artefacts.

The analyses carried out by Mühlmann[104] also exert a great influence on Sloterdijk's philosophy of technology[105], insofar as they prompt him to conceive of cultures as domesticating systems, which tame their members and thereby render them suitable to shared living and cooperation at the expense of exteriorising hostile, warlike behaviours towards other cultures, to whom interindividual competition and rivalry are transferred. Finally, Günther's informational theory of cybernetics[106] also bears a significant value on Sloterdijk's philosophy of technology[107]. Indeed, inspired by this reinterpretation of the history of western metaphysics, Sloterdijk claims that we should revise our logic and ontology in order to philosophically understand technology, which is considered an interstitial and irreducible third within the traditional dichotomy between spirit, mind or form, on the one hand, and matter, body or substance, on the other. Thus, Sloterdijk submits that a nonbinary logic and a polyvalent ontology are required for a philosophical understanding of artificiality.

Hence, after delimiting Sloterdijk's understanding of technology from his early trajectory towards the so-called "onto-anthropological turn" and also discussing his main philosophical influences, we can point out what are the main concepts of his philosophy of technology. To structure our argumentation, three concepts will be respectively addressed: immunology, spherology and anthropotechnics.

101 Gehlen, *Man*.

102 Sloterdijk, *Foams*, 651–662.

103 Sloterdijk, *Foams*, 657.

104 Heiner Mühlmann, *The Nature of Cultures: A Blueprint for a Theory of Culture Genetics* (New York: Springer, 1996).

105 Sloterdijk, *What Happened in the 20th Century?*, 23–34.

106 Gotthard Günther, *Das Bewusstsein der Maschinen: Eine Metaphysik der Kybernetik*, 3rd ed. (Baden-Baden: Agis, 2002).

107 Sloterdijk, *Not Saved*, 133–148.

3. Main Concepts of Sloterdijk's Philosophy of Technology

3.1 Immunology

One of the main characteristics of Sloterdijk's anthropological turn, as should have become clear by now, is the conciliation of the human as a being that has to be understood from an existential *and* biological perspective, with an attention to the different *origins* of the entanglement between the biological and the existential. To do so, he points out how we could investigate the *emergence of the clearing*[108], something that remains unthought in Heidegger, who does not address the question of the genesis of *Dasein*'s world-openness or worldliness. If we start from Heidegger's strictly phenomenological-hermeneutical standpoint, Sloterdijk submits that "if the human being is in-the-world then this is because he belongs to a movement that brings him forth and exposes him to the world"[109]. Our main claim here is that this "movement" is deeply related to technology.

Since the notion of "world" is deeply ontological but has implications in various fields of research, such as history, biology, anthropology and psychology, in Sloterdijk's work, it is possible to see how this movement of world-formation or "coming-to-the-world must be understood in multiple ways"[110]. For example, in the first volume of the *Spheres* trilogy, *Bubbles*, we find several debates with psychoanalysis—for instance, with the so-called mirror stage thematised by Jacques Lacan[111]—to reinterpret the "act" of being born and the development of subjectivity as *co-subjectivity*. In other moments, Sloterdijk will address this question in terms of coming into the world politically, with issues such as power struggles[112] and the first gregarious political communities[113] [114]. Nevertheless, here, since we aim to highlight the question of technology in Sloterdijk's thinking, our direction will be that of developing the question of *coming-into-the-world*. This interpretation, as we aim to show, takes the immuno-spherological paradigm and the concept of anthropotechnics (which will be outlined below) as central. Immunology and spherology are two completely intertwined concepts, but we will delve first into the former for schematic purposes.

Sloterdijk has not been the first or the last one to develop the concept of immunity into a framework that we could define as contemporary continental philosophy—authors such

108 Sloterdijk, *Not Saved*, 96.
109 Sloterdijk, *Not Saved*, 206.
110 Sloterdijk, *Not Saved*, 176.
111 Sloterdijk, *Bubbles*, 533–538.
112 Sloterdijk, *Rage and Time*.
113 Sloterdijk, *Im Selben Boot*.
114 Sloterdijk, *Globes*, 187–198.

as Donna Haraway[115], Jacques Derrida[116], Roberto Esposito[117] and Byung-Chul Han[118] use it in multiple directions. However, Sloterdijk will connect it originally with the history of humanity itself, showing how humans always dwell in immunising interiors with defensive or protective qualities, giving special attention to their technological constitution. Nevertheless, as highlighted above, his reading also includes an interpretation of technology from an ontological and existential perspective, pointing out—following but also critically engaging with Heidegger—how technology is also a mode of unveiling since, as we have seen above, the very opening of the question of Being itself has a technological (pre) history. Sloterdijk offers a reinterpretation of the Heideggerian history of metaphysics—as the history of forgetting of Being that finds its last moment in a techno-cybernetic consummation—which could be seen as a "burning away of a conceptual fuse that winds from Athens to Hiroshima"[119]. Introducing the immunological perspective, this trajectory could be extended from the first hominin tools protecting primitive protohuman groups to the complete insulation achieved through the building of spaceships and beyond, since the whole history of metaphysics and its fulfilment, as developed by Heidegger[120], could be seen as one chapter of the history of the immune systems.

However, this whole trajectory must be understood in various ways, with particular epochs and discontinuities. For instance, since modernity, key events started to shake the western onto-theo-logical immunity constructions, such as the Copernican revolution and the Great Discoveries of the Sixteenth century. As Sloterdijk[121] points out, these two "abysses"—respectively the cosmological and the ethnological one—revealed that the immunological catastrophe of the Modern Age is not the "loss of the centre", but rather the "loss of the periphery", since these events reshaped the *frontiers* of our understanding concerning both the universe and ourselves.

With this turning point, the history of modernity could be seen as a progressive adoption of science and technology as the leading western attempt at immunisation against the threats of the outside and the unknown by its empirical and conceptual *explicitation*[122]. This

115 Donna Haraway, "The Biopolitics of Postmodern Bodies: Determinations of Self in Immune System Discourse". *Differences* 1 (1989): 3–43.

116 Jacques Derrida, "Autoimmunity: Real and Symbolic Suicides", in *Philosophy in a Time of Terror: Dialogues with Jurgen Habermas and Jacques Derrida*, ed. Giovanna Borradori (Chicago: University of Chicago Press, 2003), 85–136.

117 Roberto Esposito, *Immunitas: The Protection and Negation of Life* (Oxford: Polity, 2011).

118 Byung-Chul Han, *Psychopolitics: Neoliberalism and New Technologies of Power* (London: Verso, 2017).

119 Sloterdijk, *Not Saved*, 135.

120 Heidegger, *The End of Philosophy and the Task of Thinking*.

121 Sloterdijk, *In the World Interior of Capital*, 29.

122 Sloterdijk, *Foams*, 70–81.

ability to "make the invisible visible" provides a centrality to defensive strategies based on manipulation and unveiling of reality through disclosing causal relations, since there is no more "closed world" whose borders we can clearly see but instead an "infinite universe" susceptible to mobilisation and transformation. Thus, in a scenario of progressive lack of metaphysical unity due to the secularisation process of modernity, western societies need to find another form of dealing with the tension of their surroundings, since their traditional theo-symbolic immunity is not as effective as before anymore. Thus, cultural self-identification via mass consumerism or insurance policies are examples of how contemporary technology can turn into "the campaign to achieve progressive relief from that anonymous stress resulting from oppression by the real"[123].

3.2 Spherology

As previously mentioned, spherology is a central concept within Sloterdijk's articulation of the question of technology. First of all, we can clarify how the concept of space is unequivocally related to the concept of sphere. Sloterdijk[124] begins the discussion of spatiality with a debate with Heidegger, more precisely on the spatiality of *Dasein* and the existential called "being-in" (*In-sein*) outlined in the first section of *Being and Time*[125]. By declaring the need for a broader discussion of the character of spatiality, the developments made in the *Spheres* trilogy point to the radical relationship between (co) existence and spatiality, or how the possibility of creating the world in an ontological sense always occurs in relationship with others, in a successive movement of establishing intimacies and alliances, linking them to a form of interior dwelling. As Rüdiger Safranski paraphrased the famous Sartrean quote from *Existentialism Is a Humanism* to explain Sloterdijk's effort, in the construction of any immuno-sphere, "coexistence precedes existence"[126]. In this way, if we want to delve into human existence, we must go through psychological, anthropological, biological and technological elements underlying how we inhabit the world and construct spaces of coexistence.

However, to highlight technology's central role in the spherological paradigm, it is crucial to demonstrate how the concepts of spherology and immunology are complementary and thoroughly interrelated. Taking the question of technology in perspective, while immunology is about how humans permanently inhabit an interior space by developing defence strategies in the face of an uncanny exterior, spherology is about how these defence strategies are intrinsically spatial. To gain more clarity on the points discussed

123 Sloterdijk, *Stress and Freedom*, 29.
124 Sloterdijk, *Bubbles*, 333–342.
125 Heidegger, *Being and Time*, 97–105.
126 Sloterdijk, *Burbujas*, 16.

above, we can make a short digression into some of Sloterdijk's constructions. This will also help us emphasise how broad his formulations are, insofar as they combine empirical aspects related to technical artefacts with ontological considerations on technology, reinforcing the already discussed thesis of human constitutive technicity.

Firstly, we can mention the relationship between spherology and the production of the conditions of habitability—which implies the delimitation of an exterior and an interior and the production of means by which a world can emerge and stabilise itself within a space, if we interpret the latter in a co-existential reading. Taking this perspective, one exciting development highlighting the question of technology in immuno-spherological terms is the production of habitable spaces through "air conditioning"[127]. Interpreting the concept of mood (*Stimmung*) initially developed in Heidegger's *Being and Time*, Sloterdijk shows that this word can have two different meanings—one related to the often-reminded existential-ontological perspective and another related to the "ontic" climatological aspect. With this, the onto-climatic reading of existential analytic reveals that one could understand the ekstatic character of *Dasein* (as a being that always exists in projecting itself towards the outside) as revealed spatially by a shared atmosphere, in which being-in-the-world can be understood as "being-in-the-air"[128]. In this way, it is possible to offer a reading of twentieth-century technology as technical manipulation of dwelling units via the explicitation and management of atmospheric conditions, or as he writes, "where there was 'lifeworld', there must now be air conditioning technology"[129]. The figure of the Crystal Palace recovered from Fjödor Dostoyevsky's writings[130], shopping malls[131], technoscientific experiments such as Biosphere 2[132] and space stations[133] are some examples by which techno-immuno-spherological design currently takes place through the explicitation and control of the "lifeworld" conditions, giving our epoch a topology highly influenced by technology, making possible an ambiguous and complex morphology of the present made by co-isolated units[134].

Secondly, as already demonstrated earlier in this article, there is a progressive distancing from the natural environment through the abovementioned process of production of the conditions of habitability. Such distancing can be understood as an amplification of the technological mediation during human evolutionary trajectories, as it will be

127 Sloterdijk, *Foams*, 144–178.
128 Sloterdijk, *Globes*, 138.
129 Sloterdijk, *Foams*, 66.
130 Sloterdijk, *Globes*, 171.
131 Sloterdijk, *Foams*, 168.
132 Sloterdijk, *Foams*, 327.
133 Sloterdijk, *What Happened in the 20th Century?*, 106–110.
134 Sloterdijk, *Foams*, 52–61.

further developed in the section on anthropotechnics. Thus, the complexification of the Heideggerian ontological difference between human and nonhuman animals will also be an important issue for Sloterdijk, since for him, humans can be understood as a long-range process with existential and biological aspects[135]. In this way, the spherological paradigm features a description of what are the enabling techno-anthropological mechanisms of the conformation of a world (*Welt*) from an environment (*Umwelt*), to put in the words used by Heidegger in his lecture course *The Fundamental Concepts of Metaphysics*.

This discussion is synthesised in two moments. The first one is developed in the essay *The domestication of Being*[136], where Sloterdijk provocatively twists the Heideggerian concept of "enframing" (*Gestell*) into "enhousing"[137] (*Gehäuse*), showing that the essence of technology can be interpreted as a mode of unconcealment, but also taking into consideration an evolutionary-anthropological perspective. This interpretation also changes the Heideggerian characterization of the essence of technology as related to a challenging (*herausfordern*) of beings[138] into technology as "the" original possibility of human becoming and their primal condition as space dwellers. The second one is elaborated in *Foams*[139], where the phenomenon of anthropogenesis is approached as the combination of "nine anthropogenic islands"[140]. Consequently, the genesis of the human is understood in one of its dimensions as a process of creation of spaces through the handling of tools, playing a central role in the evolutionary drift of the species through a cybernetic greenhouse effect. In this process, two different forms of equipment can be highlighted. The first is the throwing equipment, insofar as with it there is the beginning of the question of distance in the humans' dealings with their surroundings[141]. The second are the sharp instruments and their consequent possibility of separation and distinction, impacting (ontically and ontologically) the relationship between humans and their spatiality during anthropogenesis[142].

The third point concerns the unavoidable role of "the other" in the technical constitution of spherology. As in all other perspectives developed throughout *Spheres*, Sloterdijk operates his conceptual construction of technology on the premise that being-with (*Mitsein*) is the primordial existential horizon through which humans inhabit the world. With this, all processes of production of the conditions of habitability and distancing from the natural

135 Sloterdijk, *Not Saved*, 89–148.
136 Sloterdijk, *Not Saved*, 89–148.
137 Sloterdijk, *Not Saved*, 110.
138 Heidegger, *The Question Concerning Technology*, 320.
139 Sloterdijk, *Foams*, 340–353.
140 Sloterdijk, *Foams*, 333–340.
141 Sloterdijk, *Foams*, 347–348.
142 Sloterdijk, *Foams*, 351–352.

world through technology occur based on establishing relations with one another at the most different moments in the narrative of the human being. For example, in the process of anthropogenesis—which is a techno-anthropological question through and through, as we explore in this article—the space inhabited by the first groups is not the space of physicists and geometrists but an interior provided by "walls and roofs of solidarity"[143], made possible by the simultaneous opening of the world of its participants through technological mediation. To put it another way, taking human groups as always existing in sphero-poietic spaces, "without their simultaneous opening, the coexistence of humans with their own kind and the rest in a shared whole would be inconceivable"[144]. At another extreme, when Sloterdijk diagnoses the present time in topological terms, addressing contemporary issues such as the tensions and contradictions of our technosphere, his central concept of foams has a close relationship with how we are simultaneously isolated and connected to each other—or in other words: technologically co-isolated: "foams thus constitutes a paradoxical interior in which, from my position, the great majority of surrounding co-bubbles are simultaneously adjacent and inaccessible, both connected and removed"[145].

3.3 Anthropotechnics

Sloterdijk introduces the concept of anthropotechnics in his essay *Rules for the Human Park*[146], initially delivered as a lecture which occasioned a heated public debate in 1999, confronting him with some representatives of the Frankfurt School, in particular Jürgen Habermas, Axel Honneth and their allies in the German press (e.g., Thomas Assheuer), who were accusing Sloterdijk of covertly supporting a eugenicist politics favouring human genetic enhancement[147]. However, at a closer look one may easily appreciate how, despite some cursory references to genetic engineering, the stakes of the *Elmauer Rede* are both less controversial and more radical than what these unfounded allegations may lead one to believe.

Indeed, combining insights coming from Nietzsche's conception of ascesis with Foucault's reflection on techniques of the self, Sloterdijk aims to draw our attention to the human anthropotechnical constitution: "the concept of anthropotechnics designates nothing but that no *Homo sapiens* has yet fallen from the sky, that this creature is therefore attained

143 Sloterdijk, *Foams*, 337.

144 Sloterdijk, *Foams*, 336.

145 Sloterdijk, *Foams*, 54.

146 Sloterdijk, *Not Saved*, 193–216.

147 Heinz-Ulrich Nennen, *Philosophie in Echtzeit: Die Sloterdijk-Debatte. Chronik einer Inszenierung* (Würzburg: Königshausen & Neumann, 2003).

only by means of technogenic effects, which react to their own evolutionary drift"[148]. Our morphology, cognition and behaviour are shaped by the feedback effects of our technical practices. As it is further elaborated upon in the essay *The Domestication of Being*[149], every human group puts in place sets of pedagogical, ritual and biopolitical apparatuses devoted to framing its members' behaviours and thereby rendering them suitable to live within their sociocultural environment. These self-referential practices or exercises (Übungen) are characterised by sequencing, iterability and recursion: "in every performance of practicing, an action is carried out in such a way that its present execution co-conditions its later execution"[150]. They thereby retrospectively produce the subjects who perform them, enacting "the basic anthropotechnic law: the repercussions of all actions and movements on the actor"[151].

As Sloterdijk extensively argues starting from his book *You Must Change Your Life*, devoted to developing a "general anthropotechnology" or the comparative study of historical systems of anthropotechnics, these practices initially concern the collective dimension, leading to disciplined and homologated behaviours that are mostly nonteleological and unintentional. The elders' subjectivity, Sloterdijk claims[152], is thereby faithfully and forcefully reproduced over the younger ones. Subsequently, concomitantly with the advent of advanced civilisations, anthropotechnics also involve single individuals—whose subjectivity is thereby enhanced and differentiated—and increasingly manifest themselves as goal-directed and premeditated programmes of action.

Thus, anthropotechnics are those practices devoted to forming subjectivity through repeated actions. They involve, therefore, all sorts of habits, rituals and exercises, regardless of whether they refer mostly to a bodily, spiritual or ecological dimension. Hence, one major merit of Sloterdijk's anthropotechnology, we believe, is to reunite under a common theoretical paradigm and methodology of inquiry all subjectivity-shaping practices, thereby grouping together phenomena as different as kinship structures and meditation techniques, plastic surgery and esoteric cults, literary media and etiquette. Regarding the philosophy of technology, we now aim to stress two implications of Sloterdijk's anthropotechnology, thereby also connecting it to the other major topics of his thought reviewed above.

Firstly, anthropotechnology prompts us to regard humans as plastic organisms whose subjectivation depends on their developmental routes and environmental interactions

148 Sloterdijk, *After God*, 137.
149 Sloterdijk, *Not Saved*, 89–148.
150 Sloterdijk, *The Art of Philosophy*, 8.
151 Sloterdijk, *You Must Change Your Life*, 320.
152 Sloterdijk, *Die schrecklichen Kinder der Neuzeit*, 222–242.

rather than on some "intrinsic", genetically determined criterion or their passive adaptation to the "external" environment alone. Humans are those animals who can act upon their biology through technical means and thereby accordingly shape their behaviour and cognition. Consequently, anthropotechnology bears political stakes: once subjectivity's constructed character is considered, we shall become mindful of the decisional and selectional processes determining which systems of anthropotechnics may be adopted by a given community, i.e., which kind of individuals that community wants to produce.

This process's *cybernetic* recursion should not be overlooked: we adopt a given set of anthropotechnics; these anthropotechnics mould a given type of subjectivity; the individuals undergoing this process of subjectivation, in turn, will accordingly operate decisions over which kinds of anthropotechnics should be adopted; these anthropotechnics will produce other subjects and so on, via reciprocal causation where humans are both the subjects and the objects of their own, self-forming practices. Adopting anthropotechnics, therefore, amounts to apprehending programmes of actions and inscribing them into our biology, overwriting the formerly learned programmes and thereby altering our psychophysical and behavioural mechanisms through differential repetitions.

Secondly, Sloterdijk distinguishes[153] between anthropotechnics, i.e., reiterated practices ontogenetically moulding our subjectivity, and what he calls anthropogenetic technics, i.e., phylogenetic mechanisms evolutionarily producing the human lifeform across multiple generations—exemplified by technical insulation and distancing from external selection pressures, as reviewed above. Indeed, we may only shape our subjectivity through sequences of anthropotechnics provided that we are endowed with enhanced plasticity, which enables us to modify our cognition and behaviour based on environmental interrelations. Now, as submitted by his sphero-immunological approach outlined above, Sloterdijk regards the human environment as artificially climatised and immunised from exogenous selection pressures. Since this artificial environment's conditions of usage, maintenance and reproduction need to be learned during development, those individuals who, displaying enhanced plasticity, prove more suitable to cope with its constructed character and take advantage of it will thrive and consequently gain better chances to reproduce and pass on their genes.

