



Reframing the technosphere

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Published in:
Krisis. Journal for Contemporary Philosophy

Publication date:
2017

Document Version
Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (APA):
Lemmens, P., & Hui, Y. (2017). Reframing the technosphere: Peter Sloterdijk and Bernard Stiegler's anthropotechnological diagnoses of the anthropocene. *Krisis. Journal for Contemporary Philosophy*, (2), 26-41. <https://archive.krisis.eu/reframing-the-technosphere-peter-sloterdijk-and-bernard-stieglers-anthropotechnological-diagnoses-of-the-anthropocene/>

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**Reframing the Technosphere:
Peter Sloterdijk and Bernard Stiegler's Anthropotechnological
Diagnoses of the Anthropocene**
Pieter Lemmens and Yuk Hui

Introduction

In June of 2016 the German philosopher Peter Sloterdijk (1947) and the French philosopher Bernard Stiegler (1952) engaged in a public debate in Nijmegen on the Anthropocene. The Anthropocene is the term for a new geological epoch in which the human has allegedly acquired 'geological agency' (Chakrabarty 2009), even becoming the most important geological (f)actor on the planet – a non-physical factor that is indeed an *actor* (Bonneuil and Fressoz 2016). This situation obviously burdens 'humanity' with an unprecedented responsibility, not so much vis-à-vis the earth, which is arguably totally indifferent to the current ecological crisis, but with respect to its own survival, and most probably also with respect to other lifeforms, which are also dependent on the life-sustaining conditions of the biosphere. The latter's future has never before been, in the eyes of scientists and humanities scholars, so decisively associated with the figure of this uncanny and now apparently earth-shattering being the Greeks called the *anthropos*, as now.

As is well known by now, the notion of the Anthropocene was coined in 2000 by the Dutch atmospheric chemist and meteorologist Paul Crutzen in a colloquium on the Holocene at a conference of the International Geosphere-Biosphere Programme (IGBP) in Mexico, in which he apparently stood up and claimed that we were not living in the Holocene anymore but in the Anthropocene since the human (*anthropos*) had now become a 'geoforce', most significantly through anthropogenic carbon dioxide emissions in the atmosphere (Crutzen and Stoermer 2000). In a short yet seminal article in *Nature* two years later he argued that the Anthropocene as the 'human-dominated geological epoch' had started with the onset of the Industrial Revolution, mentioning the design of the steam engine by James Watt in 1784 as a crucial event (Crutzen 2002). Acknowledging as his forerunner the Italian geologist Antonio Stoppani, who already in 1873 recognized the human as a 'new telluric force' on a par with the natural forces, he briefly sketched some of the destructive impacts of humanity on the planet and proclaimed that barring a global catastrophe the human species will no doubt remain a major geological force for many millennia to come (*ibid.*).

The Anthropocene first of all marks the entrance of humanity into a phase in its history which will be characterized by huge changes in the earth's biosphere, i.e., in the global ecological system that has up until now rather silently and robustly supported its cultural-historical projects (Steffen et al. 2011, Barnosky 2012 Rockström & Klum 2015). If most 'anthropoceneologists', and in particular so-called 'ecomodernists' or 'ecopragmatists' among them, emphasize the 'anthroposization' of the earth and like to characterize the Anthropocene as the 'human era' in which humans will shape the planet and decide about the future of the biosphere (Brand 2009, Crutzen & Schwägerl 2011, Ellis 2011, Lynas 2012), thinkers that are more philosophically oriented and also more critical about modernity, such as Clive Hamilton, Timothy Morton, Bruno Latour and Isabelle Stengers, stress the feedback effects of the Earth System upon anthropogenic impacts as its most typical and also most worrying characteristic. Both Latour and Stengers, for instance, invoke the image of 'the intrusion of Gaia' (Stengers) to highlight the *agency* exhibited by the earth as agitated by human action (Latour 2014) and present this as a

new figure of transcendence radically questioning humans and forcing them to accord with her whims (Stengers 2015). Morton understands the Anthropocene as signaling the 'end of nature' as we know it (Morton 2009) and as the age of 'hyperobjects' intruding the human sphere (Morton 2013). Clive Hamilton accentuates the Anthropocene as an unprecedented *rupture* in the functioning of the Earth System as a whole, inaugurating a completely different, post-holocene condition that urgently calls for a new responsibility of the human and a complete reorientation of the human-earth relationship (Hamilton 2017).

The Anthropocene has gained a lot of attention in academia in the last couple of years, especially also among humanities scholars and social and political scientists, generating an intense, rich and varied debating landscape, frequently referred to as the 'Anthropo-scene' (Lorimer 2016). One issue concerns the Anthropocene's starting point. Some have argued that it already began with agriculture (Ruddiman 2003) or more generally the 'agrilogistic' mode of inhabiting the earth (Morton 2016), others claim it started only after the Second World War, with the so-called 'Great Acceleration' (Zalasiewicz et al. 2015).

Another, more controversial issue concerns the very name given to the new epoch. Although we can certainly agree with the critique, leveled principally by Marxist thinkers such as Jason Moore, Elmar Altvater, Christian Parenti (Moore 2016) and Andreas Malm (Malm 2015) but also by Naomi Klein, that the true 'culprit' of the global ecological crisis that is now reframed as the Anthropocene is not 'humanity' or 'the human species', (and if so only a certain segment of it), but 'capital' or the capitalist mode of production, and that a better term would therefore be 'capitalocene', we nevertheless think that a focus on the *anthropos* in the sense proposed in this article – i.e., as a fundamentally technologically empowered, para-natural, (or why not 'meta-physical', and therefore 'monstrous' creature?) – remains indispensable to our current age of planetarization. 'Technocene', also suggested by Sloterdijk (Davis & Turpin 2015), seems in this sense also a viable alternative, yet it is not our aim here to contribute to the current discussion around the appropriate 'nomenclature', important as it no doubt is.¹

Sloterdijk and Stiegler have both offered interesting and pertinent philosophical diagnoses of the Anthropocene, approaching it from their respective anthropological, or better, anthropogenic perspectives, which should more precisely be understood as *anthropotechnic* or *anthropotechnogenic* perspectives, as we will explain shortly. Both perceive the Anthropocene as a critical event in the technogenic adventure that in their view constitutes the essence of the process of anthropogenesis. For both, that is, the Anthropocene signals the necessity, for the *anthropos*, to radically change the course and the very nature of this technogenic adventure, an adventure from which it is born and upon which it vitally depends since it has invested in it everything that it is. And finally, both suggest, each in their own specific way, a response to the Anthropocene in the form of a proposal that is properly anthropotechnological: a *homeotechnological* revolution in the case of Sloterdijk and a *negentropic* turn of technology in the case of Stiegler. As we shall see, in both cases this is also immediately a *technopolitical* issue, entailing an *immunopolitics* in the case of Sloterdijk and a *pharmacological noopolitics* in the case of Stiegler.

