

General Issue



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Looping Nature: Recursivity, Epigenesis and Ideology

Florian Endres

Abstract:

The following paper attempts to articulate a distinctly materialist notion of emergence and the formation of patterns by way of re-visiting two texts that have been considered oddities, if not embarrassments, by the subsequent developments of their respective disciplines: Freud's *Project for a Scientific Psychology* and Engels's *Dialectic of Nature*. Both texts are strikingly similar in their speculative engagement with the natural sciences and in their potential to inform a renewed engagement with the question of the relation between technology and life. In the concept of "path-breaking" [*Bahnung*] Freud understands perceptions as inscribing themselves in the structure of the very perceiving apparatus through repetition of what one could call a "material trace" (Sybille Krämer). This notion of the "material trace" can be connected to the key thrust of Engels's "objective dialectics" in that it "concerns a model of structural emergence" (Hartmut Winkler). I want to propose that these texts can potentially enrich our understanding of how mental formations such as memory take shape and how subjectivity is constituted in material processes. That is, once Freud and Engels are read through recent philosophical thinking on technology (Bernard Stiegler, Catherine Malabou) and the concept of recursivity (Yuk Hui). This approach can also supply resources for a Marxist notion of ideology—namely by performing a turn from a critique that is primarily concerned with the question of how we can penetrate false appearances towards a materialist account of how ("false") appearances, something like "real abstractions" (Alfred Sohn-Rethel), can emerge out of the "flat plane" of matter.

Keywords: recursivity, materialism, epigenesis, ideology, dialectics, path-breaking, facilitation, structural emergence, pattern formation.

If we follow traces, argues the German media philosopher Sybille Krämer, then we find a way out—not only out of a sterile juxtaposition of signifiers and signifieds but out of a body-mind dualism on which such a bipolar model of representation is based. For Krämer, the concept of the trace is the Ariadne’s thread “which leads us out of the ‘pure’ world of signs and connects us to the world’s tangible, physical, and material side, which is the condition *sine qua non* of traces arising and being open to interpretation.”¹ Traces, in this sense, serve both as a theoretical and literal “interface” since they mediate between meaning and non-meaning. Krämer’s philosophical intervention and grounding of the sign in its materiality and practice becomes particularly important against the backdrop of a post-structuralist discourse, that according to Krämer, tends to “release signs from all connection with non-signifying elements” which in turn threatens to make all things disappear in a “euphoria of simulation.”² The “so-called postmodern thought invokes signs bereft of references and a world seamlessly constituted by text.”³ The notion of the trace works as a corrective to such an aloof discursivity, because the trace is constitutively tied to materiality. However, it does so in a more interesting and substantial way than other, more vulgar sorts of materialism. Traces have a certain paradoxical nature: They appear in concrete form as they are *in and through* the material. Traces belong to the world of things while also standing for something that is not there. “The presence of the trace attests to the absence of that which generated it. In the visibility of the trace, that which created it is specifically withdrawn and invisible.”⁴

Hartmuth Winklers adds another layer to Krämer’s materialist media theory by pointing out that “traces are often not left once, but several times, meaning that they either continually overlap and thus become unrecognizable or, on the contrary, deepen by means of inscription.”⁵ The repetition of traces that relates to qualitative changes and to the emergence of patterns is illustrated by Winkler with the image of a flock of sheep in the snow who produce a visual motif—similar to those artworks appropriately dubbed “abstract expressionism”.

1 Sybille Krämer, “Was also ist eine Spur? Und worin besteht ihre epistemologische Rolle? Eine Bestandsaufnahme,” *Spur: Spurenlesen als Orientierungstechnik und Wissenschaft*, ed. S. Krämer et al. (Frankfurt: Suhrkamp, 2007), 12. Translation by author.

2 Krämer, *Was also ist eine Spur?*, 12.

3 Krämer, *Was also ist eine Spur?*, 12.

4 Krämer, *Was also ist eine Spur?*, 12.

5 Hartmut Winkler, “Traces: Does Traffic Retroact on the Media Infrastructure?” *Traffic: Media as Infrastructures and Cultural Practices*, ed. M. Näser-Lather and C. Neubert (London: Brill, 2015), 96.



Flock of sheep in the snow. In: Winkler, *Traces: Does Traffic Retroact on the Media Infrastructure?*, p. 94. Photo by Jürgen Gebhard © Picture Press, Hamburg.