Importantly, a cybernetic recursion obtains also between anthropotechnics and anthropogenetic technics. The technical engineering of the human environment and consequent dampening down of external selection pressures is acquired through anthropotechnics, which produce subjectivities suitable to take care of this environment and thrive within it. Anthropogenetic technics, enacted through anthropotechnics,

153 Sloterdijk, *Not Saved*, 126–127.

evolutionarily selects, in turn, for those traits which better fit in with its endogenous selection pressures. Sloterdijk[154], therefore, submits that anthropotechnics are necessary, firstly, to preserve the pampered conditions where the human offspring can thrive, i.e., to endure and secure our artificial environment. Secondly, to cope with the drawbacks of our developmental plasticity, i.e., our exacerbated receptiveness to multiple, undetermined stimuli. Thus, while humans produce their own environment through systems of anthropotechnics, this artificial environment selects for the individuals more suitable to enhance and endure this construction.

Now, after discussing the *genesis* of Sloterdijk's onto-anthropological perspective and his main philosophical concepts regarding technology, we can investigate how it is possible to look not only to the *past* of our relationship with technology but also to the *future*. This will imply characterising the ecological crisis in which we are immersed and its relation to technology on a global scale, since our planetary species seems to have technology as its primary way of dwelling on the Earth.

4. Technology and the Ecological Crisis in Sloterdijk`s Thinking

4.1. The Anthropocene and the Technosphere

In *Not Saved*, Sloterdijk explicitly endorses the idea of the human condition as a technical condition through and through by rephrasing Jean-Paul Sartre's famous statement from *Existentialism Is a Humanism* that "*Nous sommes sur un plan où il y a principalement la technique*"[155] ("We are on a plane where there is principally technology"). It is not first of all Being, as Heidegger claimed in his equally famous rephrasing of Sartre's statement in the *Letter on Humanism*[156], that makes humans possible but technology, which opens up *Dasein* in the human organism and thereby renders this organism human in the emphatic sense of being the exceptional noetic (i.e., thinking and knowing) creature that is open to the openness or clearing of Being. It is technology that is the plane on which the human as the onto-logical being Heidegger referred to as the *homo humanus* is first of all possible. This means for Sloterdijk that "*Humanitas* depends on the state of technology"[157] and this implies for him that technology is far from the alienating and dehumanising force traditional humanists accuse it to be. Nonetheless, technology is the very thing through which humans have always and will forever tinker with their own evolving humanity, a coevolutionary process that is currently about to enter, as already discussed above, the

154 Sloterdijk, *Not Saved*, 126.
155 Sloterdijk, *Not Saved*, 142.
156 Heidegger, *Letter on Humanism*, 237.
157 Sloterdijk, *Not Saved*, 142.

profoundly invasive stage of direct *molecular* modification of human biology and that is also dramatically intervening—e.g., through geoengineering—in the natural environment in which this sphero-poietically and immunologically driven evolution takes place[158].

Indeed, contemporary technology not only intervenes more directly in human biology—due to its increasing precision and power. It is also interfering in ever more direct ways with other forms of life and with the whole biosphere. The latter has been affected in the last two centuries on a global scale by the impacts of technological development to such an extent that today the biosphere is threatened in its functioning as humanity's ultimate life support system by a rapidly expanding global technological system of which geologists have recently argued that it has become a geological phenomenon itself. It is on a par in its material and energetic throughout and, therefore, in its Earth-systemic pertinence, with the biosphere as well as with other geospheres. This new geosphere has been called the technosphere by the American geologist Peter Haff[159], who argues that it will be the crucial geosphere of the emerging Anthropocene age, both decidedly impacting on the planet as well as on the planetary feedback on human existence.

In Sloterdijk's terminology we could say that the technosphere represents the result of the planetary extension of human sphero-poietic activity. We could argue from his perspective that humans have only become capable of significantly affecting their biospheric residence since their entrance into modernity. From this moment on, western culture and gradually virtually all other cultures across the planet transitioned in a decisive way from symbolic (and for Sloterdijk ultimately impotent and illusory) immunisation strategies to technical (and for Sloterdijk powerful and effective *because* explicative and causal-operational) immunisation strategies—this substitution being the hard core of the modernisation process, in his view[160] [161] [162].

Given that the technosphere as a collective human construction is now crucially affecting the biosphere, it is becoming clear that through it humanity has gained *de facto* responsibility for its future destiny, as Sloterdijk also emphasises[163]. Some three centuries of technoscientific explicitation, extraction and exploitation of what was perceived to be the "natural environment" have resulted in its effective transformation from an inoperative background into an increasingly unstable, active and provocative foreground

158 Sloterdijk, *Not Saved*, 142.

159 Peter Haff, "Technology as a Geological Phenomenon: Implications for Human Well-Being". *Geological Society London Special Publications* 395, no. 1 (2013): 301–309.

160 Sloterdijk, *Living Hot, Thinking Coldly*, 319.

161 Sloterdijk, *Der ästhetische Imperativ*, 241.

162 Sloterdijk, *Globes*, 845.

163 Sloterdijk, *What Happened in the 20th Century?*, 7.

possessing its own inherent dynamisms and operations, such that the whole distinction between (natural) background and (human-cultural) foreground in fact collapses and the traditional "backstage ontology" of western metaphysics and anthropology needs to be replaced by an ecologically informed ontology of profound interconnectedness and interdependence. This represents an onto-anthropo-technological caesura that also implies the end of modernity's "cosmic carelessness"[164] and inevitably heralds a new age of collective care for the Earth as our unique cosmic ark—care that is "for the cohabitation of the Earth's citizens in both human and nonhuman form"[165].

The future of technology, therefore, will decidedly *not* be that of continuing modernity's course of conquering nature but, on the contrary, of keeping open the very possibility of continuing the process of civilisation[166]. Despite acknowledging the fact that modern technology and the will to power behind it can to a large extent be held responsible for the damage afflicted to the biosphere and are, therefore, frequently attacked in a fundamental way by those who want to "save the planet", Sloterdijk generally displays remarkable confidence in the potentials of technology, claiming, for instance, that technology has not yet spoken its final word, regarding its future new configurations and modes of relation to nature[167]. Indeed, as the technically advanced and thoroughly technically dependent creature that it is and increasingly becomes, the human is forever condemned to technology's "alchemy"[168] and bound to the further deployment of its will to power, which for Sloterdijk inextricably and necessarily belongs to the inherently negative and deviant stance vis-a-vis nature that typically characterises the human species' evolutionary trajectory[169].

The only possibility for humans to be saved not only from outright extinction but also from their ontological demise (which was Heidegger's greatest concern as we know) is not to wait for a "divine intervention", as the late Heidegger notoriously claimed. It is no other than our reviled and admittedly reprehensible will to power, understood by Sloterdijk as the striving to match the creative potential of God as *natura naturans* through technical knowledge of creation[170]. If "God" in this sense means "the capacity to create natures", as Sloterdijk proposes with Spinoza in a creationist-technicist fashion utterly different from Heidegger's onto-historial understanding of the divine, the technology to come should emerge from a transformation of this capacity in "the capacity to cooperate with

164 Sloterdijk, *What Happened in the 20th Century?*, 22.
165 Sloterdijk, *What Happened in the 20th Century?*, 42–43.
166 Sloterdijk, *What Happened in the 20th Century?*, 31.
167 Sloterdijk, *What Happened in the 20th Century?*, 20.
168 Sloterdijk, *Not Saved*, 192.
169 Sloterdijk, *Not Saved*, 187–188.
170 Sloterdijk, *What Happened in the 20th Century?*, 20.

natures"[171], which is to say in the transition from allotechnics to homeotechnics, as we will discuss below. Only if the technosphere is reimagined and reengineered to switch from a framework engendering careless and reckless extraction and exploitation of "old nature" towards a structure supporting a careful and intelligent co-operation and co-production with the biosphere, will humanity have a chance of continuing to survive and possibly thrive on the Earth. Indeed, such a homeotechnological and as such non-domineering turn of what Heidegger theorised as the essence of technology, which also assumes a less imperious and more refined and playful subject[172], might lead to a "multiplication of the Earth", as Sloterdijk suggests[173], i.e., an enrichment and diversification of its potentials as a life support system.

4.2 Globalisation and Global Co-immunisation

Heading now to the issue of globalisation and its relation to the ecological catastrophe, one of the crucial features of Sloterdijk`s thinking is his position in the debate on postmodern scepticism regarding the modern philosophical and technoscientific grand narratives, as they are understood by Jean-François Lyotard[174]. Taking a Nietzschean perspective, Sloterdijk rejects any resignation in small, local and situated narratives, instead going in the opposite direction. For him, to face the challenge of dwelling in the technosphere, we need even bigger narratives, since we do not any longer need to fully trust those kinds of narratives as foundations to reveal a sort of hidden truth about the world, for instance, as modern thinking often required[175].

Sloterdijk claims[176] that globalisation can be seen as a historical trajectory of grand proportions, unlike the limited concept formulated by contemporary sociology as something recent. The process of globalisation would have already begun mainly with Ancient Greek philosophy in the thoughts of Parmenides and Plato with the "geometrisation of the immensurable"[177]—a metaphysical attempt to build a transcendent immune system—being followed by the imperialist colonial expansion of the West in which "no point on the earth's surface, once money had stopped off there, could escape the fate of becoming

171 Sloterdijk, *What Happened in the 20th Century?*, 20.

172 Sloterdijk, *Not Saved*, 146.

173 Sloterdijk, *What Happened in the 20th Century?*, 38.

174 Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge* (Minneapolis: University of Minnesota Press, 1984).

175 Sloterdijk, *In the World Interior of Capital*, 4.

176 Sloterdijk, *In the World Interior of Capital*, 9.

177 Sloterdijk, *Globes*, 45.

a location"[178]. The progressive change from the metaphysical immunological paradigm to the technological one takes us towards the third and final moment of consummation of terrestrial globalisation through the planetary synchronisation performed by the information and communication technologies appearing at the end of the Twentieth century. With this, technology as the construction of habitable interiors gains enormous importance. For instance, using the metaphor of the Crystal Palace, the globe can be seen as an expanding greenhouse in which its inhabitants pursue technological immunisation strategies, for example, with insurance policies and biotechnology[179].

However, as the process of terrestrial interconnection is completed through the unstoppable flux of capital and information, we finally become aware of the fragile structure of our biotechnological life support systems and of the Earth as the foundation of all possible "life, thought and invention", i.e., the realisation of *monogeism*[180]. Modernity and its "side effects" are dramatic if we consider our planetary situation, leaving a challenge for us to develop a *prospective* intelligence since the emerging "world society will be a society of foresight, or it will not be at all"[181]. Furthermore, the climate crisis and the struggles between different "societal units" or immune systems challenge the possibility of civilisational coexistence since the "coexistence of humankind is no more an abstraction of the Enlightenment"[182], but a real issue of our global village, leading to a warning about the necessity of developing a resolutely post-metaphysical general immunology[183] or, as stated provocatively, co-immunism[184].

Considering now more directly the relationship between globalisation and the climate catastrophe, developing a fruitful interface between these two themes shows itself as a challenge of our time, which is evident in the paraphrase chosen by Latour—of Sloterdijk's work—to *Facing Gaia*, which states that "it is no longer politics *sans phrase* that is destiny, but rather climate politics"[185]. Such a task can be better answered if we consider some of Latour's interpretations regarding the concepts developed by Sloterdijk.

One of Latour's primary concerns[186] is to give materiality to the representations of the mode of existence of the Moderns, which are heading us towards an unprecedented

178 Sloterdijk, *In the World Interior of Capital*, 140.
179 Sloterdijk, *In the World Interior of Capital*, 154.
180 Sloterdijk, *In the World Interior of Capital*, 6.
181 Sloterdijk, *Not Saved*, 192.
182 Sloterdijk, *Selected Exaggerations*, 258.
183 Sloterdijk, *You Must Change Your Life*, 451.
184 Sloterdijk, *Selected Exaggerations*, 259.
185 Sloterdijk, *Globes*, 333.
186 Bruno Latour, *An Inquiry into Modes of Existence: An Anthropology of the Moderns* (Cambridge: Harvard University Press, 2013).

ecological crisis, and also to offer an alternative theoretical framework for the entangled reality we live in, using, for example, his famous approach to Actor-Network Theory to describe globalisation[187]. Besides the criticisms made by Sloterdijk[188] of Actor-Network Theory, for instance, because of its bidimensional thinking and consequent neutralisation of existential space, spherology shows itself to be a theoretical ally to the Latourian project regarding the ecological crisis. This occurs because in both approaches the globe is not only understood as a "modern" representation of the planet we live on or as a kind of background, but it is the real and local habitat that provides the technical conditions of possibility for us to think and act upon it, embedded with local histories and conditions of its agents, or as Latour states, "the global is part of local histories"[189]. Moreover, in addition to the physical materiality of the immunological envelopes in which we are inserted, the globe also has a natural history inseparable from human history due to the advent of the Anthropocene, as discussed by several anthropocenologists, such as Dipesh Chakrabarty[190].

Furthermore, Latour's interpretation of co-immunism in Sloterdijk's philosophy takes into consideration the concept of Gaia, as it highlights the interactivity and response of the environment in which we are involved, demanding a mode of inhabiting the globe that is responsive and sensitive to "these multiple, controversial, mutually entangled loops"[191]. Adding technology to the previous problem, it is clear that both Latour and Sloterdijk converge in considering the fundamental role of discovering new forms of hybridisations between technology and nature that escape the dualisms established by modernity, whether through a compositionist perspective—trying not to separate ourselves from nature but assuming and radicalising our entanglement with it[192]—or homeotechnics (as discussed below in this paper). So, for both authors, it is not a question of denying technology or finding "moral limits'' towards its use. Instead, the main task is how we could develop philosophical reflections that could enable technology to go beyond the modern dichotomies and allow for our (more and more real) global coexistence in the face of the ecological catastrophe.

However, the receptions of Sloterdijk's elaborations received the most varied reactions. On the one hand, Latour[193] considers Sloterdijk an ally, categorising immunology

187 Latour, "Spheres and Networks".

188 Sloterdijk, "Spheres Theory".

189 Latour, "Spheres and Networks", 142.

190 Dipesh Chakrabarty, "The Climate of History: Four Theses", *Critical Inquiry* 35, no. 2, (2009): 197–222.

191 Latour, *Facing Gaia*, 141.

192 Latour, "Love Your Monsters".

193 Latour, *Facing Gaia*, 123.

as the first anthropocenic discipline, since the Anthropocene would be the event of "divine" proportions that would enable us to rediscover a common vertical attractor or anthropotechnics necessary for global co-immunity[194]. On the other, authors with a Marxist-psychoanalytical background, such as the Slovenian philosopher Slavoj Zizek, are critical of the previous ideas because they have a greater reliance on solutions that start from the problem of political organisation and a pessimism concerning the "human nature"[195]. Another criticism that deserves to be highlighted is the one made by the French philosopher Bernard Stiegler[196] due to the lack of a pharmacological understanding of technology in Sloterdijk's diagnosis, insofar as the former regards technology as essentially ambiguous in the Ancient Greek sense of the term *pharmakon* (i.e., both a poison and a medicine) and that the latter would succumb, therefore, to a *hybris* when seeing "existential opportunities" in the catastrophe we are going through.

4.3 Homeotechnics

Sloterdijk[197] submits that the transition from traditional and local immunity to global co-immunity may only occur as a transition within the way we conceive of and perform technology. Indeed, traditionally technology has always or almost always been what Sloterdijk[198] terms allotechnics, i.e., the imposition of extrinsic goals on natural substances and processes, thereby conceiving of nonhuman natures as generic, servile and inert matter. The technology to come is termed homeotechnics, meaning a cooperative, co-natural and "non-domineering form of operativity"[199], which should cooperate with natural substances and processes according to their intrinsic potentials.

Inspired by Günther's insights, outlined above, Sloterdijk submits that allotechnics is based on a monovalent ontology and a bivalent logic, while homeotechnics rests on a nonbinary and polyvalent conception of reality and truth, where the allegedly sovereign and active mind is not opposed to the allegedly submissive and inert matter anymore: "in the traditional concept of matter it is assumed that, on the basis of its resistant and minimal qualities, it will only be used heteronomously"[200]. Thus, Sloterdijk[201] argues, allotechnics manifests itself as a break with natural processes, i.e., as their simplification

194 Sloterdijk, *You Must Change Your Life*, 442–452.
195 Sloterdijk, *Selected Exaggerations*, 263.
196 Stiegler, *The Neganthropocene*, 114.
197 Sloterdijk, *What Happened in the 20th Century?*, 1–23.
198 Sloterdijk, *Not Saved*, 133–148.
199 Sloterdijk, *Not Saved*, 144.
200 Sloterdijk, *Not Saved*, 143.
201 Sloterdijk, *Neither Sun nor Death*, 326–330.

and, therefore, violent domination, while homeotechnics amounts to a novel understanding of the relationship between humans and their multispecies and artefactual environments based on intermingling, cooperation and co-information.

Admittedly, Sloterdijk's conceptualisation of homeotechnics risks remaining overly vague and unduly optimistic. However, we believe it is noteworthy to point out, in this regard, that this transition towards a novel configuration of technology is rendered possible, in turn, by the constitutive ambiguity of Sloterdijk's conception of technology itself, whose essence is not given once and for all but rather coevolves with the human lifeform. And indeed, in his latest book, *Die Reue des Prometheus*, dedicated to Latour's memory, Sloterdijk submits that, in order to avoid the looming ecological catastrophe, a change in our worldview towards an "energetic pacifism" should be accompanied by a thorough restructuration of our socio-political institutions as well as the substantial implementation of novel kinds of technologies. Even if, in this context, Sloterdijk[202] does not explicitly labels as homeotechnics these practices, such as renewable energies generators, microbially produced food supplies and microdevices transforming the kinetic energy yielded by our daily gestures into storable electric energy, we believe that they would fit in with the homeotechnological paradigm nonetheless, thereby rendering it more concrete.

5. Conclusion

Sloterdijk's philosophy exhibits multifarious directions of inquiry and with the present, necessarily limited overview we do not aim to expound the enormously wide-ranging spectrum of his thought. However, by focusing on Sloterdijk's concepts and analyses more directly related to the question concerning technology, we believe to have cogently shown how Sloterdijk should be considered a philosopher of technology proper, although he does not understand himself that way and has hardly addressed the question of technology head on.

As reviewed above, indeed, Sloterdijk starts to deal with technology sporadically and nonthematically in his early works in the 1980s but, from the early 1990s onwards, he clearly develops an anthropological focus leading him to investigate how technologies subjectivise and actually produce humans—indeed "hominise" and "humanise" us—in works such as *Weltfremdheit* and *Im selben Boot*, eventually elaborating an arguably full-fledged philosophy of technology in his most important works such as the *Spheres* trilogy, *Not Saved* and *You Must Change Your Life*. Finally, this explicit interest in the study of

202 Sloterdijk, *Die Reue des Prometheus*, 57–69.

technology prompts Sloterdijk to devote special attention to the use and conception of technology when discussing pressing contemporary issues, such as global warming and geoengineering, in recent works such as *What Happened in the 20th Century?*.

Thus, we submit that Sloterdijk's philosophy should be considered a philosophy of technology strictly speaking, firstly, because he develops thematic analyses of concrete, individual technologies—ranging from contemporary housing units[203] and early modernity's ships and containers[204] to prehistoric lithic industry[205] and late twentieth-century space stations[206], just to name a few. Secondly, because he sets out to elaborate a systematic and explicit conceptualisation of technology "as such", thereby taking into account the philosophical challenges posed by understanding it as an anthropologically universal phenomenon. Thirdly, because the core tenets of his philosophy display a technological dimension which binds them together and organises them into a coherent conceptual paradigm, where the production of interior spaces (spherology) through self-forming, iterating techniques (anthropotechnics) leads to their climatisation against external selection pressures (immunology), as discussed above.

Hence, in light of the above, we believe that (at least) two main insights from Sloterdijk's philosophy of technology deserve particular attention. Firstly, his strong conceptualisation of human constitutive technicity[207], i.e., the idea that humans could neither evolve nor survive or be conceived of regardless of their relation to technologies. According to Sloterdijk, we are technical organisms, insofar as our cognition, morphology, ecology and behaviour are enabled, supported and mediated by technical practices through and through. From this perspective, the human lifeform results from the intertwinement between biological and technological processes. Secondly, his focus on the evolutionary origins of our relation to technology. Indeed, in texts such as *The Domestication of Being*[208], Sloterdijk investigates how the relationship between the most ancient technologies and the (pre)human lifeform originated, thereby engaging in a fruitful and critical dialogue with evolutionary biology, psychology and palaeoanthropology.