Since both have developed their technological and technogenic perspectives on the *anthropos* decisively in dialogue with the thought of Martin Heidegger, and in particular with his view on the essence of technology as enframing and the need for a radical turn from this very essence, we will start with first briefly sketching their respective techno-logical re-interpretations of Heidegger's existential ontology, as well as their decidedly un-Heideggerian views on the technogenesis of human existence. We will also briefly introduce their principal theoretical paradigms of sphero-immunology and pharmaco-organology. Our account of their critical re-interpretations of Heidegger's ontological or onto-historical view of technology will be postponed until our discussion of their anthropotechnical diagnoses of the Anthropocene.

The relation between *Anthropos* and *Technē*. Temporal vs. Spatial Analytics.

Both Sloterdijk's and Stiegler's anthropotechnologies start from a similar critique of Heidegger's notion of the 'ontological difference' as the dimension of the question of being. The former responds to it with what he calls the anthropological difference which historicizes Heidegger's transcendentalist conception of being-there and the clearing of being, and reconceptualizes it as resulting from the technogenic and self-domesticatory evolution of the species within self-made and self-maintained 'inner spaces' or 'anthropospheres', leading to the break of proto-humans with their animal *Umwelt* and launching them into the openness and indeterminacy of the world, or in other words, engendering their sensitivity for the difference between Being and beings. The latter deconstructs it with the concept of the 'original default' as a 'necessary default' [*défaut qu'il faut*] which theorizes humans as beings without origin or essence and thus vitally dependent on technical 'compensations', these constituting their 'essentially accidental' openness and allowing for their 'ek-sistent' mode of being. As such, they bring the ontological-transcendental to the ground by demonstrating a history of the ontological through the ontic, a decidedly materialist, and that is to say 'technogenic' (Sloterdijk 2017., 142) 'history of the clearing "from below"' (ibid., 100).²

The *anthropos* in the thought of Sloterdijk and Stiegler is an unstable historical and philosophical category, which is always becoming. The readings of the history of anthropology and philosophy according to the two thinkers share a common term: 'exteriority' – an attempt to deconstruct Heidegger's concept of the temporal *Ek-stasis*. However, this concept is performed in a symmetrical way in being mirrored by the thought of Heidegger. On the one hand, Sloterdijk in his three volumes of *Spheres* rediscovered the question of space, and developed what he called an 'ontotopology' in contrast to Heidegger's 'ontochronology'; on the other hand, Stiegler in his three volumes of *Technics and Time* reproaches Heidegger's *Seinsfrage* for consisting of a forgetting of technics as constitutive of time.

For Sloterdijk, the figure of man is the monstrous – a translation of the German *das Ungeheure*, which is Hölderlin's translation of the Greek word *το δεινον* in Sophocles' *Antigone*. Heidegger translated it in his *Introduction to Metaphysics* and his later courses on Hölderlin as 'uncanniness' [*das Un-heimlich*], which Heidegger also associated with "homelessness" [*Un-heimisch*]; meaning the fundamental homelessness of the human as a being without origin (Heidegger 1993, 86). The homelessness associated with the uncanniness of human existence is grounded for Heidegger in man's relation to Being (Warminski 1990, 205). Like Heidegger, Sloterdijk finds in this monstrous figure of the human the question of original technics. However, he goes further by proposing what he calls an 'onto-anthropomonstrology' (Sloterdijk 2017, 105) characterized by a default of 'coming to the world' [*Zur Welt kommen*]. Coming to the world is not yet being in the world, in the sense that *Dasein* has to look for the *Da* of its *Da-sein*. It is also not only to look for, but also to *build* a sort of insulation as well as a relational space *as sphere* – in the sense of a self-domestication (ibid., 108). And it is within these spheres that the human as a world-open, existential creature is forged, as it were. Spheres are in fact anthropogenic engines, 'hothouses' or 'incubators' in which humans are born. The genesis of the human being is as such 'an actual house affair [...], a drama of domestication in the radical sense of the word' (ibid.). Sloterdijk's historical anthropology takes a materialist reading of technics to characterize the evolution of human being originating initially from lithotechnics (stone tools). 'Becoming human', he writes, 'happens under the protection of lithotechnics' (ibid., 114) and Heidegger's clearing as 'the place where Being [*Sein*] arises as that which is there [*da*] (ibid., 202) is initially 'a work of stones' (ibid., 116).

We can understand both Sloterdijk and Stiegler's project as a partial response to Heidegger's writing after the *Kebr*, a turn from *Being and Time* to the history of Being, in which he considered the history of Western metaphysics as a progressive oblivion of Being, which is realized in modern technology. Heidegger delivered an important talk in 1949/1955, later published as "The Question Concerning Technology", in which he points out that the essence of modern technology [modern Technik] is no longer technical or technological, but rather Enframing [*Gestell*]. If the essence of Greek *technē* means *poiesis* or bringing-forth [*Hervorbringen*], modern

technology as the realization of metaphysics has completely bypassed the question of Being and sees in every being exclusively the possibility to calculate and command; in other words, beings are treated as standing-reserve [*Bestand*]. This critique of modern technology as metaphysical project is taken up by both Sloterdijk and Stiegler, in a sympathetic but contradictory sense, namely that they demonstrate technology as the necessary condition of care [*Sorge*], a central concept in *Being and Time*, referring to the basic ontological structure of Dasein as 'ahead-of-itself-Being-already-in-the-world' (Heidegger 2001, 237). By *deconstructing* Heidegger's writing after the *Kehre* and *reconstructing* his writing before the *Kehre*, they arrive at their own spatial and temporal reconceptualization of technology. In comparison to Sloterdijk's critique of Heidegger's failure to fully take up the question of space, Stiegler reproaches Heidegger's *forgetting of technics* as time in his historical account of Western metaphysics as the history of the *forgetting of being*. Stiegler takes Heidegger's concept of the 'already-there' further to show how falling [*Verfallen*] is *necessarily* a question of technics as time. The *Unheimlich* takes a new meaning; it is not referred to human being as ontologically homeless, but rather more in terms of the Freudian *Uncanny* (*Unheimlich*), *ēpimētheia*, an *après coup* or a *Nachträglichkeit*: 'The *unheimlich* character of all prostheses is, besides, what *Dasein*, with its eye "on the simple fact of existing as such," cannot endure while being from the start supported by it' (Stiegler 1998, 219).

For Stiegler, technical objects are essentially to be understood as a form of social memory, constituting what he calls an 'epiphylogenetic' memory ('epi' meaning 'on top of', through which an individual memory becomes available to the species – 'phyllo' – as a whole), i.e., 'a past that I never lived but that is nevertheless my past, without which I would never have had a past of my own' (ibid., 140). It is this external memory that founds and supports the human's historical-cultural mode of being. As for André Leroi-Gourhan, a French paleoanthropologist very influential to Stiegler, this memory is the constant process of exteriorisation in the ethnic group: 'Like tools, human memory is a product of exteriorization, and it is stored within the ethnic group. This is what distinguishes it from animal memory, of which we know little except that it is stored within the species' (Leroi-Gourhan 1993, 258).