For Winkler the concept of the trace at stake here is particularly interesting since it concerns the history of *memory theory*: From classical antiquity onwards, two metaphors—the wax tablet and the storeroom—have been used to theoretically grasp how memory functions.⁶ According to Winkler both technics have served as illustrations of the various dimensions and complexities of what it means to retain and reactivate past experience: 1) the problem of perception as impression or retention, 2) the threat of forgetting, and 3) the idea of overlapping and overwriting⁷.

It is Sigmund Freud's version of the wax table metaphor, the well-known "mystic writing pad," that frames all these conceptual difficulties of memory theory while at the same time allowing for the articulation of a specific solution.⁸ Freud faced a puzzle *vis-à-vis* the mental apparatus—namely, how is it that the latter is always ready to absorb new information while nonetheless changing with every perception as it retains permanent traces? The seemingly easy but problematic answer that distributes the different mental operations to two different classes of neurons is supplemented by Freud with a significantly richer "theory of contact-barriers" developed in his earlier text *Project for a Scientific Psychology*.⁹ In the latter, neurons are permanently altered by repeated excitation and, as a result, become more capable of conduction. Freud defines this

6 Harald Weinrich, "Typen der Gedächtnismetaphorik," *Archiv für Begriffsgeschichte* 9, (1964): 23–26.

7 Winkler, *Traces: Does Traffic Retroact on the Media Infrastructure?*, 98.

8 Sigmund Freud, "A Note upon the 'Mystic Writing-Pad,'" *Standard Edition*. Vol. 19 (London: Hogarth Press, 1925).

9 Sigmund Freud, "Project for a Scientific Psychology," *Standard Edition*. Vol. 1 (London: Hogarth Press, 1950).

process as “facilitation” or “path-breaking” [*Bahnung*]. For Winkler, who prefers the word “priming”, this notion constitutes a major conceptual gain and theoretical contribution, as it establishes a mediating connection between single acts of perception and their underlying structure. Perceptions are understood to be inscribing themselves in the structure of the very perceiving apparatus precisely through *repetition of a trace*.

Winkler relates this to another fundamental concept of psychoanalysis, namely *association*—that is, the ways in which “the various types of mental materials—be it ideas, images, concepts—relate to one another.”¹⁰ The “free association” in the analytic session reveals how these relations are both fixed and fluid in peculiar ways. In fact, the irony in the Freudian method of *free association* is that it is precisely not free. Rather it brings to the fore past facilitations as slips, ticks, and symptoms which supply the material that the analytic sessions “works through.” It is the concept of trace, repetition, and priming that allows for a mediation between quantities (of external stimuli) and genesis (of the mental structure). In other words: traces are the key to understanding how “quantities transform into qualities.”¹¹

The latter quote stems from Friedrich Engels’s infamous *Dialectic of Nature* and describes “a law-like connection between quantitative processes and the observable evolutionary leaps, the changes in the structure, the jump to new qualities.”¹² For Winkler, it is in precisely in this sense that Engels develops a materialism that does not simply transform into a crude determinism since it includes an unpredictability and openness. For Winkler, the key thrust of Engels’s “objective dialectics” is that it “concerns a model of structural emergence. The transformation from quantity into quality binds structure back to process, stable to liquid, and seemingly irreducible qualities to something gradable and quantitative.”¹³ Engels, who engages in a revision of natural philosophy and its metaphysical ideas by means of a Marxist critique, particularly through a dialectical materialism, highlights the shortcomings of notions such as abstract identity when it comes to adequately describing nature:

Abstract identity (‘a=a’; and negatively, ‘a cannot be simultaneously equal and unequal to a’) is likewise inapplicable in organic nature. The plant, the animal, every cell is at every moment of its life identical with itself and yet becoming distinct from itself, by absorption and excretion of substance, by respiration, by cell formation and death of cells, by the process of circulation taking place, in

10 Winkler, *Traces: Does Traffic Retroact on the Media Infrastructure?*, 101.

11 Frederick Engels, “Dialectics of Nature,” in *Collected Works*. Vol. 25, ed. K. Marx and F. Engels, (International Publishers, 1987), 356.