This methodological emphasis on the evolutionary dimension of our relation to technology should prompt us to consider the latter as something more originary and encompassing than "humanity", which is rather produced and transmitted by it. In this regard, Sloterdijk's

203 Sloterdijk, *Foams*, 529–563.
204 Sloterdijk, *Globes*, 237–248.
205 Sloterdijk, *Not Saved*, 111–133.
206 Sloterdijk, *Foams*, 296–315.
207 Havelange, "Les représentations".
208 Sloterdijk, *Not Saved*, 89–148.

work shows many parallels with that of Stiegler[209]. Indeed, the latter's notion of originary technicity resonates strongly with Sloterdijk's core conception of technology as the anthropic-anthropogenic operator par excellence, albeit the former lays more emphasis on the temporal, onto-chronological aspects while the latter highlights the spatial, onto-topological dimension[210]. This strong resonance obviously invites further reflection.

In conclusion, we believe that it would be worth investigating how Sloterdijk's thought should be contextualised within the broader debate in the philosophy of technology. Contemporary historiography[211] usually identifies an "empirical turn"[212] within this field of study, which would amend the overly abstract, pessimist and determinist elan pertaining to so-called classic philosophers of technology such as Jacques Ellul, Martin Heidegger and Herbert Marcuse[213]. Nowadays, the empirical turn, championed by authors such as Don Ihde and Peter-Paul Verbeek, is the dominant approach in the field and has inspired several debates about its influence and recent developments[214]—despite criticisms have also been raised against its tendency, for instance, to eschew from the elaboration of a general concept of technology[215] or from an analysis of the challenges posed by the global technical system[216]. And indeed, the empirical turn is not the only extant approach to the philosophy of technology. Other ways to deal with technology have also been developed in the last decades by authors such as Latour, Stiegler, Gilbert Simondon and Yuk Hui.

Hence, how shall we position Sloterdijk's thought relative to this debate? On the one hand, we argue that Sloterdijk's approach is hardly considerable as belonging to the classic philosophy of technology, not only for obvious chronological reasons but most importantly because it does not exhibit the stigmata usually labelled to this approach by supporters of the empirical turn and evoked above. On the other, it is also not easily identifiable with the empirical turn in the philosophy of technology, firstly, because

209 E.g., Stiegler, *Technics and Time 1*.

210 Lemmens and Hui, "Reframing the Technosphere".

211 E.g., Maarten Franssen et al., "Editorial Introduction: Putting the Empirical Turn into Perspective". In *Philosophy of Technology After the Empirical Turn*, ed. Maarten Franssen et al. (New York: Springer, 2016): 1–10.

212 Hans Achterhuis, "Introduction: American Philosophers of Technology". In *American Philosophy of Technology: The Empirical Turn*, ed. Hans Achterhuis (Bloomington: Indiana University Press, 2001), 1–9.

213 Philip Brey, "Philosophy of Technology After the Empirical Turn", *Techné: Research in Philosophy and Technology* 14, no. 1, (2010): 36–48.

214 Peter-Paul Verbeek, "The Empirical Turn", in *The Oxford Handbook of Philosophy of Technology*, ed. Shannon Vallor (Oxford: Oxford University Press, 2022): 35–54.

215 Agostino Cera, "Beyond the Empirical Turn: Elements for an Ontology of Engineering", *Információs Társadalom* 20, no. 4, (2020): 74–89.

216 Lemmens, "Thinking Technology Big Again".

Sloterdijk considers technology throughout the entire human history, thereby not limiting his focus of inquiry to modern technology alone—as is usually the case not only with representatives of the empirical turn but also with Latour, who is arguably closest to Sloterdijk in his general conception of technology. Secondly, because he does not give up on investigating questions of constitution, i.e., to inquire into the conditions of possibility and impossibility (Derrida) of both technical behaviour and the lifeform exerting it, contrary to what seems to be the case in the empirical turn.

Finally, regarding the "philosophical temperament" of this article, it should have become clear to the readers that our main concern is to present the general aspects of what could be called Sloterdijk's philosophy of technology, thereby leaving aside the question of an in-depth philosophical critique of its main tenets. Consequently, we hope that our attempt may foster a wide range of debates about the limits and tensions found in Sloterdijk's conceptual framework. Hence, we submit that an appraisal of Sloterdijk's thinking as a significant contribution to the philosophy of technology proper and, indeed, one of a particular kind may prompt scholars to revise and enrich the terms of this already diverse and exciting field of study and demands, therefore, further research.

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TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

Gaia Is a Tough Bitch

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Abstract:
This essay stages a critical engagement with the late works of James Lovelock, the famous Gaia scientist hagiographized by Science Studies scholar Bruno Latour. I argue that Latour's celebration of Lovelock's Gaia dangerously obscures a more compelling version of Earth systems' theory, belonging to Lovelock's collaborator and co-founder of the theory, Lynn Margulis. Lovelock's version of Gaia is embedded in a masculinist, bellicose and imperialist discourse reliant upon an emergency rhetoric and justifying geoengineering and A.I. control fantasies. Meanwhile, over the last decade Bruno Latour positioned himself as a thinker of ecology, partly by casting himself as a supporter of Gaia theory. Yet he made no mention of the problematic politics with which Lovelock's work was entangled. Turning both to Lynn Margulis' and to feminist philosopher of science Isabelle Stengers' understanding of Gaia, the article resists anthropocentric visions to articulate less hubristic and potentially more democratic responses to our current ecological catastrophes.

Keywords:
Gaia; ecology; geoengineering; climate change; Earth Systems

ISSN 2773-0875

Two scientists, one anthropologist, one philosopher—each of them so-called-human, multispecies organisms.[1] One vast, autopoietic system comprising all four of these humans and much more. These five characters occupy the stage in what follows. One of the two scientists is male (but not only), while one is female (but not only). The anthropologist is male (but not only), while the philosopher is female (but not only). The vast system comprising all four of these humans and much more was named by two of these and by many more after a Goddess and is infinitely more than gendered. This is no happy-ending tale; in fact, it is no tale at all. There will be no love triangle here. Neither should the reader assume a deterministic, dualistic structure easily distributing our more-than-human characters along simple, gendered lines, though sadly, tragically perhaps, what follows may read partly as an exhortation for us not to cave along with the male scientist and his anthropologist admirer, into disappointingly and dangerously gendered tropes and traps. The stakes are high, as they have to do with scientific knowledge, its production, its silences, and its effects on how we humans and other more-or-less humble dwellers may think (with), live with(in), and experience Gaia, that Goddess, that bitch, our home.

Prologue: the (Gaian) Earth is a (High Stakes) Stage

In 2009, Gaia scientist James Lovelock argued that ecological emergency justified limiting democracy in favour of "blood, sweat and tears," invoking a manly leadership and geoengineering as the only solution to said emergency. However, long before his resort to a language of emergency warnings and this hubristic tone, Lovelock had revolutionised geoscience by demonstrating that the Earth acts physiologically, not unlike a living organism. The "Gaia theory," which would have remained mostly speculation and computer modelling without his collaborator, Lynn Margulis, took a long time to be taken seriously by the scientific community.[2] Instead of imagining living beings as passively adapting to a backgrounded environment, Lovelock and Margulis argued that life creates its own conditions for self-perpetuation, a notion that upset both neo-Darwinians and geochemists; the first because this seemed to evoke a telos at a planetary scale that their focus on natural selection forbade, the second because it required the integration of an alien discipline, biology, into their field of expertise. According to Gaia theory, if Earth's atmosphere isn't in thermodynamic equilibrium and if planetary temperature has been generally hospitable to the continuation of life, it is because on Earth atmosphere and biosphere dynamically constitute each other. Here I argue that, though Gaia theory

1 Dorion Sagan, *Cosmic apprentice: Dispatches from the edges of science* (Minneapolis: University of Minnesota Press, 2013).

2 The question of whether Gaia theory makes unanimity among scientists today is not within the scope of this paper: I will focus instead on its rhetorics as well as some of their technopolitical and ethical implications.

originated as a collaboration between Lovelock and Margulis, Lovelock's emphases are recalled to the detriment of Margulis' distinct contribution, and this silencing may become damaging to our global, political and ecological climate. Analysing the distinctly gendered rhetorics of both scientists, as well as ontological, ethical and technopolitical consequences, I advance this critical analysis in agonistic conversation with the Gaia theory commentary of anthropologist Bruno Latour and feminist philosopher of science Isabelle Stengers. In doing so, I aim to show that Gaia theory can, in fact, resist human exceptionalism and hubris rather than reinforcing these.

Act I: Feverish Gaia on Dialysis

Scene 1: Emergency and Dialysis
Enter James Lovelock, scientist, and Gaia, uneasily dressed as a frail old lady

Belonging to "situated knowledges,"[3] scientific paradigm shifts, which never are (can be, or arguably should be) neutral, carry significant philosophical and political implications.[4] Atmospheric chemist Lovelock's and microbiologist Lynn Margulis' Gaia began as an Earth-based planetary science that was deeply anti-anthropocentric. But while Lovelock's Gaia theory offered a vision of the biosphere as a complex and profoundly interdependent system, his onto-political views, situated in imperialist, nationalist pride, taint his conclusions regarding how to "fix" the problem of climate change. In a 2006 essay, he wrote:

As a young man, I was proud to be a subject of a great empire and even now, although it is largely history, I still see it as something that, like the Roman Empire, left behind a beneficial legacy. But I sense that stewardship is an imperial concept that assumes an automatic superiority invested in those in charge. … We, the United Kingdom, are no longer in charge and stewardship is therefore now the right and duty of the greater powers. Do we trust them to exercise their power justly and sensibly? Do we think that the United States or China or a body like the UN could be trusted to regulate the climate

3 Donna Haraway, "Situated knowledges: The science question in feminism and the privilege of partial perspective," *Feminist studies* 14, no. 3 (1988): 575–599.

4 Lynn Margulis was keenly aware of this situatedness: in an interview titled "Gaia Is a Tough Bitch" (a title which I echo here), she wrote: "if Science doesn't fit in the cultural milieu, people dismiss science, they never reject their cultural milieu! If we are involved in science of which some aspects are not commensurate with the cultural milieu, then we are told that our science is flawed. I suspect that all people have cultural concepts into which science must fit. Although I try to recognize these biases in myself, I›m sure I cannot entirely avoid them. I try to focus on the direct observational aspects of science." In: Lynn Margulis, "Gaia Is a Tough Bitch," *The third culture,* 129–146. She wrote this referring to her partial disagreement with James Lovelock.

or the oxygen level of the atmosphere?[5]

One could imagine that Gaia theory—as it does in some interpretations[6]—would lead one to *reject* the notion of human stewardship altogether, in an anti-anthropocentric positioning inspiring eco-humility rather than hubris. Lovelock himself repeatedly and contradictorily asserted the anti-anthropocentric implications of Gaia. Yet the above passage, with its nostalgia for British rule over an old-world order, proceeds in a lyrical tone about how the biosphere should be respected and apprehended by "us" humans just as physicians would regard their patients. This moment becomes the crucial axis upon which Lovelock's argument hinges: the failure to specify why we should not trust the U.S. or China as much as one allegedly could have trusted and felt "proud of" the U.K. does not question imperialism, but rather suggests a continued faith in the "beneficial" character of empire per se, only qualified by a nationalist conviction that empire is unlikely to be "just" or "sensible" if such power is left in American or Chinese hands. Ultimately the objection is not at the level of the principle of stewardship or of imperial power but rather patriotically concerns which imperialist nation-state is in charge.

Three years later, in *The Vanishing Face of Gaia*, Lovelock contradicted himself on this point. But rather than retracting his mildly sceptical view of stewardship, he suggests geoengineering as a possible "fix" for the climate crisis:

> There are signs that we can treat global heating by engineering or other means. We have proved that our unscheduled and unintended experiment of adding large quantities of carbon dioxide into the air by burning carbon fuel heated the planet, and we know that it was a mistake. Does this mean that we can cure global heating by adding some other gas or material that does the opposite and cools? Scientists, including me, think that we may have little option but to try; but surely it is much better to try as a planned experiment than as a panic response.[7]

Ambiguously (and erroneously) implying that "scientists" (as opposed to "some" scientists) favour geoengineering, Lovelock associates such a technopolitical approach with an inevitable necessity provoked by urgency, a "planned experiment" that emergency forces further as the "only option" in a "panic." Lovelock thus ignores the possibility that the current catastrophe might in fact prove how much we do not know, and likely will never know.

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5 James Lovelock, "The Fallible Concept of Stewardship of the Earth," in R.J. Berry (ed.), *Environmental Stewardship: Critical Perspectives, Past and Present* (London: T&T Clark, 2006), 106–111.

6 e.g., Lynn Margulis and Dorion Sagan, *Microcosmos: Four Billion Years of Microbial Evolution* (Berkeley: University of California Press, 1997), 22.

7 James Lovelock, *The Vanishing Face of Gaia: A Final Warning* (New York: AZ, Basic Books, 2010), 137.

The apodictic emergency tone of Lovelock's imperialist discourse, gendered and militarized, evinces a militarized masculinism coupled with apocalyptic desire. Thus, he repeatedly insists that a sudden, dramatically catastrophic event would be, to an extent, desirable,[8] as it would shake "us" into a much-needed, war-like mobilization. *Vanishing Face of Gaia* abounds in bellicose metaphors and comparisons with World War Two.[9] Here a sudden and devastating event would beneficially justify a strong leader[10] stepping in. Churchill's spectral figure and his "blood, sweat and tears"[11] would finally not shy away from circumventing excessively slow and impractical democratic imperatives, which to Lovelock impede upon the necessary expediency given "our" state of emergency. Assuming rather than substantiating the distinct temporality and expedience of authoritarian militarism over democratic inaction, lyrical masculine undertones fuel his rhetoric. Lovelock, originally a medical researcher, stages threatening, anthropomorphizing metaphors where Earth becomes a fragile, vulnerable "old lady," to whose rescue human scientists and bold political leaders must rush, as her benevolent doctors. He assumes, in turn, that these are knowledgeable enough to "save" her:

> These technological fixes [i.e., geoengineering] should not be condemned without considering their value as an extender of the time we have to act. In a longer run they are probably no more a cure than is dialysis for kidney failure but who would refuse dialysis if death was the alternative.[12]

Western medicine, with a history of declaring itself capable to act as the ultimate life extender, is taken to exemplify the kind of ethics that shall guide us to the path of potential geoengineering. Life on dialysis is assumed better than death, in a peremptory "who would refuse" turn of phrase. Yet one may pose another "who"-question that shakes the accuracy of the metaphor: whose death is being discussed here? The end of the planet in the Holocene form we are (un)familiar with and have evolved in, may be at stake. Yet leaping from this to the "death" of "the planet" as a whole requires a strong human exceptionalism. Besides, the scale-leap from individual lives and lifesaving dialyses in the

8 Here Lovelock erased, even at the time of his 2010 book, the countless floods, hurricanes, and other disasters that had already claimed, shaken and displaced so many lives in the global South and some of the global north, from hurricanes to floods, and also including slower but equally devastating processes of soil depletion. The "shock doctrine" is Naomi Klein's phrase to describe the violently exploitative predation following these events. See Klein, Naomi. *The Shock Doctrine: The Rise of Disaster Capitalism* (Macmillan, 2007).

9 Lovelock, *Vanishing Face*, 23, 90–93, 131, 135, 155.

10 On the anti-democratic character of geoengineering as "hyper-radical monopoly" and the capitalocentrism of the IPCC reports, see my article, "Feminist imaginations in a heated climate: Parody, idiocy, and climatological possibilities." (*Catalyst: Feminism, Theory, Technoscience* 3, no. 2, 2017): 1–33.

11 Lovelock, *Vanishing Face*, 32.

12 Lovelock, *Vanishing Face*, 142.

human medical realm to the planetary scale gives dubious confidence in our capacity to "cure" ills caused by "us," forcing a homogeneity upon incredible variegation, difference and inequality, a forced homogeneity from which follows a technocratic and corporate authoritarianism explicitly opposed to democratic approaches.

Lovelock's reasoning depends on an excess of postulates taken to be incontestable, particularly when it comes to capitalocentric futurism (*i.e.*, the inability to imagine the future as anything but hegemonically capitalist.[13] Lovelock presumes that "our" present and future goal shall and should (continue to) be "business as usual." Praising France for its predominantly nuclear energy production,[14] and evoking synthetic food to "solve" world hunger,[15] Lovelock deploys Malthusian diatribes on overpopulation[16] that ignore the feminist debates and critiques thereof.[17] In his later, more explicitly political works, Lovelock appears to assume that as a scientist his expert opinion applies in domains beyond science, and that his opinions are untainted by ideology: scientific authority somehow neutralizes ideological leanings. Thus, he describes himself as an "independent scientist,"[18] by which he means that he rarely if ever was affiliated to a university. The private sources of funding (e.g., Shell, Hewlett Packard) and NASA[19] from which he proudly

13 J.K. Gibson-Graham, *The End of Capitalism (As We Knew It)* (Minneapolis: University of Minnesota Press, 2006).

14 Lovelock praises nuclear energy in his *Vanishing Face of Gaia*, dismissing objections thereof as "irrational" and as "disinformation." *e.g.*, 25–27, 77. He characterizes nuclear energy as "profitable without state subsidy," an interesting alternate fact if one considers the long term and the financial and practical difficulty that France is currently experiencing upon updating its many power plants. On p. 81, Lovelock scoffs at "the anecdotal belief that there are clusters of leukemia victims in the populace around nuclear power stations. I know as a scientist that this is nonsense but try convincing a woman who lost a relative who happened to live in the vicinity of a nuclear installation that the likelihood is vanishingly small. This is why it is too easy to persuade the gullible multitude that the harmless mobile phone you use, or the nearby power cable, is a danger." Gullibility, the mourning woman, the populace, all such naïve characters whose experiences do not weigh much relative to the authority of the scientist and his statistical evidence (which Lovelock does not provide).

15 Lovelock, *Vanishing Face*, 25.

16 Lovelock, *Vanishing Face*, 76.

17 One would be hard-pressed to exhaustively list the enormous amount of scholarship in this area. Perhaps simply mentioning Donna Haraway's recent attempt to articulate a feminist and decolonial alternative to overpopulation discourse is one example. Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press, 2016).

18 Lovelock, *Vanishing Face*, 35.

19 In her "Gas guzzling Gaia, or: a prehistory of climate change denialism," *Critical Inquiry* 47, no. 2 (2021): 306–327, Leah Aronowsky documents the ways in which Lovelock regularly obtained funding from Shell for his Gaia research and showed that what she describes as the "malleability" of Gaia theories has enabled some versions of these to subsequently serve a certain strand of climate denialism. She describes Lovelock as "a freelance inventor of sorts [whose] client list came to include Hewlett-Packard, Dupont, Pye Unicam, and, most importantly for our purposes, Shell Research Lim-

recounts earning a living[20] somehow stand as proof of "independence." Meanwhile, he never seems to consider the relative academic freedom provided by universities. In Lovelock's book, *A Rough Ride to the Future*, one of the principal arguments becomes the defence of a figure he calls "the lone scientist," as allegedly much more capable of leading progress and innovation than may other scientific collaborative arrangements. There he expresses similar contempt about international organizations like the United Nations (indeed quite ineffective at dealing with the ecological catastrophes of our times) as he does regarding academe (which he surely had many legitimate reasons to critique), only to uncritically side in favour of private corporations "fixing" the climate issue. Thus he writes that a "consortium of businessmen" whose interests would be hindered by climate change could consider acting unilaterally, by equipping private cargo ships with aerosol generators producing clouds as the ships would sail.[21] Though he later admits that this "solution" may be problematic, he does not take back the general logic, but rather provides such admission merely because we could not predict the "side-effects" of such initiatives, which blind spot puts us, in the British scientist's euphemistic terms, "in an ethical dilemma." Nonetheless, Lovelock maintains his position in favour of "modest geoengineering" (aerosol pulverization over oceans to create sun-reflexive clouds), and consistently suggests that environmentalists (taken as a lump, and somehow homogenous, monolithic whole) are "dogmatic ideologues wholly ignorant of science and engineering."[22] Thus, Lovelock asserts that the "solution" to our "problem" belongs to experts, implemented by corporate, "self-regulating" market forces. Ultimately, Lovelock's science is primarily an engineering science, and indeed in his last book, *Novacene*, Lovelock concedes that "latterly I have realized that I have never been a pure scientist, I have been an engineer."