Epiphylogenetic memory is distinct from phylogenetic (species-genomic) as well as epigenetic (individual-nervous) memory; in the words of Stiegler, it is a 'technological memory' (Stiegler 1998, 177), an artificial memory which we can find in languages, the use of tools, consumption of goods and practices of rituals. These involve the exteriorisation of memory and the liberation of organs. This anthropological understanding allows Stiegler to develop what he calls a *general organology*, a study that sees technics as the liberation as well as perfection of organs. At the core of general organology is also the question of time (as desire, pro-tention and attention), which comes rather from Stiegler's reading of Husserl's lectures on time-consciousness. To put it in a nutshell, Husserl distinguishes what he calls the primary and secondary retention, the first being, for example, the melody that we retain in our immediate memory; the second being our memory of this melody tomorrow; the tertiary retention is, for Stiegler, the technical retention of traces, especially the technics of writing and recording. The three retentions constitute a circuit that allows Stiegler to expose the ignorance of tertiary retention in the history of modern philosophy, notably in Kant, Husserl and Heidegger.

Based on the two different analytics, namely the spatial and temporal, one finds a significant difference between Sloterdijk and Stiegler, concerning the question of, and approach towards, care. We may also want to consider this difference as that between the general approach of Sloterdijk's immunology and Stiegler's organology. For Sloterdijk, in order to argue for the priority of space, the latter becomes the condition of the possibility of time as care, as he says that 'the care for en-housing [*Ge-Häuse*] and the care for self are not to be distinguished in the beginning' (Sloterdijk 2017, 122)). En-housing means protection, like a case. It is the primary function of the sphere. The house fundamentally concerns the question of insulation and protection. The spheres or anthropospheres as thought by Sloterdijk function like a membrane, or a 'think wall' that acts as an immune system by preventing undesirable things from entering, as well as providing flexibility in confronting, other spheres.

Sloterdijk pushes his 'sphero-immunology' much further than Plato and Nietzsche, whom he considers to be immunologists *avant la lettre*, to include 'insurance techniques' as well as juridical, therapeutic, medical and biological systems, or in other words, he is aiming for a 'general immunology' or 'general theory of immune systems' (Sloterdijk 2016, 25) which extends from the biological to the symbolic and the technological. The task of the philosopher becomes the task of an immunologist. The term ontology deviates from an objective and universal description of the world, and is obliged to carry a cultural and medical meaning in the post-meta-physical epoch. One has to be careful here however: it is too simple to see Sloterdijk's immunology simply as a passive defense system, since it is also a reaction against the global condition transformed by media, technology and capitalism. In this view, the simple distinction between enemy and foe disappears; what replaces it is a co-operative logic (*ibid.*, 450). Therefore, general immunology, and in particular global immune design, becomes the first principle of survival under globalization, for both individuals and cultures, as we shall see later.

This question of care takes another form in the writing of Stiegler, since it is fundamentally an organology of retentions—or a general organology, which is articulated through three types of organs: the psychosomatic organs of human individuals; social organizations; and all kinds of technical organs (Stiegler 2014). This is largely due to his reading of Simondon, whose concept of psychic and collective individuation allows Stiegler to go beyond and against the original care in *Being and Time*: authenticity [*Eigentlichkeit*]. It is because care is now posed as the question of individuation and transindividuation, the psychical and individual cannot be separated from the collective, and without the latter the individual will not be able to individuate.³ The concept of individuation (here as the question of time and of desire) largely distinguishes the political analysis of Stiegler from Sloterdijk's (which pivots on space and protection), and is especially apparent in the case of the latter's recent plea for the praise of borders against Angela Merkel's refugee politics. (Sloterdijk 2016). Could this be a reflection (reverberation?) of the difference in temporal versus spatial analysis of the two authors? The question of border is fundamentally spatial and therefore one could maybe ask if a metaphysical limit is not already laid down in Sloterdijk's politics.

In contrast to Sloterdijk's historical analysis of a politics of spatial poetics, Stiegler also takes off from Plato's immunology, but with a lucid awareness that any immunology is a *pharmakon*, i.e., at once and simultaneously healing-protective and toxic-destructive (Stiegler 2013). The philosopher as therapist, like Sloterdijk's philosopher as immunologist, needs to decide what health is. Simondon and Freud here play a central role for the diagnosis of Stiegler. The question of individuation in the thought of Simondon is politicized by Stiegler, hence individuation is no longer a neutral term that Simondon employs to describe psychic and collective transformation, but rather a 'measure' that determines what is a successful individuation or not. Simondon uses the term 'disindividuation' to describe a transitional phase of individuation in which the being in question is de-structured and then re-structured. In Stiegler's interpretation, disindividuation becomes a notion to describe the difficulty or incapability to individuate. Stiegler's innovation lies in his reading of Freud, through whom he transforms the question of individuation into the question of libidinal economy, i.e., of an economy of desire understood as the sublimation of drives.

The 'positive use' of the *pharmakon* is the key to reconstructing a libidinal economy, which is in the process of being ruined by industrialization and marketing. To demonstrate his notion of the libidinal economy, we can follow the example that Stiegler often evoked. In his analysis of Edward Bernays' use of psychoanalytic technique for marketing, the libidinal energy is transformed into id, meaning into pure drive. Libido, in the reading of Stiegler, is an investment, whilst drive is not an investment but rather close to addiction, a disinvestment. Simondon's individuation in this context becomes an economy of investment. The opposite is found in the case of Richard Durn, frequently evoked in Stiegler's later writings. Durn was a jobless French environmental activist who killed eight of his fellow citizens in 2002 in an attempt 'to do evil at least once in his life, to have the feeling of existing', a feeling that he felt he had completely lost (Stiegler 2009, 39). Traversing Simondon and Freud, Stiegler goes back to Heidegger's concept of care, and to understand 'taking care' as resistance against the logic of the industrial economy (Stiegler 2010).

The short-term vision of today's hypercapitalist industry subsumes the technical system to the economic system and uses the technical system to violently disturb the existing stability in order to profit from such a transformation (Stiegler 2010, 102–4). It is worth noting that Stiegler is running the Institute for Research and Innovation (IRI) within the Centre Pompidou in Paris, as well as heading the lobbying group *Ars Industrialis*, which attempts to propose and realize what he calls an 'economy of contribution' based on new conceptual designs of collaborative software. The pharmacological measurement is applied in the technologies that Stiegler investigates. For example, in the recent debate on algorithmic governance and automatism, in view of the problem brought about by automation including unemployment and so on, Stiegler proposes to analyze automation in a different way with reference to Denis Diderot's idea of improvisation, in order to demonstrate the positive use of automation. With these two variant *Dasein* Analytics and positioning of the question of Being, we will proceed to their respective diagnostics of the Anthropocene.