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ited, the research arm of Royal Dutch Shell." She further writes in reference to Gaia's "malleability" that "the displacement of human exceptionalism can be leveraged equally for a doctrine of neoliberal environmental governance or for an embrace of radical biological alterity" (emphasis mine). While I find Aronowsky's critical investigation of the Lovelock's funding from Shell and of some climate denialists' capture of Gaia theories very helpful, and while the present essay partly converges with this critique, I do not read Gaia theory as "equally" exploitable by neoliberals and bona fide "embraces of radical biological alterity." I rather distinguish between interpretations of Gaia (along with their respectively gendered tropes and their distinct consequences ontologically, politically, and ethically). These distinctions have been obscured in part due to a common tendency in the history of sciences to eclipse the contribution of women. Indeed, Aronowsky spends but a few quick sentences and a dismissive footnote acknowledging the role of Lynn Margulis in the development of Gaia theory, as well as her paradigm-shifting work on serial endosymbiosis theory. The notion that recognizing Gaia as a complex system by examining microorganisms amounts to a "naturalization of pollution" is also misleading, relying upon notions of "naturalization" that assume unhelpful nature/culture dualisms. "Naturalizing" seems to hardly be the issue if one understands "nature" (or rather, of naturecultures) as historically contingent and complex.

20 James Lovelock, *A Rough Ride to the Future* (NY: Overlook Press, 2014).

21 Lovelock, *Rough Ride,* 140.

22 Lovelock*, Rough Ride,* 144.

The figure of the "lone scientist" morphs into the indeed more accurate description of "engineer," i.e., someone who wasn't so much pursuing basic scientific knowledge as he aimed to "fix" the climate in the "practical" interest of "business as usual."

If Lovelock's previous book, *The Vanishing Face of Gaia,* was subtitled "A Final Warning," it and the scientist's later writings indeed constitute a warning regarding the new forms of hubris late capitalist futurism generates, a window into the "second phase" of political and scientific responses to climate change, which philosopher Isabelle Stengers alerts us about:

Enter Isabelle Stengers, philosopher.

Today, the grand campaign to deny the problem has run out of breath a little, but the second phase is being prepared. New voices are making themselves heard, asserting … [the] only solution is geo-engineering, which will ensure that it is possible to continue to extract and burn, without the temperature rising… One need not be paranoid in order to ask oneself if the success of [the word "Anthropocene"] as much in the media as in the academic world … doesn't signal a transition from the first phase—of denial—to the second phase—that of the new grand narrative in which Man becomes conscious of the fact that his activities transform the earth … and that he must therefore take responsibility for the future of the planet.[23]

Exit Isabelle Stengers (to return in act II)

Lovelock's recommendations indicate the powerful appeal of capitalocentric futurism, to the point that frenetic "fixing" is deemed preferable to *phronesis* even according to an otherwise inventive scientist. In this emergency context, capitalocentric and futuristic imaginaries which pathologize a feminized Earth, prompt "us" to place the Earth "on dialysis" for the time being, and to figure out later how to perform a more definitive kidney transplant. Paradoxically, it was Lovelock's rich view of Gaia as a living, self-regulating physiological complex biospheric whole composed in turn of complex ecosystems which informed the scientist's medicalized, militarized rush to hubristic emergency measures. Lovelock's threading of the Gaian metaphor alongside his syllogistic reasoning led him to consider geoengineering as a promising route. From the complex, nuanced, scientifically multidisciplinary and imaginative argument that the Earth is alive, he jumped to the simplification that Earth is comparable to a unified, single organism (a jump that, as we'll see, Lynn Margulis rejects). Lovelock subsequently genders, ages and anthropomorphizes

23 Isabelle Stengers, *In Catastrophic Times: Resisting the Coming Barbarism* (London: Open Humanities Press and Lüneburg: Meson Press, 2015), 8.

this organism, giving it attributes he paternalistically associates with vulnerability. Then, from the double postulate that old women are vulnerable, and according to which individual organisms' health may be entrusted to medicine's benevolent hands, the image of Earth as a sickly old lady leads him right to geoengineers, standing for incarnations of MD saviours and their dialyses options. An excessively threaded metaphor, a couple of questionable (and implicit) postulates, gendered, pathologizing associations, a few syllogisms, and a massive scale leap, make for a geoengineering advocacy recipe which exemplifies the dangers of analogical thinking. Rhetoric, like the Earth, has its limits.

After *The Vanishing Face of Gaia*, Lovelock went even further in imagining hubristic futures. "Before the end of the century," he prognosticated confidently in a 2016 interview with the *Guardian*, "robots will have taken over."[24] As global temperature rise (and the potential extinction of the human species) is unlikely to matter to robots or their artificial intelligence, Lovelock is not concerned anymore. Meant to be reassuring, Lovelock's robotic statement de facto fails to accord value to future more-than-human life, as automated machines, lucky them, will ensure the perpetuation of business as usual. "Business as usual" (now a refrain under his pen), until we die, and beyond. Although usually deploying the phrase as that which demands to be protected, occasionally (and contradictorily) refers to "business as usual" negatively, to signal the continuation of things in blind indifference to the catastrophic situation. But here Lovelock ultimately replaces religious faith's transcendence with a belief in capital such that it may endure beyond life. This transhuman futurism, in which capital stands in for the divine, becomes more explicit in its religious undertones in Lovelock's last book, a year before his death in 2022.

Act I, Scene 2: Gaia In an Accelerationist, Transhumanist Straightjacket

Before turning to this "secular" eschatology, a couple more points are needed regarding Lovelock's *A Rough Ride to the Future*, published just before the robotic Guardian interview. Throughout this book Lovelock offers a grand narrative in which the invention of the steam engine marks a new phase of evolution that he calls "accelerated evolution."[25] The bellicose tone presses on, with grand claims regarding "civilization," "tribalism," and human nature. "War," Lovelock's reader is told, "can be regarded as a way of naturally selecting the right ideas at a time when time is short." Such emergency selection is read as

24 Decca Aitkenhead, "James Lovelock: by the end of the century, robots will have taken over," (*The Guardian*: 2016). Retrieved from: https://www.theguardian.com/environment/2016/sep/30/james-lovelockinterview-by-end-of-century-robots-will-have-taken-over

25 Lovelock, J. *Rough Ride,* Lovelock's notion of "accelerated revolution" is one of the central threads of this book: see 29, 72, 74, 83, 90, 92, 97, 100, 199, 202, 218.

the mark of progress, and neo-Malthusian assertions contextualize this claim. Lovelock's association between bellicose masculinity and progress is even more explicit here than in his previous works: "Science and war are closely linked, and maybe this is why more often than not they are male preoccupations."[26] No attempt is made here to critically examine the socio-economic and political reasons for such a connection. A deep essentialism fuels Lovelock's teleo-industrial evolution: "The human conscious mind was selected for its capacity to tell entertaining stories and reveal to a woman someone lively and fit enough to be the father of her children."[27] Thus "humans" are men, while women are rhetorically excluded from evolution, but kindly invited to "revelations." The "lone-scientist" wonders: "could men's skill at 'chatting up the birds' have been selected as a measure of fitness?"

Lovelock compares his grand narrative regarding "accelerated evolution," the period spanning from the steam engine to today, to cosmic inflation following the Big Bang, in an attempt to reassure his readers. He exhorts them to "take comfort also in the thought that the universe survived its inflation; perhaps we will too."[28] The supposed good news is that "accelerated evolution," turning out new artefacts faster than biodiversity loss, will allegedly compensate mass extinction thanks to "electronic ecosystems." The cyborg beings populating these, Lovelock claims, will endure higher temperatures than their extinct human creators.

If humans have unapologetically replaced God and robots have replaced humans in this narrative, scientists and inventors stand as a superior "caste" among humans: "I regard it as crucial to think that scientists and inventors are members of the same castes of humans." But – the reader may catch her breath a little – "neither the scientist nor the inventor is a new species of human."[29] Lovelock distinguishes between science and invention, however, insisting that "necessity and its intuitive answer through invention, [not science], is the explanation of progress."[30] The distinction relegates even science and its rational thinking to the background, unnecessary for progress compared to its sine qua non condition: the inventor's "intuition." Again, the "lone scientist" – as hero – will later more accurately describe himself as an "engineer."

When he finally and somewhat movingly mentions Lynn Margulis — the sine qua non of "his" Gaia theory, recounting the news of her death in 2011, Lovelock's rhetoric takes another militaristic turn: "Like generals who lead their troops from the front, she went into combat against the cronies of the Earth and life sciences firmly established in their

26 Lovelock, *Rough ride,* 24.
27 Lovelock, *Rough ride,* 9.
28 Lovelock, *Rough ride,* 59.
29 Lovelock, *Rough ride,* 62.
30 Lovelock, *Rough ride,* 65.

turf dugouts."[31] The analogy misses the mark for a scientist (Margulis) who turned down any attempt at contact, presumably from the United States Department of Defense, because they demanded secrecy.[32] But Lovelock's militarized tone is coherent with the rest of his discourse. Indeed, while Bruce Clarke rightly describes James Lovelock's version of Gaia as "neoliberal," and Lynn Margulis' as "communistic,"[33] many moments of Lovelock's prose, increasingly so with each of his later books, are reminiscent of a futurism that characterizes not only certain strands of neo-liberalism but of neo-fascisms.

Lovelock's imperialist, militaristic, medical and masculine language further confirm their digital futurist orientation in his *Novacene*,[34] where he fantasizes further about a future in which Gaia will shed her organic layers in favour of her technological ones, eventually breeding artificial intelligences that would remain in charge of homeostatic self-regulation of the Earth's atmosphere, thus taking not just an active but a leading part in the Earth system. Here Lovelock offers a monistic worldview that reduces all to informational bits, a view resonating with post-apocalyptic imaginaries from the Silicon Valley and the likes of Elon Musk.[35] Where the back cover of the book describes Lovelock as "the greatest environmental thinker of our times" (an ironic claim given his own dismissals of "environmentalists" as "ignorant … dogmatic ideologues"[36]), it is in this last book that Lovelock describes himself as primarily an "engineer," dreaming of an earthly technoworld with a subdued biosphere. As the Gaian literary historian Bruce Clarke sums up, "*Novacene* submits both biotic systems – living organisms – and metabiotic ecosystems

31 Lovelock, *Rough ride,* 65.

32 Personal communication, Dorion Sagan, May 26th, 2018.

33 Bruce Clarke, *Gaian Systems: Lynn Margulis, Neocybernetics, and the End of the Anthropocene* (Minneapolis: University of Minnesota Press, 2020). Clarke's meticulous investigation of the history of Gaia theories puts less emphasis than the present essay on the very high political stakes in distinguishing between Lovelock and Margulis' contributions. Much less critical of Lovelock's politics than I am, Clarke valuably shows that Margulis' version of Gaia theory particularly stresses autopoiesis (Maturana and Varela's influence). This indeed is one of the reasons why she is more careful than Lovelock, often underscoring the limits of the term "Gaia" as a metaphor, which misleadingly suggests a unified organism instead of a complex system of systems. Clarke agrees that the distinct approaches of the two scientists prevented Lynn Margulis from caving to the cybernetic fantasies Lovelock indulges in, in his late works. Though Margulis and Sagan do recognize the intimate entanglements of technosphere and biosphere, their ontological and scientific imaginary resists the notion that the latter could do without the former. On autopoiesis see Maturana, Humberto R., and Francisco J. Varela, *Autopoiesis and cognition: The realization of the living*, vol. 42 (Berlin: Springer Science & Business Media, 2012).

34 James Lovelock, *Novacene: The Coming Age of Hyperintelligence* (Cambridge, MA: MIT Press, 2019).

35 For a critique with the entanglements between white supremacy, patriarchy, A.I. and space conquest postapocalyptic discourses, see Joanna Zylinska, *The end of man: A feminist counterapocalypse* (Minneapolis, MN: University of Minnesota Press, 2018).

36 Lovelock, J. *Rough Ride,* 144.

– of which Gaia is the final iteration – to an AI-fuelled transhumanist imaginary."[37] The commitment of this exceptionalism is further affirmed with Lovelock's certainty that "we are alone," that life on Earth was a "one-off." The Earth's vital exceptionalism doubles with that of humans, to him unquestionably the only life form endowed with "sentience" (a category whose content the engineer fails to clarify). Armed with fast-moving syllogisms, Lovelock proceeds to declare that "the end of life on Earth would mean the end of all knowing and understanding. The knowing cosmos would die."[38] Lovelock accompanies this concern with more grandiloquent prose: "I now think that the religious view of humanity as chosen may express a deep truth about the cosmos." While he insists that he does not believe in God, he sees the alleged human uniqueness in sentience as demanding perpetuation – thus the human vocation to craft electronic beings capable of continuing the cosmos's self-knowledge. The non-life of the mind shall persist in the afterlife of the body.

In our context of ecological catastrophe and, among other things, the concomitant burst of literature referred to as "the nonhuman turn,"[39] suggesting that animacy,[40] agency,[41] vibrancy,[42] and even sentience[43] or intelligence be re-thought in non-anthropocentric terms, Lovelock's faith in a human monopoly on sentience seems rather dubious, especially on the part of a scientist. Lovelock's conviction that Earth is the only planet in the cosmos to have developed life is also dubious. A vast literature abounds on this question of whether "we are alone" (the whole scientific discipline of astrobiology spends its vast resources on this matter), a rather anthropocentrically structured question as long as the answers are formed in an "either/or" manner (either yes, in which case we are deemed exceptional, unique, per Lovelock's position; or no, in which case a sameness is granted to the whole universe, with visions of equivalents for ourselves everywhere; little space in this discourse is left for the recognition of a possible impossibility to know). Further,

37 Bruce Clarke, *Gaian Systems,* 273.

38 Lovelock, J. *Novacene*, 30.

39 *e.g.,* Richard Grusin, ed., *The Nonhuman Turn* (Minneapolis, MN: University of Minnesota Press, 2015). The literature on the nonhuman has developed so abundantly over the last decades that one would be hard-pressed to be exhaustive: the following references are just a few key examples.

40 Mel Y. Chen, *Animacies: Biopolitics, Racial Mattering, and Queer Affect* (Durham, NC: Duke University Press, 2012).

41 Karen Barad, *Meeting the Universe Halfway* (Durham, NC: Duke University Press, 2007).

42 Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010).

43 Natasha Myers, *Rendering Life Molecular: Models, Modelers, and Excitable Matter* (Durham, NC: Duke University Press, 2015).

the question is anthropocentric insofar as the subject "we," of the supposed "lone" state, is taken for known. The assumption behind Lovelock's claim that "we are alone," a claim which founds his transhumanism, is also that the uniqueness he is so sure of knowing for a fact, is of special value. This fails to consider, at least as a possible question, the Nietzschean suggestion that knowledge might not have mattered at all once those who are assumed to have invented it are gone.[44] Finally Lovelock assumes that "intelligence" can be merely translated into electronic bits. In this as with his claims regarding earth stewardship or his advocacy of geoengineering, Lovelock's version of Gaia makes for a neoliberal, transhumanist, technocratic onto-political imaginary.

Act II: Gaia as a Tough Bitch

Scene 1: Staging the Scientist's Canonization
Enter Bruno Latour, anthropologist; Gaia is still awkwardly dressed

In 2015, Bruno Latour published a book unfortunately titled *Face à Gaïa*.[45] Unfortunate because Gaia has no face, and neither do her components "face" her – not even us humans – except in a fantasy, dangerously abstract God's eye view. Latour opens the chapter most directly focused on Gaia theory with quasi-hagiographic praise of James Lovelock, whom he compares and contrasts with Galileo. In fact, Latour's theatrical-ecological ambitions led him to co-create a play that honoured Lovelock in the same genre with which Brecht had honoured Galileo[46]. There as elsewhere in his late works however, Latour remains conspicuously silent regarding the imperial-transhumanist drama described above.

Latour saw in Lovelock and Galileo's respective contributions two paradoxically opposite but also comparable epistemological breaks. Galileo had discovered that the universe

44 In "On Truth and Lies in a Nonmoral sense," Nietzsche writes: "Once upon a time, in some out of the way corner of that universe which is dispersed into numberless twinkling solar systems, there was a star upon which clever beasts invented knowing. That was the most arrogant and mendacious minute of "world history," but nevertheless, it was only a minute. After nature had drawn a few breaths, the star cooled and congealed, and the clever beasts had to die. One might invent such a fable, and yet he still would not have adequately illustrated how miserable, how shadowy and transient, how aimless and arbitrary the human intellect looks within nature. There were eternities during which it did not exist. And when it is all over with the human intellect, nothing will have happened. For this intellect has no additional mission which would lead it beyond human life." Friedrich Nietzsche, *The Birth of Tragedy and Other Writings* (Cambridge: Cambridge University Press, 1999), 139.

45 Bruno Latour, *Face à Gaïa : huit conférences sur le nouveau régime climatique* (Paris: La Découverte, 2015).

46 Latour, Bruno, Aït-Touati Frédérique, Latour Chloé, Global Circus, "Une tragi-comédie climatique". https://www.youtube.com/watch?v=8mkNg2nDWmY. Retrieved July 20th, 2022.

was infinite, open, and that all planets shared a commonness making our Earth quite banal. Meanwhile, in Latour's reading, Lovelock's Gaia has allegedly "brought us back" to a finite Earth that can once again be read as unique. While planetary resources available to make the Earth habitable to human and nonhuman life are indeed limited, this would-be uniqueness is misleading. Via Lovelock, Latour deemed Gaia theory as demonstrative of Earth's unique character, because it underscores how living organisms, as integral parts of the Earth system, actively produce the self-regulation of the planet's atmospheric composition and temperature. But, contra Latour, if this self-regulation is indeed Gaia theory's thesis, the theory, rather than assuming a vitalist exceptionalism, actually challenges boundaries between biotic and extra-biotic forces, and adds to a long scientific history that de-centres humans and the Earth. However, this is not as palpable in engaging Gaia theory from the distinct perspective of Lovelock, as it is in the company of Lynn Margulis' Gaia, mostly eclipsed in Bruno Latour's recounting.

Act II, Scene 2: A Gaian Strip Tease

Enter Lynn Margulis, scientist, Dorion Sagan, Margulis' co-author and son.
Gaia strips away her old lady's clothes to reveal her provocative monstrosity, defiant to both humanism and vitalism.

In *Microcosmos*, Lynn Margulis – who co-founded Gaia theory with James Lovelock[47] – and Dorion Sagan wrote that:

> Man is the consummate egotist. Before Copernicus founded modern astronomy our ancestors believed that their home, the Earth, was at the centre of all the universe. Despite Darwin's demonstration that we are only one recent branch on an evolutionary tree, most people still believe that human beings are biologically superior to all other life. … *Homo Sapiens* does not represent the culmination of progress.[48]

In addition to this questioning of anthropocentric "progress," in an early essay titled "Gaia and Philosophy," Sagan and Margulis explicitly point out how the Gaia hypothesis shatters perceptions of *human uniqueness*:

> Perhaps the greatest psychological stumbling block in the way of widespread scholarly acceptance of Gaia is the implicit shadow of doubt it throws over the

47 James E. Lovelock and Lynn Margulis, "Atmospheric homeostasis by and for the biosphere: the Gaia hypothesis," *Tellus* 26, no. 1–2 (1974): 210.
48 Margulis and Sagan, *Microcosmos*, 194.

> concept of the uniqueness of humanity in nature. … Recovering from Copernican insult and Darwinian injury, anthropocentrism has been dealt yet another blow by Gaia.[49]

Furthermore, a thermodynamic understanding of life as an open system efficiently reducing gradients not only prevents claims, *of human uniqueness, but of life's uniqueness* compared to non-life.[50] Though Latour would likely agree with the critique of anthropocentrism, his Galileo-Lovelock contrast in fact erases part of what makes Gaia theory so rich. Margulis' version of Gaia stresses the limited human understanding of the universe, challenging humans' centring of "their" *oikos*.

Following Margulis and Sagan's take,[51] and stepping away from Latour's Galileo/Lovelock juxtaposition, the epistemo-ontological de-centring of Anthropos could be read in terms of (at least) four paradigm shifts within the history of Western science. Copernican heliocentrism showed that *the place of life* was not special.[52] Darwin's theory of evolution demonstrated that the existence of *humans within life* was not special either, showing them as anecdotal within evolutionary history. Finally, non-equilibrium thermodynamics showed that *the process of life* is not special either, and that contrary to what has been long asserted, life does not "violate the second law of thermodynamics," but participates instead in the reduction of gradients in highly effective ways.[53]

These events have displaced not only anthropocentrism but also vitalism, troubling the lines between life and non-life. It is in the context of these various scientific provocations disrupting "our" exceptionalism, that Gaia theory must be understood, rather than as "bringing us back" to Earth. If Gaia theory is profoundly pertinent to the current ecological

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49 Dorion Sagan and Lynn Margulis, "Gaia and philosophy," in *Slanted Truths* (New York, NY: Springer, 1997).

50 Eric D. Schneider and Dorion Sagan, *Into the cool: Energy flow, thermodynamics, and life,* (Chicago: University of Chicago Press, 2005).

51 Margulis and Sagan, "Chapter One," *What Is Life?* (Oakland: Univ of California Press, 2000).

52 In McKrittick's conversation with Sylvia Wynter, "Unparalleled Catastrophe for our Species?," Wynter objects to those who may hastily be tempted to equate the Copernican decentering of the human to a form of devalorization, pointing out that this is only the case from a biocentric world vision, which does not recognize that, in the theocentric vision of the times, to see man as the center was to consider him as belonging to "the dregs of the universe." The decentering was thus a form of revalorization of man from *homo religiosus* to *homo politicus.* Thus, the question of anthropocentrism is complex, as its historic amendments not as linear as they may first seem, and as the center does not necessarily signify a superiority. The argument, for our purposes, is specifically about the contested, even collapsing assumptions regarding the uniqueness of humans in relation to what it signifies from the perspective of modern techno-science. See McKittrick, Katherine, ed., *Sylvia Wynter: On being human as praxis* (Durham, NC: Duke University Press, 2015).

53 Schneider and Sagan, *Into the Cool.*

crisis, it is partly because of just this de-centring, in the sense that it encourages the realization that humans and co-evolving species and ecosystems are deeply entangled within a single, far more-than-human autopoietic system, beyond even partial human control, actively making up the biosphere and long fuelling its atmosphere insofar as the latter enables life's persistence.[54]

In an interview provocatively titled "Gaia Is a Tough Bitch," Margulis explicitly asserted the anti-anthropocentric positioning of this new understanding of the Earth, connecting it with Gaia's monstrous bitchiness, which will be the object of our next deanthropos-scene: "The Gaia hypothesis is a biological idea, but it's not human-centred. Those who want Gaia to be an Earth goddess for a cuddly, furry human environment find no solace in it."[55]

Act II, Scene 3: This Bitch That Therefore She Is

Gaia's roar resoundingly claims its meta-organismic character, intruding as a monstrous, bitchy, autopoietic system.[56]

54 For some philosophical and political implications of Gaia's thermodynamics as a dissipative system, see Thomas Nail, *Theory of the Earth* (Redwood City: Stanford University Press, 2021).

55 Lynn Margulis, "Tough Bitch."

56 The conception of Earth systems as autopoietic has been critically examined by Myra Hird, who takes it for overemphasizing a oneness that she equates to deep ecology's visions. While Hird's "microbial ethics" (inspired by her immersion in Lynn Margulis' work and at the microbiologist's laboratory) is helpful to overcome some feminist and environmental tendencies to reduce the nonhuman to zoocentric preoccupations, the simple portrayal of Gaian autopoiesis as excessively unifying, or comparable to the flattening produced in deep ecology's accounts (e.g., in Arne Naess or George Sessions' works) is contestable. This point is beyond the specific scope of this paper: in this section I will emphasize how much Margulis' and Stengers' reading of Gaia invites for an anti-hubristic, anti-anthropocentric view. The concern regarding an emphasis on global oneness is warranted in the case of Lovelock's Gaia, but Margulis' conception of autopoiesis along serial symbiogenesis actually makes for a more complex account of Earth History, where multiplicity and what William Connolly calls "bumpy temporalities" hold centre stage. See Hird, Myra, *Origins of Sociable Life: Evolution after Science Studies* (New York: Springer, 2009): chapter 6; William, Connolly, "Bodies, Microbes and the Planetary," *Theory* & *Event*, 21, no. 4 (October 2018): 962–967. Donna Haraway has similarly advanced the concept of "sympoiesis" in response to Margulis' work (Haraway, *Staying,* chapter 3). Though this notion is arguably needed alongside "autopoiesis" and "symbiosis," if "sympoiesis" was to supplant these altogether, it would perhaps risk flattening an important, productive tension the two concepts aptly describe regarding how more-than-human evolution works in deep time (this again, is made clear by William Connolly's careful reading of Margulis' works in *Facing the planetary: entangled humanism and the politics of swarming.* Durham: Duke University Press, 2017: 47).

Geoengineering would likely be radically incompatible with such a perspective, which displaces narratives of linear, capitalo-telic progress and any sort of equation between the health of the planet, that of a single organism or species, and business as usual. Earth's complex dynamism forbids the grand interventionism that geoengineering would-be technofixes mobilize.[57] Margulis repeatedly insisted on her disagreement with Lovelock on the interpretation of the Gaia hypothesis she supported and enabled to grow into an actual theory: she underscored that the Earth was indeed not an organism, but an animate, autopoietic system. No single organism is capable of recycling almost all its own material wastes (something that Earth's surface does), and the biosphere has yet to reproduce (something that organisms do).[58] Margulis' Gaia refers to a physiological phenomenon of autopoeisis at the level of the complex system formed by world ecosystems taken together. Indeed, "in [this] symbiotic approach, humility, community and mutuality are as profoundly systemic as are the principles of biological autonomy."[59] This view interrupts the reasoning upon which Lovelock's pro-geoengineering stance hinges, including its culmination in A.I. control fantasies. Let us remember that foundational to his claims is his positing of the Earth as an organism, one comparable to a – supposedly vulnerable and kidney-failing – "old lady." Margulis, in contrast, carefully underscores the limited scope of organism metaphors, resisting a move from this register to grandiose prescriptive conclusions. Not only her use but the content of her own metaphors differ from Lovelock's: she provocatively described Gaia as "a tough bitch." Among the (counter-) normative connotations of such "bitchiness," is humility, even intimidation. Bitchiness and toughness evoke Gaia's resistance, defiant resilience, and her indifference to humans,

57 By negatively using the term "technofixing," I do not imply a rejection of technology in general. Rather I am referring to the specific sort of technological approach that consists of imagining a single, capitalocentric solution for a complex system's regulation. The sort of technological changes "Gaia's intrusion" calls for defies the supposed "fixes" by way of atmospheric pulverization of sulfur dioxide, which many geoengineers are advocating. These would create what I call, after Ivan Illich, a "hyper-radical monopoly." See Ivan Illich, *Tools for Conviviality* (New York City: Harper & Row, 1980). Illich called for a general re-tooling of our industrial societies in favour of convivial technologies. While a "monopoly" is exercised by one company over the production of one commodity (e.g., all sodas being made by Pepsi), industrial "radical monopolies" occur when only one kind of commodity is available to satisfy one need (e.g., personal cars become the only possible means of transit due to exclusionary urban planning). Even (somehow) successful geoengineering would condemn humans and many others to depend upon one mode of production (the capitalist mode) for its survival – a "hyper-radical monopoly." (See Claire Brault, "Feminist imaginations in a heated climate: Parody, idiocy, and climatological possibilities," *Catalyst: Feminism, Theory, Technoscience* 3, no. 2 (2017): 1–33).

58 In a speculative, Samuel Butlerian elan, Margulis and Sagan have imagined what something like reproduction could look like for the Earth: humans could be a form of minuscule inadvertent bridge to seeding life into other planets qua contamination of these planets in their space travel. See Margulis and Sagan, *Origins of Sex: Three Billion Years of Genetic Recombination* (New Haven: Yale University Press, 1990) and Margulis and Sagan, "Gaia and philosophy," 145–157.

59 Clarke, 273.

who would indeed be well-advised to carefully consider the common roots of "human" (from the Earth), "humus," and "humility."[60]

Exit Lovelock, with Latour behind him fading into the background.

Act III: The Bitchy Intrusion of Gaia

Scene 1: Gaian Transcendance
Re-enter Isabelle Stengers, philosopher of science.

Contrary to Latour, Isabelle Stengers perspicaciously grasps Lovelock and Margulis' distinct interpretations of Gaia and draws out important philosophical and political implications from the latter scientist's work. She writes:

> Lovelock perhaps *went a step too far* in [comparing Gaia to] a living organism ... Gaia thus seemed to be a good, nurturing mother, whose health was to be protected. Today our understanding of the manner in which Gaia holds together is much less reassuring. The question posed by the growing concentration of so-called greenhouse gases is provoking a cascading set of responses that scientists are only just starting to identify.[61]

As we can now see from the above reading of Lovelock and Margulis' distinctive contributions (which differences are recapitulated in the table at the end of this essay), one may even go further than Stengers here. Lovelock does indeed oscillate and occasionally portrays Gaia as a protective figure, as well as a vulnerable one in need of human protection. But perhaps this is rather symptomatic of Lovelock's *failure to go far enough* with an anti-anthropocentric view.

The Gaia evoked by Margulis – and subsequently by Stengers – cannot be anthropomorphically reduced. Though both the scientist and the philosopher maintain a provocative rhetorical feminization, the figure of the "tough bitch" is neither hysterical nor nurturing, neither protective nor in need of protection. Thus, Margulis and Sagan write, "Gaia is not the nurturing mother or fertility doll of the human race."[62] Rather, she is a monstrous[63] autopoietic assemblage of dynamic forces that far transcends the human.

60 Haraway, *Staying*.

61 Stengers, *Catastrophic Times,* 45. Emphasis mine.

62 Margulis and Sagan, *Microcosmos*, 156.

63 Sagan, Dorion, "Coda. Beautiful Monsters: Terra in the Cyanocene," *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*. (Minneapolis: University of Minnesota Press, 2017).

As Stengers puts it:

> Gaia is the name of an unprecedented or forgotten form of transcendence: a transcendence deprived of the noble qualities that would allow it to be invoked as an arbiter, guarantor, or resource; a ticklish assemblage of forces that are indifferent to our reasons and our projects.[64]

Gaia is, importantly, extra-moral, and merely "tickled" by capitalist telos or human hubris. In her essay *Catastrophic Times*, Stengers outlines two concurrent histories,[65] coming to a crossroads in today's crisis. The first narrative tells the story of capitalist triumph, as a system of values and practices transcending those who assembled it. One is reminded here of Steinbeck's famous dialogue in the *Grapes of Wrath*: perplexed, evicted farmers see the monstrosity of capital: "The bank - the monster has to have profits all the time. It can't wait. It'll die. … When the monster stops growing, it dies. It can't stay one size."[66]

But while capitalist monstrous history is an economic assemblage that, as such, transcends the sum of its parts, a second history, in Stengers' account, is now "intruding."[67] This second history includes Gaia's "ticklishness," and her threat to evict the industrio-capitalist irritation, potentially harming many in that wake. Gaia, this "tough bitch," is radically indifferent to humans or any single species, let alone capitalist futurism. Thus, the irony when Stengers writes of the "intrusion" of Gaia: "she" rudely (in terms of capitalist courtesy standards) intrudes upon capitalist delusions of grandeur, importuning the old men's club whose exclusive members are busy gorging on the resources she's always already provided, however much they wish to deny their dependence on her and her effective power over them. She may, tragically for humans, cut these resources off if the "tickle" becomes too disrupting of her autopoietic whole. Stengers' terms, "Gaia's intrusion," and her "ticklishness," ironic and provocative, signal both Gaia's post-capitalism and its extra-morality, in feminist fashion. The Earth, as the provider we inhabit and which we are but a part of, somehow impertinently "intrudes" upon its parts, who have so far dreamed themselves independent, expelling their tickle with a rash movement barely noticeable to her. Contrary to Lovelock's drama, there is no righteous "vengeance" at play here: the more-than-human choreography under way is monstrously extra-moral.

64 Sagan, "Coda." 47.

65 Stengers, *Catastrophic Times*, chapter one.

66 John Steinbeck, *The Grapes of Wrath* (New York: Viking Press, 1939).

67 Stengers, *Catastrophic Times*, 17–25.

Act IV: Grand Finale: Defense Consulting and Gaia 2.0

Scene 1: Re-enter Latour, Flanked Chummily with Lovelock

This interpretation is barely alluded to in Latour's reading of Gaia. The anthropologist does purport to offer correctives to some of Lovelock's rhetorical excess, yet even these fail to address Lovelock's geoengineering-friendly moments, engendering silence as if the French theorist had missed these glaringly problematic, repeated passages in Lovelock's prose. In *Facing Gaia*, Latour does cite Margulis, but only in passing – his fleeting mention only credits her "beautiful prose."[68] As Lovelock himself readily admits, it was Margulis, after all, who provided the key piece of the mystery – how Earth's atmosphere is chemically regulated – identified by Lovelock: it is regulated by ancient masses of hardy, growing, metabolically diverse microbes. Latour accords very little recognition, if one may even call it this, to Margulis' contribution to Gaia theory, effectively silencing one of the most ground-breaking scientists of the 20th century, one who could bring about the needed corrective with regards to Lovelock's threading of the organism metaphor.[69]

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68 Latour mentions Margulis a couple of times in his *Face à Gaïa*. These fleeting, peripheral apparitions are of three kinds: either she appears in a footnote (1), in parentheses (2), or, when mentioned in the body of the text, it is always with Lovelock (3), tagging along rather than treated as his collaborator and a distinct Gaia theorist. On page 134, Latour misspells Margulis' last name. 1) On page 135, in a footnote where he mentions her "argument about symbiogenesis," Latour fails to attribute it to her and promptly adds that Scott Gilbert also has advanced this argument – this, without specifying that Gilbert has indeed supported her theories: in the Latourian turn of phrase here, one would assume that Margulis followed Gilbert, or that the latter kindly granted credit to the former scientist. On page 139, Latour misspells Margulis' co-author and son Dorion Sagan's name, and admits, again in a footnote, that "without Margulis, Gaia hypothesis would likely not have gone beyond the cybernetic metaphor." This assertion is left without any further explanation. 2) Latour mentions Margulis in parentheses on page 125: after pointing out how "moving" James Lovelock prose is, he parenthetically underscores that "[Lovelock's] companion (comparse) Margulis" is even more moving. 3) All other mentions of Margulis are lumped together with references to Lovelock: "Lovelock and Margulis…" In contrast, the references to Lovelock on his own abound. No clear distinctions are made regarding possible differences or disagreements. Somehow, Latour does feel the need, in his vagueness regarding Margulis' legacy, to parenthetically indicate her dates of birth and death (confining her life?), which gesture he does not do for any other figure in the rest of the book, dead or alive. While these rhetorical markers may seem anecdotal, and while they are indeed peripheral enough to my main point here, that I relegate them to this endnote, the way that Latour mostly relegates Margulis herself to footnotes, parentheses, and indistinct companionship with the constrastingly hagiographized geoengineering-happy Lovelock, is not simply problematic from a feminist perspective or as a matter of principled recognition, neither is it only about the feminist analysis of citation politics, or simply symptomatic of a rather unsurprising, sadly banal, sexist erasure. It is of course all of this, yet my focus here is on the ontological, political, and technological effects of this erasure.

69 Some of the silences and confusions described in the above note 67, were in part corrected in Latour and scientist Timothy Lenton's essay, "Extending the domain of freedom, or why Gaia is so hard

Still, in *Facing Gaia*, Latour even claims to propose this corrective himself (although in rhetorical terms only, rather than supported more specifically by the scientific *and* rhetorical reasoning Margulis provided). Then, in an interview for the *Los Angeles Review of Books*,[70] Latour hurries to correct his interviewer when the latter refers to the organism metaphor but does so as if Lovelock himself were precise enough on the matter, *i.e.,* as if the nuance came from the British scientist rather than as a disagreement with his American colleague. As a result, the anthropologist contradicts his own critical moments regarding Lovelock as he exposits them in *Facing Gaia* – granted, the critique regarding the organismic metaphor's excesses is not exactly his own in the first place. Latour's silence regarding his male scientist idol's geoengineering and robotic fantasies, as well as Lovelock's colonial undertones, effectively erasing or damning with faint praise one of the greatest (female) scientists in the 20th and (so far) the 21st century, seems to come with a commensurate omerta on Lovelock's anti-democratic hubristic moments.

In the same interview, the STS scholar feels compelled to repeat twice that he has pursued a "close reading" of Lovelock, following him "for many years."[71] Yet Latour's rejection of geoengineering as hubristic[72] sits ambiguously alongside his silence regarding Lovelock's positions on the matter. A disambiguation would have seemed all the more called for when Latour proudly reported that he had consulted for French president Emmanuel Macron's ministry of defense.[73] This boasting brings to mind the political question of the distinction between state consultant and public intellectual. Where the public intellectual may arguably be characterized by her/his commitment to take open, transparent stances addressed perhaps to power, though importantly, in public and to the public, the state thinker, meanwhile, may provide consulting services to a state's ministry of defense, without giving any precise or open, public account of said services' content, though boasting about their occurrence as a proof of his authority, and all this, without even clarifying the reason for which specific state institution has thus been supported. When Latour proudly evokes that he has been consulted by the ministry of defence, he takes the military character of his consultation for granted, deeming it unnecessary to even specify why it was not the ministry of ecology who called for his consultation, let alone to

to understand." In *Critical Inquiry* 45, no. 3 (2019): 659–680. There, in contrast to what occurs in Face à Gaïa, though the rhetorical and conceptual divides between Margulis and Lovelock as well as their gendered dimensions or political implications are not disambiguated, the authors do refer to Gaia theory as the collaborative work it always was.

70 See Paulson, Steve. "The Critical Zone of Science and Politics: An Interview with Bruno Latour." (Los Angeles, CA, *Los Angeles Review of Books. Retrieved from: https://lareviewofbooks. org/article/the-critical-zone-of-science-and-politics-an-interview-with-bruno-latour*, 2018)

71 Paulson, "Critical Zone."

72 On page 111 of his *Face à Gaïa,* Latour takes for granted that such options are irresponsible, and that such judgement sits comfortably with his praise of Lovelock, with no need for qualifications.

73 Paulson, "Critical Zone."

provide any information with regards to the consultation's content. That the influential anthropologist — whose works famously contributed to the emergence of Science and Technology Studies as a field — took his collaboration with military power for granted calls for all the more critical scrutiny, as here he was assisting a neoliberal government that has notoriously been violent, anti-constitutionally repressed the environmental movement in France (including for instance, in bulldozing "zones à defendre" (ZAD)), while covering such repression with marketing slogans such as "make the planet great again." We have seen earlier that James Lovelock shifted over time from considering himself a "lone scientist" to admitting he was more of an "engineer." Perhaps the figures of the public intellectual distinct from the state collaborator, offer a helpful parallel to map each of these characters' respective zones of opacities and responsibilities as well as their convergent and/or divergent politics.

When expressing his enthusiasm about the extent of the unknown that Earth systems sciences open up, Latour exclaimed: "it's like discovering America. We are at the time of Columbus and all the rest has still to be discovered."[74] For an anthropologist to excitedly make this sort of rapprochement between 1492 and the early 21st century, in this rhetorical formulation, marrying universalist Western first-person plural pronouns with the semantics of "discovery," once again erasing myriad native peoples and their knowledges as part of the great unknown, raises serious questions about the sort of Anthropos-Scene at play. In his later book, *Où atterir ?*, Latour – who once upon a time had rightly declared that we had never been modern[75] – now claims that the West once carried the promise of universality, that this promise failed to deliver, but that "we" are now all placed in the same sinking boat, "equally." But the ground under "our" feet (in which the "us" is universal) has long been robbed as far as colonized people are concerned, and in Latour's account, "they" are "accustomed to" this situation. But now "the ground collapses under the feet of *all the world at once*."[76] The universalist humanism resurrected here is further articulated thus:

> This is a question of attachment, of a way of life, that we are being torn away from, a question of ground, of property that recedes under our footsteps, and this concern *nags everyone equally, the former colonizers as much as the formerly colonized*. No! It causes much more panic for the former colonizers, less habituated as they are to this situation, than the formerly colonized. What is for sure, is that *we will find ourselves before a universal lack of the space* to be shared and a lack of habitable land.[77]

74 Paulson, "Critical Zone."

75 Bruno Latour, *Où atterrir?: comment s' orienter en politique* (Paris: La découverte, 2017).

76 Latour, *Où atterrir?,* 17. My translation.

77 Latour, *Où atterrir ?,* 18. My translation.

While this rhetoric accuses the climate-sceptical camp of denial, it in turn denies what finally has been increasingly but still insufficiently recognized by virtually all climate models, and which a simple reading of even the IPCC reports[78] would make clear: namely, the impacts of climate change are by no means universal, uniform, or self-identical. Instead, they are deeply unequal, according to geographic regions, socio-economic situation, gender, racialized subject position, etc. If, as the characterization of a capitalogenic event as "anthropogenic" attests, mainstream climatological discourse is often founded upon grand universal gestures in spite of blatant differentials, in this passage of Latour's prose the globalized, deeply unequal injustice is partly flattened under the tears of the "former colonizer."[79] The blatant erasures are all the more violent when one considers, even with

78 "Even" the IPCC reports: because although the renowned panel was founded back in 1988, receiving the Nobel Peace Prize along with Al Gore in 2007, it was not until the last two rounds of reports (in the 2010s) that the IPCC provided more detail about worldwide inequalities in impacts and vulnerabilities, while in the past, mostly treating global averages as self-explanatorily and homogenously alarming.