Anthropotechnical Diagnostics and Therapeutics of the Anthropocene: Sloterdijk's Sphero-Immunological Approach

For Sloterdijk, the Anthropocene not only denotes the fact that the human has now become the most important geological *force* within the biosphere, but much more importantly, the insight that this human will have to become increasingly *responsible* itself for the maintenance of this biosphere as the very condition of its own survival. Besides naming a geological fact, the term Anthropocene designates nothing less than a *call* to humanity, a call with an unprecedented and unsurpassable ethical and political urgency that compels humans to *assume* the responsibility for the habitability of the Earth's biosphere that they *in fact* already *have*.

This taking of responsibility will become vital in the future since it has become perfectly clear that the Earth will not be able in the long term to support the exploitative and care-less ways in which ever growing parts of humanity have been inhabiting her since at least the Industrial Revolution unleashed by capitalism. The

crucial insight that the so-called ecological crisis has produced is that we can no longer persist, (as humanity, according to Sloterdijk, has actually done already since the rise of the so-called 'high cultures' [*Hochkulturen*] but in a gravely more intensified way since modernity), in treating the Earth exclusively as the stage and unlimited resource-fund for its cultural-historical plays. As Sloterdijk writes in his 1989 treatise *Eurotaoismus*, at the end of which he provides a perceptive and prescient sketch of the global situation of humanity in the epoch of what is now called the Anthropocene, 'it is only when the play starts to ruin the stage that the actors are forced to take another view of both the stage and of themselves' (Sloterdijk 1989, 305). The invention of this other view of itself and its earthly habitat is what the Anthropocene puts on the agenda of the *Anthropos*, as it were. It first of all means abandoning the still dominant 'backdrop ontology' of nature conceived as 'the inoperative scenery behind human operations' (Davis & Turpin 2015, 334).

What was once called 'nature' and conceived of as an ever reliant, productive, abundant and robust backdrop has been fatally implicated in the *maelstrom* of human productivism and consumerism – 'enframed' by it, as Heidegger would have it – with its impending exhaustion as a result. The continued existence of this so-called 'nature', which we have now uncovered as being just a small and fragile 'film' covering a planetary body, can no longer be entrusted to her own autarky since she has been scientifically explicated and technologically exploited, and will become dependent on us humans, that is to say, as Sloterdijk suggests, 'on a new world-forming gesture, executed by people for whom it has become evident that the protection of the stage is the play itself' (Sloterdijk 1989, 310).

In the apocalyptic last chapter of *You Must Change Your Life*, Sloterdijk claims that the awareness of the fact that we cannot continue our current care-less lifestyles any longer but need to 'change our lives' and start 'taking care of the whole' is nowadays almost universally shared, even forming the quintessence of today's *Zeitgeist*. It has become the one and only ethical imperative with an absolute and universal appeal, now that traditional ethical systems are definitively exhausted and no longer possess any persuasive force (Sloterdijk 2009, 699).

Arguing that the global crisis, as the herald of a possible global catastrophe, shares many characteristics with the ancient God of monotheism (ibid., 702-3), and suggesting that one can currently perceive a gradual transformation from monotheism to 'monogeism' (i.e., the belief in the one and only earth) in the minds of ever more Earthlings (Sloterdijk 2005, 16), Sloterdijk speculates that this crisis will inevitably initiate, and will *have* to initiate, nothing less than a global *immunological turn*, i.e., a revolutionary transformation in the way humans construct and organize their immuno-spheric residence on the planet, indeed 'a new world-forming gesture', that is to say in the terms of immunology, a new spheropoietic project. This transformation is in essence an (anthropo)technological transformation, a radical change in the technological relation of humanity toward the planet and toward itself.

In brief, this transformation amounts to a radical re-orientation of the *anthropos*' immunization strategies, not only in the sense that the spontaneous 'immunity services' of the planet cannot be taken for granted anymore and will increasingly depend on humanity's own *techno*-spheropoietic ingenuity and carefulness, but also in the sense of having to switch from local and particular immunospheric projects (e.g. those of local cultures and communities) primarily directed *against* the threats from the local 'natural environment' to increasingly global *co-immunization* projects that consider the totality of these local natural (as well as cultural) environments as parts of a singular shared biosphere, taking this as their principle object of collective concern, i.e., as that *for* which immunization projects should take care of. It is a geopolitical transformation from local to global immunization strategies, from local protectionisms to a 'protectionism of the whole' (Sloterdijk 2009, 712).

A viable future for humanity on this planet can therefore only be conceived for Sloterdijk on the basis of constructing a 'global co-immunity structure' or a 'global immune-design', infused by a spirit of 'co-immunism' (ibid., 713), based on the awareness of a shared ecological and immunological *situation* and the realization that this new situation, which is actually that of the Anthropocene, cannot be dealt with on the basis of the existing local techno-cultural resources only but is in need of a planet-wide 'logic of cooperation' (ibid.).

As Sloterdijk emphasizes already in the final section of his 1993 book *Weltfremdheit* (Sloterdijk 1993) such a global co-immunization project could very well prove to be a challenge that is *too big* for the *anthropos*, that is to say, as it currently exists. Yet if there is one over-arching insight that runs through all of Sloterdijk's onto-anthropological reflections, it is that humans are those beings that are *always* confronted with problems that are *far too big* for them but that they nevertheless cannot avoid dealing with. This structural burdening with what the Greek tragedians called *ta megala*, the 'big things', which puts human beings under permanent 'growth stress' and/or 'format stress' – today unfolding foremost as 'planetary stress' (Sloterdijk 1995, 53) – is what anthropogenesis as hominization and coming-into-the-world through sphero-poietic expansion is all about (Sloterdijk 1993, 380; Sloterdijk 2009, 700, 706).

If the human matures by increasing his awareness and responsibility through confrontations with the 'big things', the anthropocenic challenge of creating a global, i.e., planetary, co-immunity structure will probably make clear for the very first time, and to *all* those involved, what 'growing up' in its most general sense truly means for humanity (Sloterdijk 1993, 376). Although the *anthropos* charged with responsibility for the Anthropocene is still 'below the age of maturity' today (Davis & Turpin 2015, 327), the challenge of the Anthropocene forces him, and provides him with the chance, to assume and acquire the proper maturity.