79 Similarly to this moment in his writings, and to his mention of his ministry of defence consulting, the fact that Bruno Latour once exclaimed, when interviewed on the French 8' o'clock news regarding his theatre play project Gaia Circus, "imagine how I feel as a child of a great wine family," is far from anecdotal or devoid of political pertinence. Bruno Latour indeed comes from the famous Burgundy family of wine growers "Maison Latour," in existence since 1797. This class situatedness does not by any means linearly determine his political, scientific of intellectual positioning. However, it does seem to inform some of his declarations alleging that the global North would somehow be worse off than global South and/or poorer populations amidst global ecological catastrophe. The privileged classes may experience some degree of loss in their privilege, or at least the threat thereof, and indeed bemoan this loss, including as expressed by Mr. Latour. The class politics at play, pace Latour's and Schultz's claims in their *Mémo sur la nouvelle classe écologique*, maps onto and intersects complexly with new ecological dimensions of the conflicts and catastrophes under way, which the authors claim to be under-mobilized. Latour and Schultz, as with many voices among some segments of the environmental mainstream, lament a supposed lack of mobilization, even an "apathy," commensurate to the depths and urgency of the ongoing devastation (39). This is due, they claim, mostly to the Left's lingering attachment to notions of progress that formerly operated as a mobilizing axis but now become one of the needed rebellion targets. This analysis imagines an "inertia" characteristic of "the masses," while also accusing governments of "inaction," and positing what they call the "new ecological class" – of which they assume they can be among the spokespeople – as striving to overcome both. But such analysis neglects to account for the many assassinations of environmental activists worldwide, or for states and corporate forces' violently attacking and bulldozing sites of mobilization such as the Zones à Défendre (ZAD) in France, or the anti-pipelines native movements in North America, to cite but a few. Neither the states and corporations involved, nor the so-called masses prove to be apathetic in such antagonistic confrontations, which scales, and numbers are now rising as sea levels do. Insofar as the movements' successes might not be commensurate to the urgency, one should likely reconsider the supposed inaction, in fact the active repression of neoliberal and neofascist governments, as well as the devastation wrought by ecological collapse, more than some vague lack of ideological point of reference beyond progress symptomatic of an alleged popular lack of comprehension of what is under way, for an explanation, though the latter factor may play a partial role as well in specific instances.

a quick glimpse, the abundant literature problematizing the universalist pretences of the Anthropocene concept, and the myriad proposal for critical alternatives such as "racial Capitalocene."[80]

If Latour's question, "where to land?" purports to generously ponder the question of migration in Europe, it is with the same broad-brush strokes with which he had depicted Gaia theories, in both cases ignoring many of the violent political effects at play. Similarly to Lovelock, Latour compared the current geopolitical situation to World War II. His bellicose rapprochement pitched Europe as the good players who have stayed with the (highly insufficient) Paris accords, while Trump's United States are portrayed as having "declared war" on their allies by leaving these agreements. From this comparison, Latour concludes that "we could have solved the problem years ago with something equivalent to the effort put into the Manhattan Project during World War II."[81] In this unfortunate comparison, according to Latour, the techno-scientific initiative that led to some of the most devastating war crimes in history shall serve as inspiration for a "solution" to climate change.[82]

After his *Facing Gaia,* where he seemed to suggest, albeit vaguely, that he rejected geoengineering as unsound, Bruno Latour was rather ambiguous in this regard. In a formulation strangely antithetical to his own critique of human/nonhuman dualisms tragically constitutive of modernity, in a 2018 essay suggestively titled "Gaia 2.0," Latour wrote with scientist Timothy Lenton that "Gaia has operated without foresight or planning on the part of organisms, but the evolution of humans and their technology are changing that."[83] Thus we would have not-yet-human Earth history, replete with aleatory agencies and devoid of anticipation, neatly distinct from a human history, which introduces "foresight" and "planning." The authors evoked these "conscious choices" as opening a new era: "Gaia 2.0."

See Latour, Bruno, and Nikolaj Schultz. *Mémo sur la nouvelle classe écologique: Comment faire émerger une classe écologique consciente et fière d'elle-même* (Paris: Empêcheurs de penser rond, 2022).

80 Françoise Vergès, "Racial Capitalocene," in *Futures of Black Radicalism*, edited by Gaye Theresa Johnson and Alex Lubin (London: Verso Books, 2017); Richard Grusin, ed., *Anthropocene Feminism* (Minneapolis: University of Minnesota Press, 2017); Jason W. Moore, ed., Anthropocene or Capitalocene?: Nature, History, and the Crisis of Capitalism (Oakland: PM Press, 2016); Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press, 2016).

81 Paulson, "Critical Zone."

82 As a result, one may even wonder whether Latour was actually starting to align with the ongoing mainstreaming of geoengineering. This, even though in his *Face à Gaïa*, Latour had cited Clive Hamilton appraisively (80), who has compellingly shown how much the Lawrence Livermore National Laboratory is frighteningly reminiscent of the Manhattan Project.

83 Timothy M. Lenton and Bruno Latour, "Gaia 2.0," *Science* 361, no. 6407 (2018): 1066–1068.

This explicitly did not rule out possible geoengineering, though some of the reasoning here could also be ambiguously compatible with an eco-humble reading of Gaia: the authors compared humans with others in Gaian history, claiming that the former perform poorly and would benefit from imitating Gaia's waste recycling capacities. Lenton and Latour recognize that: "Gaia was built by adaptive networks of microbial actors that exchanged materials, electrons, and information, the latter through ubiquitous horizontal gene transfer. These microbial networks form the basis of the recycling loops that make up global biogeochemical cycles."[84] However, this recognition somehow evades any mention of Lynn Margulis's work on microbial life. In spite of this lack of citation, another passage of the essay could suggest that what the authors had in mind may actually be decentralized and democratic, perhaps even postcapitalist, though no such explicit political positioning is allowed by their vague terms:

> In Gaia 2.0, horizontal transfer of information, functional diversity with redundancy, and distributed control will likely be important to a successful circular economy. The challenge is to support diverse, autocatalytic networks of human agents that can propel transformations toward goals such as sustainable energy, fuelling the efficient cycling of resources. This is particularly challenging given a social and economic paradigm of short-term localized gain and relatively weak global, unifying, long-term structures to counteract this paradigm.

Latour and Lenton also gesture at a form of eco-humility when they write about the many unknowns in these matters: "Despite a flood of monitoring information, present industrial societies seem less able to track changes in their environment than the life-forms that compose Gaia, because that information is often ignored where it matters by those in power."[85] However, this concession is immediately followed by a formulation that somehow reinstates the human/nonhuman dualism which Latour's earlier works problematized. Lamenting humans' lack of tracking information, Lenton and Latour wrote: "it is as if purposelessness had shifted from the natural to the social domain."[86] A manifold contradiction ensues: tracking of information is assumed a symptom of purposefulness. While this tracking always was present in the nonhuman, somehow, in the last clause of this passage, the human seems to have lost a purposefulness that is assumed to have belonged to its exclusive domain, in contrast to the nonhuman. And, in an echo to Lenton's relatively critical work on possibilities of geoengineering, Latour and he write:

> Implementation of alternative forms of climate control to reduce production of

84 Lenton and Latour, "Gaia 2.0," 1066–1068.

85 Lenton and Latour, "Gaia 2.0," 1066–1068.

86 Lenton and Latour, "Gaia 2.0," 1066–1068.

> CO_2 or augment existing feedbacks depends on who is in charge of such voluntary activity. The results would clearly be different if the Intergovernmental Panel on Climate Change, President Putin, the California legislature, or President Trump had their finger on the proverbial thermostat. In reality, all these agents and many others have some grip on the thermostat, and their combined effect is not simple to predict.

Though one could hardly contest the fact of the destructive effects left in the wake of Putin and Trump's fingers – be they on the Earth's or any other living body, the suggestion that the IPCC or California legislature's fingers on a would-be thermostat may entice healthy outcomes on a complex system of systems that lacks such "proverbial thermostat" and resists such metaphors begs for interrogation if one indeed espoused a Margulisian Gaia. Albeit in a less imperialist form, we seem ambiguously thrown back again to the question of *who* shall serve as Earth's steward – per Lovelock's nationalist hesitancies which opened this essay, rather than coming to terms with the tough bitch's demand that humans relate and take part in her monstrosity in radical ways defying centralization.

While Latour and Lenton's words do not position them clearly as supporters of the "fixes" Lovelock proposes, on a spectrum staging the ongoing conflicts over dramatically different presents and futures from a radically democratic, decentralised, more-than-human response to an authoritarian robotisation of Earth, Latour's stance is not entirely disambiguated, in spite of his and Lenton's assertions that Gaia is indeed a matter of rethinking the democratic relation between the "domain of necessity" and the "domain of freedom." What this concretely entails is not clarified. The ambiguity at play keeps Margulis's scientific contributions to Gaia to the backstage, while Lovelock's dangerous right-wing politics is but a side mention or entirely muted.

Finally, in his penultimate book *Où suis-je ?* written during the pandemic, Bruno Latour seems to be willing to finally engage some of the gendered dimensions and distinctions of Gaian scientific discourse. But far from clarifying any of the issues described in the present essay, or from thoroughly reflecting upon the meanings of the feminine and the masculine as categories he mobilized in relation to the nonhuman (reflections which might have benefited from a long and rich philosophical history in feminist philosophy, especially recent iterations thereof in new materialist theories[87]), here the anthropologist

87 Maria Puig de la Bellacasa, "Matters of Care: Speculative Ethics in More Than Human Worlds," vol. 41 (Minneapolis: U of Minnesota Press, 2017); Val Plumwood, *Feminism and the Mastery of Nature* (London: Routledge, 2002), Astrida Neimanis and Rachel Loewen Walker, "Weathering: Climate Change and the 'Thick Time' of Transcorporeality," *Hypatia* 29, no. 3, (2014): 558–575; Astrida Neimanis, *Bodies of Water: Posthuman Feminist Phenomenology* (London: Bloomsbury Publishing, 2019); Stacy Alaimo and Susan J. Hekman, eds., *Material Feminisms* (Bloomington: Indiana University Press, 2008);

provides a flurry of uncritically gendered distinctions capitalizing on old associations loaded with their histories of essentialist implications, which remain unexamined. For example, Latour opposes the term "Earth" – grammatically gendered as feminine in French – to the term "Universe" – grammatically masculine.[88] From this rhetorical gesture, Latour claims to characterize the matter of the ongoing ecological catastrophes as a conflict of "*engendrement*" – "engendering" – playing with this term's connotation both as creation at large and as procreation. The STS scholar then ambiguously exclaims: "Gaia and the feminine would not be unrelated!"[89]

Epilogue: Anthropoi, Old Ladies and Tough Bitches

Things indeed seem to fall around rather sadly neat gender lines for our various philosophical and scientific protagonists: Margulis and Stengers, Lovelock and Latour, offer contested figurations of Gaia respectively as "tough bitch" or "old lady." Yet there is no gendered inevitability here. Margulis did not carve out the version of Gaia theory she did, "as a woman," but rather, because she held it as true. Her vision of truth was one adamantly attached to an ethos of multi-disciplinary agonistic debate, synthesis, and historical investigation of science. She was especially attentive to hypotheses that had been too hastily discarded (*e.g.*, symbiogenesis), and empirical observation in the field, especially of microbial communities, both live and fossil, both within and beyond the laboratory. She repeatedly had to defend Gaia theory against attempts at discrediting her vision as "merely" "female science" or "a motherly theory of nature."[90] Ironically, while regularly asked, the rebellious microbiologist always refused to self-identify as a feminist.

Though the distinctions here do point to the situatedness of knowledges, and though Margulis' gender likely was among the overdetermining factors informing her vision, we should avoid any simple, linear determinism that would, among other issues, reduce

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Isabelle Stengers and Philippe Pignarre, *Capitalist Sorcery: Breaking the Spell* (New York: Palgrave, 2011); Katherine Behar, ed., *Object-Oriented Feminism* (Minneapolis: University of Minnesota Press, 2016).

88 For instance, under Latour's prose here, the online dimensions of existences forced upon confined millions during the COVID19 pandemic are related to the masculine/universe, while Earth would refer to in-person life (or "présentiel" in French). Whether this somehow implies that the technosphere and more specifically the internet is deemed the domain of men and so-called "real life" embodied interactions the domain of women remains unclear: this likely implication and its heavily essentialist undertones are left uninterrogated. Lack of clarity seems almost a rhetorical strategy to evade accountability. Bruno Latour, *Où suis-je ?: leçons du confinement à l'usage des terrestres* (Paris : Empêcheurs de penser rond, 2021).

89 Bruno Latour, *Où suis-je ? : leçons du confinement à l'usage des terrestres*, 50.

90 Margulis and Sagan, "Gaia and Philosophy," in *Slanted truths: Essays on Gaia, Symbiosis and Evolution* (New York, NY: Springer Science & Business Media, 2013), 153.

Margulis' contribution to science. It would be reductive, evidently not in the sense that her being a woman scientist would shed doubt on her perspicacious scientific vision – in fact it may have enriched it – but in the sense that her situatedness is not only gendered: it is many other things as well. Anne Fausto-Sterling has affirmed that Margulis' immense contribution to evolutionary biology, though recognized to an extent, has not been given its due.[91] The same is true with regards to her contribution to Gaia theory (both her theory of symbiogenesis and Gaia theory now figure in textbooks, but she is not recognized as fully as her male counterparts are, as Latour's silencing exemplifies). Thus, Margulis' gender has arguably had more influence in *silencing* her theories than in "*biasing*" them. Furthermore, a simple, linear deterministic gender analysis risks exempting Lovelock and Latour from responsibility, along the lines of a "boys will be boys" argument. There are, therefore, high feminist stakes in recognizing the anti-heroic bitchiness of Gaia. Lovelock and Latour's shortcomings are symptomatic of both, to different degrees and in different ways, of a certain masculinist hubris and of a long history of erasures.

But most importantly, Margulis' partial erasure from Gaia theory does not matter simply in terms of a fair recognition, or for the history of the sciences, or for the history of women scientists (though these stakes are certainly important as well). Given the well-deserved attention granted to Gaia theories recently, a clear view of this theatre of more-than-human protagonists has very high stakes. This instance of erasure and this need for clearer distinctions also shows the enormity of the potential technopolitical consequences at play, when major scientific (or intellectual) contributions are eclipsed in this manner. The effects of such silence are political, human, and planetary.

Old lady or tough bitch, dialysis or tickle, robots or autopoiesis, the respective, commensurate scientific and philosophical rigors and nuances, may distinguish between ethical, political and existential outcomes such as climates of hubris, authoritarian and corporate, "emergency" geoengineering on the one hand, and radically democratic postcapitalist, humble, humus-rich, more-than-human earthly climates, on the other. If Earth's a stage and men and women merely some of its players, then certain of their views may allow their animation in the play to endure a bit longer and perhaps less destructively, more democratically, with more solidarity, for them and for other players.

Enter a person who painstakingly pulls a heavy poster out of her clothes, tagging it on a whiteboard with magnets. She gesticulates around each column and each box of the below table featured on the poster, recapitulating the drama described above. Once the gesticulation wears out, out-of-breath, she wipes her forehead.

91 Anne Fausto-Sterling, "Rethinking Evolution" (Boston, MA: *Boston Review*, January 25, 2016), retrieved April 19, 2023, http://www.annefaustosterling.com/boston-review-rethinking-evolution/

In a solemn tone: *The stakes should not be underestimated. Once upon a history, a crossroad was summed up under the phrase: socialism or barbarism! This Gaian drama could be summed up in an echo: democracy or geoengineers!*

She marks a long pause. Then a smile.
Now who will dare to claim control over that old bitch?

	Lovelock	**Margulis**
Proponent of	Gaia hypothesis (based on speculation about regulation of atmospheric chemistry in spite of thermodynamic imbalance; provided some evidence to substantiate the hypothesis toward a theory, in part by computer model "Daisy world")	Gaia theory (provided evidence that microbial life collectively regulates the composition of the atmosphere, salinity of oceans, global mean temperature and other variables such that the biosphere creates its own conditions for endurance, substantiating the hypothesis to crucially transform it into theory)
Personification	Old, sickly lady	Tough bitch
Characterization	Comparable to a single organism	Incommensurably autopoietic and complex; system of systems
Resulting need	Needs dialysis	Can and will manage autopoietically, beyond the human
	Implications	
Position re: "stewardship of the earth"	Stewardship of the Earth: Contradictory, evolving stance: eventually, not if exercised by the US or China; rejected based on nationalist support for British stewardship of the earth	Stewardship of the earth: thanks but no thanks
Ethical climate	Eco-hubris	human/humus/humility
Techno-political response	Industrial/hyper-industrial/digital; top-down, technocratic, authoritarian; market-based, corporate geoengineering, nuclear power, A.I.	Convivial: if mimetically inspired from symbiogenesis, arguably decentralized, radical-democratic, low-tech, economic contraction of consumerism and productivism, etc.

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TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

Philosophies d'après-nature

Louis Morelle

Book Review

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Moynihan, Thomas T. Spinal Catastrophism : A Secret History, Falmouth, Urbanomic, 2019, 352 pages.

Woodard, Ben. Schelling's Naturalism : Space, Motion and the Volition of Thought, Edimburgh, Edinburgh University Press, 2019, 256 pages.

Les évolutions du sens commun intellectuel, à l'intersection du théorique et de l'idéologique, acquièrent aisément le statut d'évidence, par ce mouvement rétrograde du vrai cher à Bergson[1]. Il semble en aller ainsi de la relativisation contemporaine du concept de nature : marqué, à la suite des travaux de Philippe Descola et de Bruno Latour, du sceau d'une obsolescence irrémédiable, la nature se trouve incluse irrémédiablement dans un schéma « Moderne » qu'il s'agit de laisser derrière nous, comme illusion dangereuse en plus d'être incohérente. À sa place, il s'agit de cultiver une pratique renouvelée de l'ontologie, centrée sur la notion de relation et la fluidité anthropologique de la construction métaphysique[2]. Un tel programme de recherche collectif, qui a sainement ébranlé nombre de certitudes dualistes et ethnocentriques, coïncide aujourd'hui, de manière apparemment surprenante, avec la vitalité renouvelée d'entreprises métaphysiques examinant à nouveaux frais le statut du Sujet-Objet rôdant derrière le signifiant « nature ».

Cette simultanéité n'a rien de fortuit. En effet, de tels efforts ont en commun de répondre (implicitement ou explicitement) à l'épuisement conceptuel et matériel de la nature, en assimilant pleinement les critiques élevées à son endroit, pour les transformer en aiguillons de la construction métaphysique. La nécessité d'abandonner les présupposés (théologiquement codifiés, dans la tradition occidentale) de la nature comme un ordre harmonieux

1 Pour un exemple tiré de l'épistémologie, John Zammito décrit avec précision dans *A nice Derangement of Epistemes : Post-Positivism in the Study of Science from Quine to Latour* (Chicago, University of Chicago Press, 2004), la manière dont la sous-détermination des théories (Duhem-Quine) et l'historicisation du savoir (Kuhn) sont passées en quelques années du statut de thèses complexes et controversées à celui de vérités établies.

2 Didier Debaise, Isabelle Stengers, « L'insistance des possibles. Pour un pragmatisme spéculatif » (*Multitudes* n°65, 2016/4, pp. 82-89).

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ISSN 2773-0875

posé à la fois *pour* l'être humain et *hors* de lui, implique en effet d'opérer une radicale dé-substantialisation de la notion de nature, pour en offrir une redéfinition dynamique qui en fasse « autre chose qu'une chose », qu'un fondement arbitraire plaqué sur la multiplicité des mondes vécus. Mais, plutôt qu'affirmation d'une Nature ontologiquement « sauvage » — soit organisme clos sur lui-même, soit territoire vierge de toute détermination par l'esprit humain — ce qui émerge ici, de manière complexe et tâtonnante, est l'horizon d'une nature définie aussi bien par son *autonomie* que par sa capacité d'*altération* : enchaînement indéfini de produits productifs, suite imbriquée de structures d'organisation réciproque, puissance d'engendrement continu.

L'examen que nous proposons ici se concentrera sur une variante spécifique au sein de cette reviviscence actuelle des métaphysiques de la nature[3]. S'écartant de la focale ailleurs posée sur le moment galiléo-newtonien (où Descartes joue parfois le rôle de figure à exorciser), celle-ci met l'accent sur le moment post-kantien comme épisode décisif de ce qu'Iain Grant nomme l'*aphysia* propre à la Modernité : soit, l'identification de la nature à un matériau inerte et vide de signification, servant de support à la puissance constructive infinie de l'esprit humain (celle-ci étant alternativement comprise en termes empiriques, pragmatiques ou transcendantaux)[4]. On s'intéressera ici, dans la lignée des discussions sur l'héritage du *corrélationisme* attribué à Kant et à la tradition phénoménologique[5], à la manière dont les héritiers immédiats de cette autre révolution copernicienne que fut le Criticisme ont cherché à montrer que, poussée dans ses implications dernières, celle-ci exige une rupture avec la compréhension usuelle du transcendantal comme désontologisation, au profit d'un réinvestissement hyperbolique de la notion de nature. Cette entreprise ne manque assurément pas de devanciers : mentionnons expéditivement une lignée informelle incluant Peirce, Bergson, Cavaillès, Whitehead, Merleau-Ponty, Simondon et Deleuze, ainsi que, dans un registre différent, le Sellars des « Foundations for a Metaphysics of Pure Process », que l'on peut tous décrire comme faisant résonner de manière entêtante l'écho du spinozisme au sein de la matrice post-kantienne, et plus profondément comme prolongeant le mouvement de ce qu'Ernst Bloch appelle la gauche aristotélicienne[6]. La réactualisation contemporaine de cette orientation de pensée nous semble mériter un examen attentif, encadré tant par les critiques épistémologiques que

3 Pour d'autres possibilités, voir les ouvrages récents de Karen Ng sur Hegel, Philippe Roy sur Châtelet, et Virginie Maris sur la nature dans l'Anthropocène.

4 Iain Grant, *Philosophies of Nature after Schelling*, Londres, Continuum, 2006, p. viii

5 Quentin Meillassoux, *Après la finitude* (Paris, Éditions du Seuil, 2012), p. 18 : « Par corrélation, nous entendons l'idée suivant laquelle nous n'avons jamais accès qu'à la corrélation de la pensée et de l'être, et jamais à un de ces termes pris isolément. Nous appellerons donc désormais *corrélationnisme* tout courant de pensée qui soutiendra le caractère indépassable de la corrélation ainsi entendue ».

6 Bloch, Ernst. *Avicenne et la gauche aristotélicienne,* Saint-Maurice: Premières pierres, 2008.

les contestations anthropologiques[7].

Du côté des premières, il est utile ici de marquer un arrêt provisoire sur l'ouvrage de Michel Bitbol, *Maintenant la finitude. Peut-on penser l'absolu ?,* qui a le mérite de cristalliser avec vigueur et cohérence la puissance théorique d'un kantisme renouvelé : à travers des révisions substantielles (une interprétation formaliste et strictement épistémologique issue du néokantisme, l'arraisonnement à une logique anti-intellectualiste du vécu et du corps tirée de la tradition phénoménologique, unifiés par un fort accent pragmatiste et provisionnel), il offre du criticisme une version capable de surmonter un certain nombre d'objections classiques (la nécessité des lois, le dépassement du cadre newtonien) en abandonnant comme obsolètes aussi bien l'infrangibilité des catégories de l'entendement que leur validité transhistorique.

Cette révision est accomplie au profit d'un abandon complet de toute prétention métaphysique, (ce qui est, sous la plume de Bitbol, sa première vertu) : en renonçant à l'en-soi, suivant en cela l'injonction célèbre de Jacobi à propos de l'idéalisme transcendental, il devient possible de s'inscrire pleinement dans un rapport projectif et constructiviste au monde, conçu comme le corrélât toujours amendable des structures de pensées telles que formalisées dans l'expérience (p. 51), permettant, en dernière analyse, de déployer le vivre dans son essentielle gratuité. De la même manière, l'idéal d'absolutisme métaphysique se trouve renvoyé à son intellectualisme et son logocentrisme, et par là la finitude est libérée de toute infériorisation indue « par rapport à un absolu dont elle n'éclairerait qu'un fragment ou un aspect à partir de son point de vue localisé » (p. 65). Ce faisant, on régionalise toute prétention à la préséance de l'image scientifique du monde sur l'image manifeste, d'une manière assurément radicale (Bitbol insiste avec pesanteur sur la radicalité de son geste et la naïveté de ses adversaires, dans ce qui ressemble à s'y méprendre à une asymétrie discursive pour le moins fâcheuse ; v. p. 27). On offre une réponse directe (quoiqu'au un succès incertain) au défi lancé par Ray Brassier à l'égard de tout « réductionnisme philosophique à propos de la science [8] ». Ainsi, la raison

7 Ainsi, il nous semble que la limite de l'entreprise de Pierre Montebello, dans *Métaphysiques cosmomorphes. La fin du monde humain* (Dijon, Presses du réel, 2015), est de se tenir à une construction ontologique (inspirée de Whitehead autant que de l'anthropologie postnaturaliste) qui prend la forme d'un "non-kantisme" consistant à contourner l'obstacle du transcendantal, plutôt que de l'affronter.

8 « Les partisans du réductionnisme philosophique à propos de la science évitent manifestement de définir le critère conceptuel selon lequel les structures de l'image scientifique pourraient être réduites aux productions de l'image manifeste. Et comme on peut s'y attendre, ceux-là mêmes qui seraient tout à fait prêts à instrumentaliser l'image scientifique, gardent consciencieusement le silence à propos du fossé séparant le constat trivial de la survenue de la théorisation scientifique au cœur de la pratique pré-scientifique, et la démonstration beaucoup moins triviale, qui préciserait en quoi, par exemple, la mécanique quantique est une fonction de notre capacité à manier le marteau » (*Le Néant déchaîné. Lumières et extinction,* Paris, PUF, « MétaphysiqueS », p. 32).

se contente de parfaire, par le biais d'une catégorisation universellement intersubjective, et d'une symbolisation généralisant les règles de la prévision et de l'intervention, la quête pré-humaine de viabilité des organismes vivants dans un environnement où il faut faire le tri entre les ressources et les menaces. Prise au sens de la révolution copernicienne, la connaissance humaine n'est en somme rien de plus qu'une étape avancée, parce qu'universalisée et formalisée, de la poussée adaptative initiée par l'évolution des espèces (pp. 69-70)[9].

On parvient ainsi à une réunification pleine de la pensée et de l'expérience qui ne laisse place à aucun dualisme, sur le mode d'une *endo-ontologie* balayant d'un revers de la main tous les partisans d'un Grand Dehors.

Force est ici de remarquer que l'extrême dans lequel nous pousse le néopragmatisme de Bitbol, où l'universalité est un pur *requisit* formel sans exigence de contenu ni de structure autonome, relève d'un kantisme déflationniste sans doute ininvalidable, mais qui n'accomplit cette immunisation qu'au prix d'une extinction quasi-tautologique de sa pertinence philosophique. Si, comme le remarquait Meillassoux (interlocuteur principal de l'ouvrage), l'opération fondamentale du corrélationnisme consistait en un codicille plus ou moins implicite adjoint à toute proposition sur le monde (*Après la finitude,* p. 30), pour Bitbol, toute la philosophie ne doit consister qu'en la répétition perpétuelle d'un *credo* analogue, de la forme : *nous affirmons que le monde est tel, en vertu du fait que nous faisons l'effort de le penser en lui supposant objectivité et consistance.* Autrement dit, la seule proposition effective du savoir, est qu'il est savoir pour autant que nous nous reconnaissons à travers lui, du fait de l'avoir produit.

Cependant, la radicalité déflationniste de cette proposition, loin de tenir jusqu'au bout à sa visée instrumentaliste, est *in fine* mis au service d'un quiétisme des plus familiers, portant sur l'ineffabilité de l'être-au-monde et la stupéfaction qu'elle se doit de nous imposer[10]. Là où Meillassoux tentait de pointer de l'intérieur les limites d'une pensée de la corrélation, Bitbol, faisant de celle-ci la détermination générique (non-dualiste) du penser

9 On trouvait un même geste d'enracinement du savoir dans un pragmatisme du vital au naturalisme involontairement rudimentaire, dont les accents sont paradoxalement proches de l'éliminativisme d'un Churchland ou de l'évolutionnisme d'un Dennett, chez cet autre défenseur de la tradition phénoménologique qu'est Claude Romano (*Au cœur de la raison, la phénoménologie*, Paris Gallimard-Folio, 2010, chapitre 23, notamment p. 818).

10 Anna Longo a justement souligné l'incompatibilité entre cette radicalité et l'endo-ontologie à laquelle souscrit Bitbol, en lui opposant un bayésianisme subjectif qui aurait l'avantage d'aller jusqu'au bout de la désontologisation qu'il revendique (« Probabilités subjectives et métaphysique », *Philosophiques* 47/2, 2020, pp. 427-436).

et de l'être solidairement posés, en expose avec une admirable conséquence le caractère ultimement circulaire et stérile : l'euthanasie volontaire d'une philosophie s'abandonnant au mystère d'un monde dont elle n'a rien à dire et qu'elle ne saurait comprendre, se contentant de constater que ce qui apparaît, apparaît tel, et — pour reprendre une formule heideggerienne — le *laissant être*. Au milieu d'analyses fines de la théorie quantique ou de l'héritage épistémologique du néokantisme, on ne sera pas surpris alors de trouver un rejet, argumentativement paresseux (par assimilation expéditive des diverses formes du savoir sous leur caractère « pratique ») autant qu'intellectuellement coûteux, du problème dit de la Déraisonnable efficacité des mathématiques (pp. 88-89), qui signe un renoncement à penser un problème qu'on prétend dissoudre. D'autres passages frappent par leur légèreté d'argumentation, comme la conclusion mystérianiste du premier chapitre sur la transition entre vie et conscience, où « un long itinéraire de pensée et de vie » permet la « conversion existentielle » qui consiste à « renoncer à chercher un ordre des raisons » (p. 107).

Ce diagnostic quant aux conséquences auto-abolissantes d'un kantisme poussé dans les derniers retranchements de son *éthicisme* avait été posé, avec une pertinence que l'ouvrage de Bitbol ne fait que confirmer, par Iain Hamilton Grant, dans *Philosophies of Nature After Schelling*[11]. Aussi profondément original qu'impénétrable, son travail présentait une proposition théorique ambitieuse : réévaluer la *Naturphilosophie* de Schelling, généralement considérée comme impasse théorique d'un philosophe de transition entre le criticisme de Kant et l'idéalisme de Hegel. Plutôt que la « réaction » ou la « rebellion » anti-scientifiques qu'y croit voir Bitbol (pp. 97-101), reprenant une image d'Épinal quelque peu surannée de la science romantique, centrée sur la figure de Gœthe et laissant de côté les développements spécifiquement *post*-kantiens qui font la singularité de la *Naturphilosophie* romantique[12], celle-ci est plutôt à comprendre comme le chantier à ciel ouvert d'un copernicianisme réalisé, guidé par l'exigence d'absolutisation d'une nature inconditionnée et par là même désubstantialisée (selon le double sens de l'allemand *unbedingte*).

Ainsi, face à l'alternative entre d'un côté de la réification d'une perspective conditionnée sur la nature dans la pensée de la finitude, sur le mode de la *transcendentalisation,* de l'autre d'une *ontologie pure* valable indépendamment pour toute réalité possible voire concevable (épistémologie prescriptive *versus* ontologie descriptive)[13], se trouve opposée la voie d'une

11 Isabelle Thomas-Fogiel a utilement souligné, dans une recension aux accents de dithyrambe, l'importance cruciale de Fichte dans l'argumentation de Bitbol (*Revue de métaphysique et de morale,* n°102, 2019/2). Sur le néo-fichtéanisme contemporain et son « éthicisme », voir *Philosophies of Nature after Schelling,* p. 15, et chap. 3.4 pp. 102s.

12 Voir ici Robert Richards, *The Romantic Conception of Life : Science and Philosophy in the Age of Goethe,* Chicago, University of Chicago Press, 2004.

13 Nous avons examiné précédemment l'option d'une ontologie descriptive (« Du bon usage du libé-

nature entendue comme productivité pure, générativité immanente. À rebours de ces deux résolutions unilatérales de la distinction entre physique et métaphysique, et de l'*aphysia* qui les caractérise, la *Naturphilosophie* envisage ainsi le signifiant « nature » comme *medium* de communication entre les étants, se propose rien moins, comme tâche à accomplir, que *l'absolutisation de la physique*, son interprétation spéculative comme déploiement autonome d'une nature générique, et la tâche converse d'une *naturalisation de la métaphysique*. Cette re-conceptualisation de la nature en son inconditionnalité[14] permet de concevoir la multiplicité des êtres comme d'un seul tenant avec leur co-existence (leur *solidarité*, pour reprendre l'expression de Whitehead). Ainsi, un naturalisme conséquent doit instituer la nature en absolu, par la présentation-manifestation de son processus auto-législatif de différenciation sans bornes extérieures (Spinoza, *Éthique*, I, 15-17).

La *Naturphilosophie* implique ainsi un geste d'*involution du transcendental* : dans la formule du kantisme fichtéanisé, le Moi est considéré, dans sa chaîne d'actes, générateur du contenu du non-Moi, et sa source régulatrice, l'entendement et sa spontanéité essentielle, se trouve institué ordonnateur de la nature ; le geste décisif de la *Naturphilosophie* consiste ici à affirmer que le statut de cette spontanéité ordonnatrice (donc du transcendental) est à comprendre comme produit d'une spontanéité antécédente, celle de la nature, non comme produit mais comme productivité[15]. Émerge alors la notion d'une nature troisième, qui n'est plus la nature présupposée du dogmatique, ni la nature constituée du criticiste, mais nature constituante[16]. Une telle position, à raison de son ambition, demande à être solidement étayée ; la méthode internaliste de Grant aussi bien que son mode d'exposition en rendant l'abord périlleux[17], on se penchera ici sur les successeurs intellectuels plus ou moins directs de son projet, qui offrent un aperçu éclairant des modalités d'un néo-natu-

ralisme en métaphysique », *Critique* n° 821, 2015/10, pp. 793-809).

14 Répondant à l'impératif, résolument post-kantien, selon lequel « philosopher sur la nature signifie la *créer* » (Schelling, *Esquisse d'un système de philosophie de la nature*, AA I, 7, 78/SW III, 13).

15 « La naturalisation du transcendental signifie que les conditions nécessaires apparentes de notre être-d'expérience doivent en référer aux conditions apparemment nécessaires par lesquelles la Nature est productive telle qu'elle l'est » (Woodard, *Schelling's Naturalism,* p. 159 ; voir aussi Schelling, *Esquisse d'un système de philosophie de la nature,* AA, I,7,78s/SW III, 12s). Le livre de Malabou sur Kant (*Avant Demain. Épigenèse et rationalité*, Paris, PUF, 2014) aboutit à une position analogue à celle de Schelling, par l'introduction de la plasticité au sein du transcendental.

16 Sur les modes de succession entre ces trois natures, voir la confrontation chez Woodard de Schelling avec le normativisme de McDowell et Brandom (*Schelling's Naturalism*, pp. 214-219), et la présentation par Grant (*Idealism : History of a Philosophy*, Londres, New York, Routledge, Taylor and Francis Group, 2014, pp. 261-270) de la même problématique.

17 L'on pourra se tourner, en français, vers Frédéric Neyrat (*La part inconstructible de la Terre. Critique du géo-constructivisme,* Paris Éditions du Seuil, 2016), Ben Woodard (« L'échelle de la nature : mesurer la conceptualisation entre Brassier et Grant » in *Cahiers Philosophiques* n°19), et une synthèse de notre part (« Comment la nature (se) pense-t-elle ? Schelling selon Iain Grant », *in Choses en soi. Métaphysiques du réalisme*, Paris, PUF, 2018).

ralisme d'inspiration schellingienne, d'abord avec la systématisation qu'offre Ben Woodard (*Schelling's Naturalism*), puis la prosopopée spéculative de Thomas Moynihan (*Spinal Catastrophism*), avant de se tourner vers la synthèse organologique de Yuk Hui (*Recursivity and Contingency*).

Le travail de Ben Woodard est exemplaire, quant à la nécessité, pour faire de la philosophie de la nature autre chose qu'un objet de curiosité historique, d'un vaste effort de formalisation analytique et de mise à l'épreuve de la science contemporaine. Synoptique et révisionnel, l'ouvrage défend la thèse d'un rôle structurant de la *Naturphilosophie* dans le corpus schellingien entendu comme quête d'une ontologie simultanément *systématique* et *ouverte* (p. 26), faisant également place à la nécessité et à la contingence (p. 146) ; dans ce cadre, il montre comment la théorie de la nature élaborée par Schelling, tranchant les apories internes du kantisme[18], peut être utilement comprise comme proto-pragmatisme débouchant sur une théorie générale des systèmes où « tenter de connaître la nature revient à repousser toujours plus plus loin la limite de ce que en quoi nous pensions que la nature consistait » (p. 2). Il s'agit de mettre en lumière ce qui, parmi ce que la pensée découvre *en elle*, n'est pas *contenu par* elle (p. 22), et ce retournement d'éclairage, de l'aval de la pensée vers son amont, vers la nature comme concaténation de conditions conditionnantes (où la pensée figure comme dernière instance en date), est accompli par une épistémologie centrée sur la notion de *construction.* La pensée est appréhendée alors comme une capacité locale en prise avec d'autres capacités par rapport auxquelles elle se détermine. Audacieusement, la notion d'intuition intellectuelle se trouve ici relue d'un point de vue anti-subjectiviste, où l'aspect cognitif du penser se trouve surdéterminé par son versant d'action (pp. 180s). Se référant sur ce dernier point aux travaux de Gilles Châtelet sur les mathématiques (qui se revendiquaient explicitement de la *Naturphilosophie* en général et de Schelling en particulier), Woodard trace une ligne continue entre les recherches de Ritter sur la polarité, le développement de la théorie des champs au XIXe siècle, et les enjeux contemporains de l'intégration entre image scientifique et image manifeste du monde chez Sellars[19].

L'ontologie minimalement naturaliste de Schelling selon Woodard (qui reprend ici son

18 *Schelling's Naturalism*, pp. 59s. Pour un aperçu général des ambivalences kantiennes ayant permis l'émergence de la *Naturphilosophie* (autoréférentialité des catégories, caractère instable du jugement réfléchissant), voir l'excellent texte de George di Giovanni (« Kant's *Metaphysics of Nature* and Schelling's *Ideas for a Philosophy of Nature* », *Journal for the History of Philosophy*, 17, n°2 (1979), pp. 197-215). On notera le rôle de pivot, dans les interprétations schellingianisantes de Kant, de ses recherches sur l'éther dans l'*Opus Postumum* (*Schelling's Naturalism*, pp. 62-69 ; Beth Lord, *Kant and Spinozism,* New York, Palgrave MacMillan, 2011, ch. 7 ; Grant, *Philosophies of Nature after Schelling*, 3.1.3.3, pp. 75-81).

19 L'importance de la *Naturphilosophie* pour la théorie des champs est soulignée par L. Pearce Williams (*The Origins of Field Theory,* Lanham, University Press of America, 1980).

terme de *méontologie*), repose sur la notion de pouvoir ou puissance, corrélée à l'abandon de la catégorie d'individu comme fondamentale ; reconstruisant, dans son chapitre central, la doctrine des *Potenzen* de Schelling dans ses nombreuses variations, et la confrontant aux développements analytiques en termes d'ontologie des pouvoirs, la relecture de Woodard systématise brillamment l'apport de Schelling à l'intelligence des processus naturels. Si l'on peut regretter que l'ouvrage tende à idéaliser Schelling comme historiquement plus décisif (et cohérent) qu'il ne le fut effectivement, au détriment de l'histoire longue et collective de la *Naturphilosophie* dans ses divers embranchements, il reste indubitable que ce Schelling *redivivus* (allié à son descendant intellectuel Peirce) offre des ressources précieuses pour quiconque cherche à penser le *continuum* des existants en étant attentif à la manière dont l'espace des raisons vient prolonger et augmenter le domaine des causes.

Comme un reflet malicieux de la sobriété du livre de Woodard, le *Spinal Catastrophism* de Thomas Moynihan s'inscrit sans équivoque dans le genre enivré de la *théorie-fiction*. Derrière ce terme aux acceptions multiples, on entendra ici les usages de la théorie comme moyen heuristique, explicitement artificiel, où les possibilités inhérentes à une position ou à un concept sont portées à leur degré maximal d'intensité. À cette autre tradition invisible se rattacheraient aussi bien les paraboles de Nietzsche-Zarathoustra, les hétéronymes de Kierkegaard, les illuminations batailliennes, les délires de *Mille Plateaux* (« Géologie de la Morale »), ou la théorie comme fiction d'horreur chez Thomas Ligotti[20]. Moynihan se délecte ainsi d'une histoire superlative (une « hypergénéalogie ») organisée autour de la figure ontogénétique de la colonne vertébrale comme facteur de structuration externe de la pensée humaine[21].