Sloterdijk emphasizes that the project of global co-immunization most crucially involves a technological and, that is to say, an anthropotechnological revolution, which is not to be understood as a technological fix but as a world-wide techno-cultural and techno-social mutation if not, indeed, an onto-anthropological mutation. Like Stiegler, as we shall see shortly, he argues that the human as a spheropoietic being is 'condemned to technology' just as much as it is condemned to 'being-in' [*In-Sein*] and can therefore only confront the anthropocenic challenge through a radical reversion of the very same technological power-ingenuity that has been instrumental in bringing about the anthropocenic condition, mainly by putting the biosphere as ultimate life-support system in danger (Sloterdijk 2017, 191-2). If, for the later Heidegger, only *a* god could save us from our entanglement

in enframing, in the current context of the Anthropocene, Sloterdijk suggests, we should interpret the notion of god in terms of 'the potential to create natures' and should start conceiving the saving power in terms of humanity's still premature and precarious 'potential to co-operate with the natures' (ibid., 192).

As such, the said technological reversion is conceived by Sloterdijk in terms of what he calls a *homeotechnological* turn, i.e., a turn from the traditional, largely contra-natural, dominating, Earth-ignoring and Earth-ignorant *allotechnological* paradigm to a co-natural, non-dominating and Earth-caring *homeotechnological* paradigm. Briefly put: whilst the traditional allotechnologies are contra-natural, (other (*allo*) than nature because based on principles and mechanisms not found in nature itself and structurally despotic and exploitative), homeotechnologies instead are co-natural, i.e., like (*homeo*) nature, in the sense of being co-operative with principles and mechanisms already operative in nature itself, and as such, Sloterdijk claims, allowing for a non-dominating and non-exploitative relation to nature (Sloterdijk 2017, 144-6).

Stiegler's Pharmaco-Organological Approach

If Sloterdijk proposes an immunological turn as response to the Anthropocene, Stiegler in his most recent writings argues for an organological and pharmacological - or in short pharmaco-organological - transformation. For Stiegler, the notion of Anthropocene first of all refers to the coming to light of the systemic and massive *toxicity* of the contemporary global organological configuration, resulting obviously from the process of industrialization initiated with the invention of the thermodynamic machine and its deployment by capital - originally with the steam engine which kicked off the Industrial Revolution - which is understood by Stiegler as an organological revolution. It is this organological toxicity that is the root cause behind the pollution and deterioration of the natural ecological systems constituting the Earth's biosphere (Stiegler 2016, 8).

Stiegler interprets this organological poisoning, which he has been analyzing in his work for almost two decades now and which manifests itself most prominently in what he refers to as processes of *proletarianization*, as meaning, among other things, the loss of knowledge, both practical and theoretical knowledge, which finally leads to the loss of the knowledge of living [*savoir vivre*]. This is because once the know-how [*savoir faire*] is short-circuited by artificial organs, such as what happened when artisans were forced to give up their skills and enter the factory, it led directly to the loss of individual and social life competences. The technical organs are taking over more and more functions and responsibilities of the human subjects and social institutions that together form a global technical milieu (Stiegler 2010, 40ff)—a condition of planetary proletarianization *par excellence*. This milieu serves ever more exclusively the prolongation and intensification of the consumerism, as well the productivism, that are necessary for continuing the process of capitalist valorization, which has imposed itself as the ultimate and almost sacred finality of the human adventure, albeit a nihilistic and self-destructive finality, as Stiegler has argued on many occasions (e.g. Stiegler 2010, 5).

It is capitalism and its deployment of the thermodynamic machine that has unleashed the world-wide ecological destruction and climatic disruption that are the most obvious signals leading geologists and atmospheric scientists to propose that we have entered the geological epoch of the Anthropocene. But the true cause of the problem of the Anthropocene for Stiegler does *not* reside in these thermodynamic machines and their carbon emissions as prime cause of the destruction of natural ecologies. Of course, we should diminish carbon emissions and think of cleaner, renewable energy sources and more eco-friendly technologies, but the root of the problem lies in the logic of capital and its persistent and all-too-successful strategies, over the last two centuries, for overcoming its own intrinsic limits, which is precisely the crucial cause behind the proliferation of the above-mentioned processes of proletarianization into all sectors of society (ibid., 74).

The first of these limits, already recognized by Marx, was the so-called tendency of the profit rate to fall, resulting from the imperative to increasing productivity through the reduction of labor costs, which forced capital to a first step in an ever-

expanding automation of its production processes via the delegation of workers' skills to machines, gradually expropriating those workers of their skills and know-how, proletarianizing them in the process. This led, at the end of the nineteenth century, to the problem of overproduction, to which capital responded in a second step by inventing consumerism through the adaptation of workers' desires to the output of capitalist production via marketing, public relations and advertising, engendering the proletarianization of the consumer subject by gradually discharging it of its 'knowledge of living' [*savoir-vivre*] and responsibility for its own existence and the world around it (ibid., 25).

As a result of the systemic exploitation of consumers' libidinal energy, this strategy necessarily implied, Stiegler contends, capital encountering a second limit at the end of the twentieth century, which he calls 'a tendential fall in libidinal energy' (ibid., 90) or, in other words, the destruction of desire as the very motor of the capitalist economy and its degeneration into drives and the formation of a drive-based economy of addictive consumption and short-termist financial speculation (ibid., 84), which is what we are currently experiencing and is very probably now at the brink of a systemic collapse. It is this destruction of desire *as* a destruction of care, attention and responsibility induced by the toxicity of the technical milieu of the mind geared to the stimulation of consumption, which eventually leads to the destruction of the natural geophysical milieus of the Earth as well, according to Stiegler (Stiegler 2013, 88).

And this constitutes capitalism's third limit, which is precisely the meaning of the Anthropocene, as we would argue. This limit can only be overcome through a radical transformation of the capitalist economy, which Stiegler conceives of as an organo-pharmacological turn through which the generalized toxicity of current organological configurations, mainly constituted by the digital networks principally apprehended as *pharmaka* that are simultaneously toxic and curative, is somehow pharmacologically transformed into a technical milieu that can serve as the basis of a new system of care and attention, of a *global ecological* care and attention, through the invention of new (socio)therapies and practices based on this technical milieu (ibid.).

The deepest problem of the Anthropocene, again, does not lie in the climate, ecological and energy crises per se, however acute they are. These crises are for Stiegler only symptoms of the more fundamental crisis in the climatic conditions of the human 'spirit' so to speak, i.e., in the ecology of this spirit *as* originally and fundamentally constituted and conditioned by a technical milieu, or more precisely a *mnemotechnical* milieu, and thus of the *libidinal energy* – in the form of knowledge, desires, attention, care, etc., – produced (or destroyed) by that ecology and flowing through it (ibid., 91). In this regard, the solution to the problem of the Anthropocene, which is that of finding *a way out* of it, consists principally in combatting, through a noopolitics, what Stiegler calls capitalist's *psychopower*, a notion obviously echoing Michel Foucault's notion of biopower, by which he means the systemic capture and channeling of people's desire and attention toward consumption via psychotechnologies (radio, cinema, TV, Internet) deployed by the capitalist economy as technologies of control.

As today's global mnemotechnical milieu is constituted foremost by the digital network technologies, this noopolitical combat should focus on the Internet. As such, Stiegler proclaims the need for a total reinvention of the architecture of the Internet, being the global mnemotechnical system constituting and conditioning the noetic capacities – and most fundamentally the potential-retentional horizons – of the *anthropos* in the Anthropocene, thereby significantly determining the anthropocenic condition. Most concretely, Stiegler argues for pharmacologically transforming the purely calculative, controlling and increasingly automated digital networks of today's utterly nihilistic cognitive and cultural capitalism into what he calls a 'hermeneutic web', which allows precisely for *de-automation* and *deproletarianization* of subjects and with it for the invention of new modes of knowledge, know-how and care necessary to confront the anthropocenic situation (Stiegler 2016, 148).

Generalized automation, robotization, big data, algorithmic governance and all the other socio-technological innovations enabled through digitization, have been put into the service almost exclusively of capitalist valorization, engendering the generalized toxicity of the technical milieu of the spirit [*ésprit*] that terrorizes our age

of nihilism. However, all these innovations can in principle be re-forged into instruments for a new system of global ecological awareness and care through a pharmacological turn, transforming the current toxic milieu serving the nihilistic needs of capitalism into a therapeutic, curative arsenal for the constitution of a new, care-taking industrial economy. Such a non-competitive but cooperative economy, which the French economist Franck Cormerais calls an 'economy of contribution, is' based on a *libidinal* economy in which care becomes the very center of the economic 'value chain' (Stiegler 2013, 88).⁴

Interpreting the purely computationalist and hyper-speculative nature of contemporary capitalist globalization completely controlling, and thereby eliminating, individual and collective protentions (i.e., all openness to the future) in Nietzschean terms, as the accomplishment of nihilism through the devaluation of all values, Stiegler understands this pharmacological turn towards a new economic and noetic system of valuation centered on care as a 'transvaluation of values' (Stiegler 2016, 9). Its intent is to break with capital's destructive hold over the protentional horizons and creative and imaginative potentials of humanity and to inaugurate a new *epoche* in which the process of organological *becoming* [*devenir*], which is currently poisoning all three organ systems and deteriorating the planetary *oikos* as a result, can be re-appropriated and adopted for inventing and constructing a new way of life and a new *future* [*avenir*], which is thought by Stiegler as an *exit* from the Anthropocene into what he has proposed to call the *Neganthropocene*, a notion, as we would like to show here, that strongly resonates with Sloterdijk's idea of a homeotechnological turn.

Employing a terminology derived from thermodynamics, Stiegler has started to conceptualize the 'logic' of organology and pharmacology within the context of his thinking of the Anthropocene with the notions of entropy and negentropy, giving them a much broader meaning than solely the physical one, and applying them to all processes of becoming and, more specifically, of individuation, be they physico-chemical, vital, psychic, social or technical. Regarding entropy, Stiegler finds his scientific and economic support from the work of the Romanian economist Nicholas Georgescu-Roegen, as well as the Austrian physicist Erwin Schrödinger. As the

latter proposed in 1944, the maintenance of life demands not only energy but also a maintenance of low entropy, and therefore we can probably say life itself is a negentropic force. Georgescu-Roegen draws an analogy between thermodynamics and economy. For him, values such as natural resources are considered to be of low entropy, and wastes are considered to be high entropy (Georgescu-Roegen 1986). The economic process is always an entropic process. If thermodynamics in physics concerns the material flow, economy analogically concerns the flux of the enjoyment of life based on the use of exosomatic instruments. The concept of exosomatization surely resonates with exteriorization that we have discussed above, and Stiegler attempts to go further by showing that it is possible and necessary to produce a negentropic economy through a re-organization of the exosomatic instruments, namely a new organogenesis.

Anthropic life as a technical form of life that is not just organic but also organological, Stiegler argues, is both negentropic and entropic since technics as an irreducible *pharmakon* can accentuate and accelerate both negentropy and entropy (ibid., 31). Negentropy as a thermodynamic concept very briefly refers to the order as well as the potentiality in a system or process, whilst entropy means disorder and loss of potentiality. Interpreting the generalized toxicity of the current organological configuration in terms of an entropization (and thus disindividuation, dissociation and proletarianization) of all the processes of human individuation giving rise to the toxification and deterioration of our planetary ecology, Stiegler characterizes the Anthropocene as the *entropocene* to (ibid.). Overcoming it explicitly calls for a *negentropic turn* in the thoroughly organological condition of the *anthropos*, which has until now been largely neglected in philosophy (although, arguably, sensed, even in all its gravity, by the late Heidegger through his notion of enframing) but presents itself for the first time *as such* with the Anthropocene, imposing itself as *the* question par excellence.

This negentropic turn should be understood as a *neganthropic* turn, inaugurating the *neganthropocene* and calling for a new figure of the human that Stiegler calls the *neganthropos*, imagined as arising from a new organological configuration constituting a new global culture and political economy in which all human activity,

first of all in the noetic domain, will be governed and motivated by the criteria of negentropy and where the new 'value of values' will be negentropy (ibid., 33), allowing the process of anthropogenesis to become a process of neganthropogenesis.

A crucial element in this turn, as already stated, is a pharmacological reinvention and reappropriation of the digital network technologies – the 'digital organology' – and their automatizing capacities precisely for the purpose of *dis*automatization and *de*proletarianization in order to overcome the systemic stupidity and structural carelessness imposed by these networks through the capitalist exploitation of those capacities, which only breeds more entropy, stupidity and impotence.

As such, the Internet could become the support of a new, global organological intelligence, knowledge and capacity-to-act necessary to overcome the Anthropocene and usher in the neganthropocene. Of course, the whole technosphere should ultimately experience a negentropic turn in this sense and in this respect, and Stiegler argues that we might be living through an 'organological chrysalis' (ibid., 156) at the moment in which all three organological dimensions are metamorphosed simultaneously. Given the truth of the anthropocenic condition interpreted in a strong sense, this would entail nothing less than a veritable metamorphosis of the Earth's biosphere into an engine of negentropy again. Since humans have become the dominant geological (f)actor and have thereby entered the Anthropocene, anthropogenesis *as* technogenesis has become the crucial biospheric process, and this means that technology, and in particular the way in which it affects the energetic play of entropy and negentropy in the biosphere, 'constitutes the matrix of all thought of *oikos*, of habitat and of its law' (ibid., 28).

Comparative Analysis of Sloterdijk's and Stiegler's Diagnosis and Therapy

What both Sloterdijk and Stiegler very much seem to appreciate in Heidegger, is the growing insistence in his later work on the fundamentally *ambiguous* nature of

technology, i.e., of its ontological-aletheiological essence, famously encapsulated in his reference to the quasi-mystical Hölderlinian phrase that 'where the danger is, the saving power grows as well' and that it is precisely the danger of technology's essence which harbors the saving power. Yet whereas Heidegger thinks of this saving power in a purely ontological sense, Sloterdijk and Stiegler re-interpret it in a more ontic or empirical sense, or better in an ontico-ontological sense, to refer to the ambivalent nature of concrete technologies vis-a-vis human existence.