La vertébration est présentée comme la concrétion de la totalité d'une histoire naturelle géologique et biologique, qui se révèle n'être qu'un enchaînement ininterrompu de cataclysmes. Habilement étayée autour d'un mélange de textes kantiens mineurs et majeurs, la recherche anatomico-transcendentale de Moynihan évoque aussi bien la chiralité de « Qu'est-ce que s'orienter dans la pensée ? », le « recul d'effroi » qu'inspire à la raison kantienne la conception vitaliste et naturaliste des *Ideen* de Herder, qu'une note de lecture de 1771 sur l'anatomie de Moscati suggérant que la maladie organique est indissociable de la structuration vertébrale dans ce qu'elle a de *contre-nature*. Moynihan offre ainsi plus largement un panthéon de références tantôt familières (Schopenhauer, Bataille, Reich),

20 Voir à ce sujet Gregory Marks, « A Theory-Fiction Reading List » *The Wasted World,* 2 novembre 2018. https://thewastedworld.wordpress.com/2018/11/03/a-theory-fiction-reading-list/.

21 Les récents travaux d'Emanuele Coccia, par le mariage similaire d'une philosophie de la nature avec une profusion de concepts et d'alliages rendus possibles par la postulation d'un processus universel de métamorphose et de dé-substantialisation, s'apparentent fortement, avec une esthétique très différente, au travail de Moynihan, à ceci près que ne s'y trouve pas théorisé avec la même clarté l'ancrage méthodologique dans la théorie-fiction.

tantôt beaucoup plus obscures, parfois même imaginaires, s'appuyant également sur la science-fiction de Burroughs et Ballard, et déploie avec virtuosité une archéo-cosmologie allant du spasme moléculaire à la recherche d'intelligences extra-terrestres, dont la thèse centrale est que le psychisme porte gravées en lui les traces d'un mal remontant aux plus profondes strates de la corporéité, et qui ne peut disparaître qu'avec son extinction (thématique à laquelle l'auteur dévoue son ouvrage suivant, *X-risk: how humanity discovered its own Extinction,* Falmouth, Urbanomic, 2020). La lombalgie devient ainsi le symbole alchimique de ce que notre être-au-monde contient d'aberrant et d'abyssal, loin de toute sérénité endo-ontologique.

Il est impossible de résumer ici la richesse d'horizons déployés par cet ouvrage à l'érudition parfois stupéfiante, et l'on se contentera de remarquer que son énonciation débridée, par accumulation de néologismes et d'idiosyncrasies langagières, offre une simulation rhétorique de l'ébranlement continué que la résonance géo-traumatique de la créativité naturelle tend à produire dans l'esprit. En ce sens, le travail de Moynihan a le mérite de rendre manifeste, par sa prosopopée à peine voilée, la présence souterraine de la nature comme mouvement inhérent à la texture la plus intime de la pensée. Il prolonge par là l'intuition vertigineuse de Merleau-Ponty sur la nécessité d'une « psychanalyse de la nature » réactivant l'équation schellingienne de la nature et de l'inconscient[22]. La nature ne parle pas, elle n'écrit pas de livres où elle pourrait se laisser déchiffrer[23,] elle ne saurait pas plus prendre la forme d'un « actant » ou d'un quelconque représentant ; elle ne peut apparaître à travers une représentation individuée (objectale ou diplomatique), mais uniquement dans le mouvement même de son expression.

Juxtaposés, le travail de Moynihan et celui de Woodard montrent combien périlleuse est une philosophie se voulant *par* la nature plutôt que *sur* elle. Le caractère irréductiblement localisé de la pensée ne peut être métabolisé, dans une théorie minimalisant sa part fictionnelle, que par la construction acrobatique d'une dialectique subject-objective (rétrojection en amont vers l'émergence quasi-téléologique de la pensée comme produit naturel, projection en aval dans l'exercice d'une structure auto-itérative), qui se trouve perpétuellement menacée de dissolution, ou bien dans le flux indifférencié de la nature, ou bien dans la processualité spéculaire et formelle de l'acte d'auto-détermination.

Or c'est précisément l'intérêt de l'ouvrage de Yuk Hui, que d'introduire la notion *d'itération*

22 *Le visible et l'invisible* (Tel 36. Paris, Gallimard, 1988), note datée de novembre 1960, p. 315. À ce sujet, voir Jason M. Wirth et Patrick Burke (éds.), *The Barbarian Principle : Merleau-Ponty, Schelling, and the Question of Nature,* Albany, SUNY Press, 2013.

23 Sur ce point, l'inaccomplissement de l'*Opus Postumum,* du projet schellingien des *Âges du Monde*, ou du dernier Merleau-Ponty, ne sont pas sans signification quant au caractère constitutivement inachevable (alternativement *inchoatif*, *ésotérique*, ou *testamentaire*) de la *Naturphilosophie* comme discours.

récursive comme pivot d'une philosophie de la nature (*i.e.* de l'organique) qui s'intègrerait à une pensée de la technique (de l'organologique). Il recompose l'ontologie de Schelling sur une ligne similaire à celle de Woodard, comme systématisation précoce d'une théorie de la récursivité naturelle, où un système intègre dans son mouvement les conditions de sa propre altération, et intronise Hegel comme son successeur intellectuel. Le dépassement idéaliste de la nature chez ce dernier en fait alors le théoricien paradigmatique de l'organicisme machinique, entendu comme *Aufhebung* historique de l'organicisme biologique du premier, jetant les bases philosophiques de la cybernétique. Yuk Hui formule par là un premier élément de réponse directe à l'obsolescence présumée de la nature telle que proclamée par le diadoque Latour et ses successeurs : penser l'auto-organisation de la nature est le préalable indispensable à la compréhension d'un mouvement technologique dont la dynamique récursive, sous la forme d'un organicisme projectif, doit être comprise comme tendant inconditionnellement vers une Terre artificielle. La thématique centrale devient alors l'émergence de la cybernétique comme théorie et pratique des systèmes perpétuellement ouverte à la révision (dans la lignée des travaux de Simondon), et l'ouvrage débouche sur une mise au jour de la contingence logée au sein de la création de nécessité propre à tout système technique. La transition par augmentation du naturel vers le technique, et l'insertion de ce dernier au sein du socio-cosmique (*ie.* de l'ontologie au sens descolien), deviennent ici les tâches principales de philosophie, si elle se veut à la hauteur des enjeux de l'Anthropocène[24].

Tordant la nature en tous sens par le biais de la spéculation, on en augmente peut-être, avec la plasticité, la résilience théorique ; mais cette nature nouvelle, tierce ou prime, en quoi se différencie-t-elle des autres « ombres de Dieu » qui font le matériau inépuisable de l'onto-théologie occidentale (et de la philosophie universitaire) ? N'en revient-on pas simplement au *statu quo ante* de la métaphysique pré-critique, du naturalisme conquérant, et de la philosophie comme discipline reine[25] ? En divergence avec les attendus diplomatiques et relationnels du post-naturalisme, qui mettent l'accent sur les modes de construction collectifs disponibles dans la situation présente, notamment politique[26], la

24 Ces derniers aspects sont plus amplement développés par l'auteur dans *La Question de la Technique en Chine. Essai de Cosmotechnique*, Paris, Divergences, 2021.

25 Sur les opérations d'auto-légitimation de la philosophie, voir (entre autres) les réflexions d'Allison Ross (« Spinoza in Paris. The French Evaluation Machine », *Parrhesia,* 23, 2015, pp. 144-59), et les analyses sociologiques de Giuseppe Bianco (« The Misadventures of the "Problem" in "Philosophy" », *Angelaki,* Vol. 23, 2018, pp. 8-30).

26 Christian Thorne, dans « To the Political Ontologists » (*in Dark Trajectories : Politics of the Outside* [Name] Publications, 2013) montre avec brio comment les divers post-humanismes, lorsqu'ils s'étendent en métaphysiques (du « devenir », de la « matière »), se rabattent systématiquement, pour éviter un recours à une hiérarchisation ontologique généralement indésirable, sur une très humble politique de la pédagogie (intellectuelle ou sensible) qui reconduit intégralement les attendus de l'humanisme le plus traditionnel, la réflexivité en moins, sacrifiée sur l'autel cosmologique.

conclusion que l'on peut tirer des philosophies de la nature contemporaines n'est pas tant une *restauration*, qu'un mode alternatif d'*insertion* de la pratique ontologique dans le tissu des capacités d'action, humaines comme non-humaines, qui s'expose au risque de l'empirie sans pour autant prendre la voie d'une identification entre métaphysique et diplomatie. Dans une tentative de entre anthropologie ontologique et métaphysique spéculative, nous avons ailleurs tenté de montrer que l'essentiel de l'apport conceptuel déployé par l'anthropologie ontologique a en définitive peu à voir avec l'ontologie *simpliciter*, car elle porte plutôt sur une élucidation remarquablement fine des modalités de la pensée dans son double versant de conceptualisation et d'actualisation[27]. À travers les diverses modalités d'une métaphysique de la nature, on réintroduit assurément une contrainte méthodologique quant à la construction ontologique[28], en tenant pour l'indispensabilité de l'ontologie en un sens *de jure* ; mais cette contrainte est celle que doit intégrer en son sein l'opération de théorisation si elle veut s'exercer lucidement plutôt qu'arbitrairement, pour se donner les moyens d'expliciter en son sein les contours de cette activité à laquelle s'adonnent les vivants naturels qu'est la pensée.

27 « Spéculation et comparaison : sur les formes contemporaines du recours à l'ontologie », *Cahiers Critiques de philosophie,* n°19.

28 Les limites de telles opérations d'ontologisation ont ainsi été pointées par le regretté Martin Fortier, à propos de la conception de la pensée végétale chez Eduardo Kohn (« Les arbres et les signes », *La Vie des idées*, 1 mars 2018).

TECHNOPHANY
A Journal for Philosophy and Technology

Technophany Vol.1 No.2

Book Review: Returning to Judgment: Bernard Stiegler and Continental Political Theory by Ben Turner

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Abstract:
Book review of Ben Turner's *Returning to Judgment: Bernard Stiegler and Continental Political Theory*.

Keywords:
Stiegler, technics, totalization, ontology, continental political theory, pharmakon

1. Context

Bernard Stiegler is a philosopher whose oeuvre is as divisive as it is magnificent. He is an inventive and pioneering philosopher of technology, a voracious systematiser, a conceptual engineer, and a deconstructionist *par excellence*. For some, he is a clear source of inspiration, a heavy influence on the new and exciting wave of critical continental thought that returns—in our age of digital networks, ecological catastrophe, institutional inertia, hyper-capitalist exploitation and cultural atrophy—to questions of nature, technology and humanity with renewed vigour and fresh eyes. For others, Stiegler is more of a reformer than a radical, more conservative than his work initially appears, and perhaps even an author whose thought lends itself to hyperbolic—perhaps even superfluous—conceptual innovations and internal contradictions.

Turner deftly guides us through both the primary texts and secondary literature interrogating Stiegler's key texts, providing an original and insightful interpretation of his intervention into continental political theory.

2. Returning to Judgment

Turner takes as his starting point when relating Stiegler's body of work to contemporary continental political theory, the literature's commitment to overcoming the problem of totalisation. Totalisation is framed as a mode of necessarily exclusionary thought, often relying on the shaky grounds of reason, rationality, and/or nature for justification, and

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ISSN 2773-0875

almost always disrupted after the fact by the problematisation of such exclusions, unable to accommodate or account for difference once articulated. Continental political theory is understood to generally avoid explicit political judgements for fear of unintentionally reproducing pre-existing hierarchies, power relations, and/or terms of exclusion, and instead remaining steadfast to its normative commitments to inclusivity and openness.

Chapter 1, "The Default of Origin," introduces the Stieglerian claim that the human is without essence. Turner argues that ontology itself is limited by the fictional status of all concepts responding to our purported origin, an origin necessarily precluded by our socio-technical context, the first limit to political ontology. Turner underlines the importance of the "non-inhuman" as a concept in Stiegler's thought, as it demonstrates the limitations (both philosophically and linguistically) of trying to think of the human as a category while clearly acknowledging the inherent contingency that must remain clear with any plausible definition. Turner also brilliantly captures the more elusive notion of the "a-transcendental," found in scattered references across Stiegler's work—it bears family resemblance to the intentions of the non-inhuman, in that the a-transcendental is a semiotic recognition of contingency. As Turner writes, "any transcendental that regulates humanity's understanding of itself, its place in the world, and its political significance is mediated and produced by the technical objects that define the empirical contexts from which such concepts emerge."[1] Turner provides an excellent introduction to the anthropological and philosophical basis for Stiegler's account of the origin of humanity and its imbrication with technicity, concluding with one of his more controversial contentions: "technical pre-humans are social but not political."[2]

In Chapter 2, "The Pharmakon," Turner addresses the status of the pharmakon as a concept in Stiegler's work in providing a minimal definition of politics wherein the political is defined in response to the poisonous and curative properties of any given technological horizon. The political, therefore, totalises from a localised position, and thus political ontology's second limit is found in its inability to exhaust this undecidability (in the Derridean sense). Stiegler's account of technics and the human (or should I say, non-inhuman) provides the following theoretical conclusions: firstly, technicity both structures human existence and always for the transformation of these conditions by exposing stupidity.[3] Here stupidity refers specifically to reactionary thought unable to perceive openness or contingency and thus retreat to judgements that generically reproduce the established order of things; secondly, and perhaps more controversially, the political refers solely to emergent antagonisms caused by any specific technically supported social

1 Ben Turner, *Returning to Judgment: Bernard Stiegler and Continental Political Theory* (New York: SUNY Press, 2023), 16.

2 Turner, *Returning to Judgment*, 47.

3 Turner, *Returning to Judgment*, 72.

condition.

In Chapter 3, "Individuation and General Organology," Turner addresses the influence of Gilbert Simondon, specifically his concept of individuation, and how this post-ontological process of thinking through conceptual judgements is limited by processes of individuation. Turner argues that Stiegler's interpretation of Simondon (articulated through the methodological tool of "general organology") is best understood as informing the view that the political emerges in response to pharmacological problems while maintaining a recursive and indeterminate relationship with its conditions of origin.[4] Stiegler's general organology—post-ontological methodology—forms the third limit to political ontology: that all concepts emerge from particular processes of individuation and thus cannot be reliably universally applied.[5]

In Chapter 4, "Libidinal Economy and Proletarianization," Turner explicates Stiegler's account of desire, libidinal economy and proletarianisation. Stiegler's fourth limit to political ontology, according to Turner, is that desire cannot be a universalisable concept accessed at the level of ontology due to its historicity, yet because there is no pre-historical desire, any politics of desire must totalise its conception to give meaning to individuation.[6] Turner begins here an effective and persuasive critical interrogation of Stiegler's theoretical contentions: Turner suggests that Stiegler's account of the libidinal economy relies on explaining a set of local problems by way of an apparently universal politics of desire. He contends that "Stiegler's political understanding of desire emphasises the need to critically assess the pharmacological nature of its relationship to totalisation rather than presupposing an ontological, productive desiring force that is opposed to totality."[7] Stiegler's account of proletarianisation is similarly accused of totalisation—presupposing a universal subject (of desire) in danger of losing cultural and symbolic knowledge, itself framed as a form of violence without accounting for other (more obvious) examples of the violent destruction of knowledge.[8] For what it's worth, I would also contend that Stiegler's reformulation of the proletariat as no longer representative of a class relation but rather a universal figure of subjectivity within computational capitalism that encompasses all classes is an obstructive and unhelpful provocation to Marxist critiques of similar phenomena.

In Chapter 5, "Stiegler's Theory of Political Judgment," Turner argues, with support from the post-foundational political ontology literature, that political judgment actively forms

4 Turner, *Returning to Judgment*, 73.
5 Turner, *Returning to Judgment*, 74.
6 Turner, *Returning to Judgment*, 100.
7 Turner, *Returning to Judgment*, 116.
8 Turner, *Returning to Judgment*, 101.

the political, and thus it cannot be said that any ontology can absolutely account for all possible responses to pharmacological problems.[9] Such an understanding of political judgment implies a plurality of ways to understand the political/non-political, given the plurality of political origins that must therefore escape any single political ontology.[10] Turner's reading of post-foundational political ontology supports the necessity of totalisation as articulated by (his plausible and persuasive reading of) Stiegler. Turner argues that the concept of judgment, therefore, unifies Stigler's philosophy of technics and its consequences for post-foundational political ontology.

In Chapter 6, "Judgments on the Impossible: Otium, Antigone, Amateurs," Stiegler's concepts of Otium, the Antigone complex and the amateur are all analysed through the lens of the possibility of constituting political judgments that resist totalisation. Turner contends that Stiegler distinguishes between the impossible and the improbable to "conceptualize how impossibility is unthinkable outside local and totalizing conditions,"[11] and this distinction informs the viability of these concepts as a means of thinking outside totalisation. Stiegler's fear of the automatic society, of algorithmic governmentality in its most extreme forms, must be met with concepts capable of resisting its tendencies—and Turner convincingly argues that all three concepts may be considered a-transcendental in the Stieglerian sense.[12]

In Chapter 7, "Neganthropology and the Problem of Judgment," Turner explicates Stiegler's novel interpretation of contemporary debates regarding the Anthropocene. Stiegler's own phrasing, the Negantropocene, is a concept designed to highlight the way in which knowledge is characterised by a pharmacological tendency toward entropy.[13] Much like the issues of the automatic society and libidinal economy, Stiegler presents neganthropology as a universal political problematic—yet such a problematic contradicts its purported aim of supporting plurality in that his use of terms assumes direct metaphorical alignment with the scientific principles of entropy and gives the human an assumed status as the universal subject of such an analysis.[14] Turner specifically interprets Stiegler as intimating that "all humans experience the problems of this conjuncture in the same way because of the shared propensity to violence"[15]—ultimately, an arduous sojourn through a list of conceptual innovations, inventions and contrivances just to arrive at a quasi-Hobbesian observation, an energetic conservatism.

9 Turner, *Returning to Judgment*, 127.
10 Turner, *Returning to Judgment*, 138.
11 Turner, *Returning to Judgment*, 154.
12 Turner, *Returning to Judgment*, 167.
13 Turner, *Returning to Judgment*, 168.
14 Turner, *Returning to Judgment*, 169.
15 Turner, *Returning to Judgment*, 190.

In Chapter 8, "The Polis as Judgment on the Origins of the Political," Turner is equally unimpressed with Stiegler's late tendency to locate the polis in ancient Greece, precluding the possibility of a plurality of emergences of politics across the world and, indeed, as inherent to the process of individuation. Turner argues—and it must be said far more in the spirit of Stiegler's early a-transcendental philosophical contentions—that "the political does not have a single origin because it is formed by local fictions regarding the nature of the non-inhuman."[16] Therefore, attempting to locate the origins of politics in ancient Greece seems not only historical conjecture (that many historians would simply label as false) but also betrays the plurality of political emergence(s) that early Stieglerian analysis of the relationship between politics and technicity implies.

In the conclusion, "A Pharmacology of the Political," Turner's reading of Stiegler is marshalled to resolve his ongoing issues with the current limitations of political ontology. Turner is sympathetic to Stiegler's ongoing influence, specifically for providing contemporary political thought with the challenge of navigating difficult social, philosophical and political problems with a language of judgment that necessarily invokes totalisation whilst remaining open to future contestation. Rather than abandoning ontology altogether, theorists must recognise its limits and the plausible complications that arise from the business of universalising concepts, ideas and theories for a global, interconnected social world in the language of necessarily localised conceptual vocabularies.

There is a cognitive bias known as the law of the instrument where a specialist is known to become over-reliant on a single tool—when you are holding a hammer, everything looks like a nail, as the saying goes, and there is a reading of Stiegler that may understand his work as that of a specialist whose tool of over-reliance is the very idea of a tool, or "tool"-ness, itself. Turner resists such dismissiveness and instead demonstrates the exciting potential in the early work of Stiegler that more pessimistic and totalising later projects appear to foreclose—returning to political judgement may be a necessary theoretical move, but not at the expense of plurality and possibility. Turner's work exposes these internal contradictions and is, therefore, essential reading for those interested in Stiegler's concepts within the author's broader context and his philosophical legacy moving forward.

References

Turner, Ben. *Returning to Judgment: Bernard Stiegler and Continental Political Theory*. New York: SUNY Press, 2023.

16 Turner, *Returning to Judgment*, 195.