In a sense, we could say that both perceive the Anthropocene through the lens of Heidegger's idea of enframing, and re-interpret his famous notion of the turning in an 'onto-anthropo-technological' sense as a fundamental epochal transformation of our relation to being and beings that the anthropocenic condition is imposing on human being-there. Yet, unlike Heidegger, they consider this relation as technological from the origin and therefore think of this transformation as an essential change *in* our technical relation to being and beings and not as a turn *away* from this technical relation towards an allegedly more original and supposedly non-technical 'abiding within' or 'enacting of' the ontological difference.

More originally, for Stiegler, this turn should be thought of as an organological turn from an overwhelmingly entropic configuration of the three organ systems that constitute the *anthropos* to a negentropic one, via a 'pharmacological turn' of the global (mnemo)technical milieu. Sloterdijk conceives of it as a turn from al-technology to homeotechnology which, given that it denotes a technology that co-operates and co-immunizes intelligently and cautiously with the intelligent, immunitary and informational processes and mechanisms present in the biosphere itself, can also be considered a negentropic curative.

For both also, we could argue, the Anthropocene itself evokes in a certain way, and simultaneously, the greatest danger and the greatest saving power, in the sense of being a culmination point in the unfolding of enframing – or what Stiegler calls the 'event' of industrialization as the conquest of fire through the thermodynamic machine, and which Sloterdijk designates as modernity's 'total mobilization' (Ernst

Jünger), or its fossil-fuel based 'kinetic expressionism' – which provokes a crisis, an 'urgency' in being-there's understanding of being and therefore in being itself (comparable maybe to Heidegger's *Not des Seyns* yet more concrete). This presents both a *need* and a *chance* to accomplish a radical anthropotechnological turn, a *bifurcation* as Stiegler has put it most recently, in the anthropic adventure Heidegger called *Dasein*, a nege/ant(h)ropic or homeotechnic bifurcation in our technological *modus vivendi* on the still largely unknown planetary body we have discovered to exist and depend upon.

What both authors emphasize is that today the Earth's biosphere has become thoroughly implicated in the anthropic process of organological becoming (Stiegler), or spheropoietic immunization (Sloterdijk), and this means that, in Stieglerian terms, it has been affected by and drawn into the ambiguous organo-pharmacological destiny of the human species, currently suffering the entropic, toxifying tendency of industrialization (and lately hyper-industrialization), giving rise to the world-wide ecological crisis. In a way, the whole biosphere is in the process of becoming an organological system or an 'anthroposphere', becoming as such conditioned by the entropic-negentropic ambiguity of the *pharmakon*.

Both obviously acknowledge the destructive effects of technological enframing on the biosphere, although Stiegler lays much emphasis on the fact that it is first of all the noetic and libidinal potential of human subjects and collectives, and that means their very *attention* for the world and for others, that is deteriorated by the industrial (read: capitalist) organology, ecological destruction being 'only' its inevitable consequence. Meanwhile, Sloterdijk does not really seem to recognize this problem of what Stiegler has termed the 'global attention deficit disorder' resulting from capitalist 'psychopower', or at least he does not give it much attention in his reflection on the Anthropocene, although he recognizes the dangers of the 'mass frivolity' and ego-centered hedonism in which today's consumer-subjects are mostly absorbed (Sloterdijk 2013, 228) and once emphasized that our future destiny on the planet would depend on what he called 'higher metamorphoses of the attention coalitions' of humanity (Sloterdijk 1993, 376).

For all their critique of industrial technology's destructive record so far, both thinkers also believe that the only solution to this destruction can be found in the very capacity of industrial technology *itself* to counter its own destructive tendency and heal its nihilistic legacy, provided that it is *intelligently* and *completely* transformed from a *destructive* into a *constructive* power, and (as emphasized foremost by Stiegler) from a *desublimatory* into a *sublimatory* force. As indicated already, Sloterdijk suggests that the techno- and noosphere added to the Earth's naturally evolved geo- and biosphere as a result of anthro(techno)genesis amounts to a potentialization of the Earth such that its 'carrying and sustaining capacity' might be increased substantially, even to the point of multiplication, on the condition that it permutates (homeotechnologically) from exploitation of the Earth to co-production with it (Crutzen et al. 2011, 108-9).

Of course, this is *prima facie* no more than a bold conjecture, inspired no doubt by Buckminster-Fuller's *Operation Manual for Spaceship Earth* (published in 1968), but it is nevertheless, for Sloterdijk, anthropogenetically supported by the expansionist, 'antigravitational' and extremely improbable spheropoietic history of our species. As the neotenic and 'deficient' animal par excellence, the human is a structurally overburdened being yet also endowed with unlikely surpluses resulting from a long history of technical overcompensation of its 'deficiency' (which Stiegler calls his original default). Technologically multiplying the Earth might be an excessive demand indeed but the human has so far always and only advanced through confronting and overcoming the impossible, as Sloterdijk reminds us (Sloterdijk 2009, 700). In this regard, the Anthropocene really exposes humanity to its ultimate test. This resonates quite strongly with Stiegler's acknowledgement of his proposal for a negentropic bifurcation as being an 'improbable possibility' or 'quantum jump' that is nevertheless absolutely necessary, indeed vital, since it concerns the very survival of human being *as such*.

Conclusion

It seems that both Sloterdijk and Stiegler put their stakes each in their own way very much on the negentropic potential of a radical transformation of the technological relation of the *anthropos* to the biosphere, an anthropotechnological or organological turn of the noo- and technosphere that is, through which the anthropic process of individuation that has become destructively entropic is being completely metamorphosed into a negentropic process, or from an allo- to a homeotechnological path. For Stiegler such a turn would bring along a new kind of 'human' (or better non-inhuman) being he calls the *neganthropos*, whilst Sloterdijk speaks of a *homo humanus* (a term used by Heidegger in his letter *On humanism* from 1945) who would recognize its being-there on this planet as a technogenic destiny and assume a careful and caring homeotechnological attitude with respect to nature (or Earth) instead of the traditional, dominating allotchnological one. Referring to Whitehead's processual cosmology, Stiegler makes the bet that an inversion of the local transformation of the cosmic order or process of concrescence induced by organological organogenesis, could liberate unprecedented potentials of negentropy within the biosphere, which echoes Sloterdijk's Deleuzian-Fullerian speculations about the possibility of a multiplication of the 'one Earth' via a homeotechnological and biomimetic reconstruction of the technosphere. That this presupposes a radical detoxification of the noosphere (to put it in Stiegler's terms) is only suggested by Sloterdijk, and not theorized in any sense, let alone explicitly researched.

To briefly conclude, the thoughts of the two thinkers are valuable for understanding in a new way the question of technology posed by Heidegger in his famous 1949 lecture 'The Question Concerning Technology'. In comparison, Stiegler has actively engaged with leftist politics while Sloterdijk seems to retreat to a more conservative agenda as we have seen with regard to his stance regarding the refugee politics; this dialogue hopes to create an apparatus which lets us discover certain constellations in their thoughts, allowing us to reflect on the future of the Anthropocene in a profound way – instead of only thinking about the human as op-

posed to nature we suggest rather to focus on the human-nature-technics connection. However, we would like to highlight two questions, which seem to us to demand more clarity in the thought of Sloterdijk and Stiegler. It is not our intention to answer these questions but simply to elaborate as to why they deserve our attention and are in need of future reflection. The first question concerns what 'being healthy' really means. Both thinkers analyse our contemporary technological situation like physicians diagnosing their patients. This figure of the philosopher is incarnated in Sloterdijk's theory of general immunology and Stiegler's general organology. The task for the philosopher-physician figure is to find the symptom in order to then prescribe the patient a remedy. This task implies two further sub-questions. Firstly, what determines a healthy society? Secondly, how can decisions and actions in this regard be carried out in a democratic way? Plato had also faced these challenges, but he skilfully avoided them by giving the task to the philosopher-king in the *Republic*.

The second question concerns an ethics for the Anthropocene. This question has been touched on in, respectively, Sloterdijk's immunology and Stiegler's pharmacology. However, there is also a certain ontologization of technics in their concepts in universal terms. Anthropologists such as Philippe Descola, Bruno Latour, Tim Ingold, Eduardo Viveiros de Castro and Roy Wagner, however, are proposing an ontological pluralism (Holbraad & Pedersen 2017), intended to encourage the diversity of ontologies that are foundational to different cultures, for example the non-modern concept of nature found in some Amerindian tribes (Descola 2013). We can (should?) see this proposal of a 'multinaturalism' or 'ontological pluralism' as a challenge to the still universal onto-anthropological discourse of technology embraced by Sloterdijk and Stiegler. This challenge immediately raises the following question: will not their ontologization of technics go in a direction that is opposed to ontological pluralism and which enforces a global technological culture that will eventually become homogeneous? And should we therefore not completely reopen the question of technology again, and, instead of limiting our analysis to the legacy of Heidegger, namely by understanding technology as either Greek *technē* or modern technology, start to think in terms of a multiple cos-

motechnics (Hui 2016)? It is precisely because neither *technē* nor modern technology is able to account for the technics in pre-modernized China, Japan, India, Amazonia, etc., in which we can generally identify a unification between cosmos and ethos through technical activities. If, as Crutzen claims, the Anthropocene began with the industrial revolution, it is the realisation of the homogeneous industrial technology which has dominated all other forms of cosmotechnics on the earth and turned the cosmos into a mere techno-scientific system (Heidegger's *Gestell*); it also actualizes contemporary globalisation by constituting a global axis of time in favour of synchronization and efficiency, depriving the temporal dynamic of localities. If we want to overcome the Anthropocene and embrace another globalisation that respects ontological difference, it is necessary to understand the limits of modern technology as well as to revive a multiplicity of cosmotechnics through an earth-oriented reappropriation of both modern technology and non-modern cosmologies. The two questions of societal health and an ethics for the Anthropocene are related to each other, since technology – we assume – is also the medium of ontologies across different ethnic groups and cultures, and ontological pluralism is fundamental to our anthropocenic future and to the necessary reframing of the technosphere. It seems to us that the ontologization of technology in the philosophy of the twentieth century demands a renewed self-scrutiny seen against the backdrop of the Anthropocene and in view of the multinaturalism evidenced by contemporary anthropology.

Notes

1] See for an extensive discussion of the various alternatives for the Anthropocene in particular Bonneill & Fressoz 2016.

2] It is obvious that both Sloterdijk's and Stiegler's conceptions of the *anthropos* are deeply influenced by earlier strands of philosophico-anthropological thought that go back to Herder's designation of the human as the 'orphan of nature' and Nietzsche's idea of the human as the 'as yet unfinished animal'. In the case of Sloterdijk this is mainly the German tradition of philosophical anthropology of Scheler, Plessner and most importantly Gehlen, whose work is absolutely key to Sloterdijk's thinking of the human and the human-technology relation, but also biologists such as Jakob von Uexküll, Adolf Portmann and Paul Alsberg as well as the famous Dutch anatomist Louis Bolk. In the case of

Stiegler it is principally the paleoanthropology of André Leroi-Gourhan, whose work he encountered through his reading of Derrida's *Of Grammatology*. As a matter of fact, there are also many remarkable affinities between Stiegler and Gehlen, e.g., with respect to the latter's notions of the gap [*Hiatus*] between need and fulfillment, the human as the 'deficient being' [*Mängelwesen*] and its corresponding need for technical and cultural compensation as well as continuous self-interpretation.

3] As one of our reviewers rightly remarked, there is certainly a lot of attention in Sloterdijk's work for processes of individuation, or subjectivation, yet it is overwhelmingly focused on individual human beings, as for instance in *You Must Change Your Life*.

4] This economy of contribution is quite different from Sloterdijk's 'economy of generosity', i.e., of the voluntary and abundant spending by the rich, as proposed in *Rage and Time* (Sloterdijk 2012, 28ff), which is rather 'pluto-aristocratic' in nature and inspired by Nietzsche and Bataille, whilst the economy of contribution is more Marxist in inspiration and related to community-based open source and free software models of production and consumption, having affinities as well with the economic ideas of André Gorz.

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Biography

Pieter Lemmens

Pieter Lemmens teaches philosophy and ethics at the Radboud University in Nijmegen. He has published on themes in the philosophy of technology and innovation studies, on the work of Martin Heidegger, Peter Sloterdijk and Bernard Stiegler as well as on post-autonomist and post-operaist Marxism (Hardt, Negri, Berardi) and on themes from philosophical anthropology and postphenomenology. His articles have appeared in journals such as *Techne*, *Philosophy of Technology*, *Human Studies*, *Krisis* and *Boundary2*. He translated Stiegler's *Philosopher par accident* in Dutch (2014) and co-edited a book on the philosophy of landscape and place (2011) as well as a volume on contemporary German philosophy (2013), both in Dutch.

Yuk Hui

Yuk Hui is currently research associate at the ICAM of Leuphana University Lüneburg where he also teaches at the institute of philosophy. He has published articles in periodicals such as *Research in Phenomenology*, *Metaphilosophy*, *Angelaki*, *Parrhesia*, *Cahiers Simondon*, *Jahrbuch Technikphilosophie*, *Implications Philosophiques*, *Intellectica* among others. He is the author of *On the Existence of Digital Objects* (Minnesota University Press, 2016) and *The Question Concerning Technology in China: An Essay in Cosmotechnics* (Urbanomic, 2016), and co-editor of *30 Years after Les Immatériaux: Art, Science and Theory* (Meson 2015).