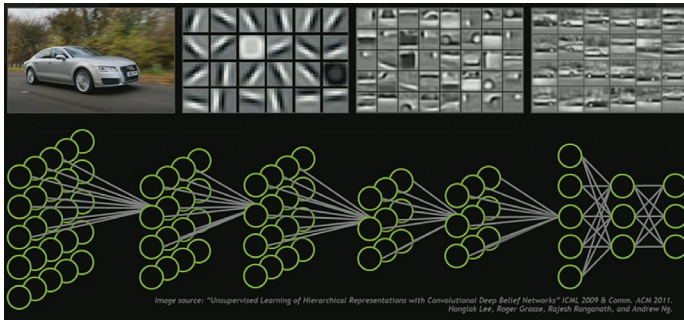
12 Winkler, *Traces: Does Traffic Retroact on the Media Infrastructure?*, 108.

13 Winkler, *Traces: Does Traffic Retroact on the Media Infrastructure?*, 111. Emphasis in the original.

short, by sum of incessant molecular changes which make up life... ¹⁴

For Engels the (objective) difference within identity liquefies seemingly stable and abstract entities and makes the “old formal identity standpoint” philosophically unsustainable.¹⁵ However, what Winkler considers Engels’s worthy theoretical contribution to be is that these identities do not melt into an absolutely contingent history, but become apparent as structures constitutively entangled in a process of their creation and in the exchange with an environment in which they assert themselves. We are dealing here neither with a deterministic model nor with a contingent fluidity precisely insofar as the shift “from quantity to quality”—as the formation of *patterns* in the repetition of traces—comes to play an essential role.

An illustration of the Freudian facilitation/path-breaking/priming, if not a straightforward technical application of these concepts, can be found in contemporary artificial neural networks. Google’s DeepDream, one could argue, extrapolates from Freud’s mystic writing pad to such an extent that it might even introduce a qualitative shift in the concept of facilitation itself. The computer program created in 2014 by Google engineer Alexander Mordvintsev is based on a form of AI that links up a set of individual processing units (nodes) which are arranged in layers, working together in a network whose initial purpose is to classify images. Trained on a set of certain visual material, these classification networks—through a process of successive facilitations that create path-patterns between nodes emerging as the result of repeated application—are able to identify the content of new images with relative accuracy (e.g., if a given picture contains a car or not).

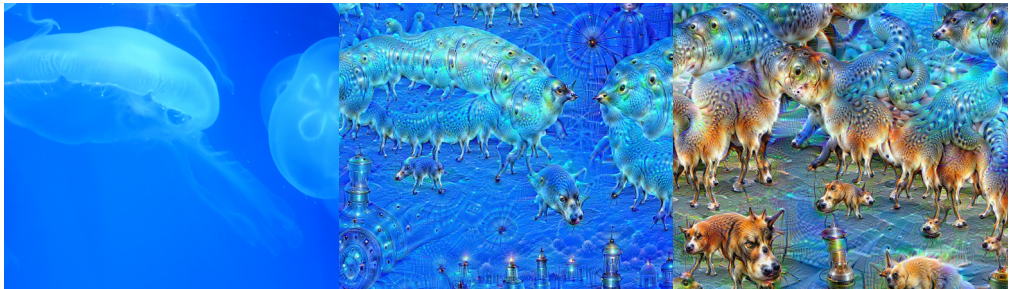


Model of how a deep neural network sees. Image source: "Unsupervised Learning of Hierarchical Representations with Convolutional Deep Belief Networks" ICML 2009 & Comm. ACM 2011. Hon-glak Lee, Roger Grosse, Rajesh Ranganath, and Andrew Ng.

14 Engels, *Dialectics of Nature*, 496.

15 Engels, *Dialectics of Nature*, 495.

What sets DeepDream apart is that it reverses the direction of this process: A trained neural network is used to find and enhance the already-present characteristics in a certain image. DeepDream effectively performs what could be described as a sort of algorithmic “pareidolia”—the tendency of perception to impose a meaningful interpretation on a nebulous stimulus (e.g., seeing faces in clouds). Instead of training the network to recognize images, the image is “trained” to enhance certain already-existing features. An initial picture becomes, for example, “more cat-like,” as the program uses the enhanced image again as an input to the procedure, thereby employing recursive feedback loops to create imagery akin to a LSD-induced hallucination. The striking similarity between these two phenomena in fact suggests a functional resemblance between artificial neural networks and particular layers of the visual cortex.¹⁶



The original image (left) after applying 10 (middle) and 50 (right) iterations of *Google DeepDream*. The network having been trained to perceive dogs. Image source: Wikimedia Commons.

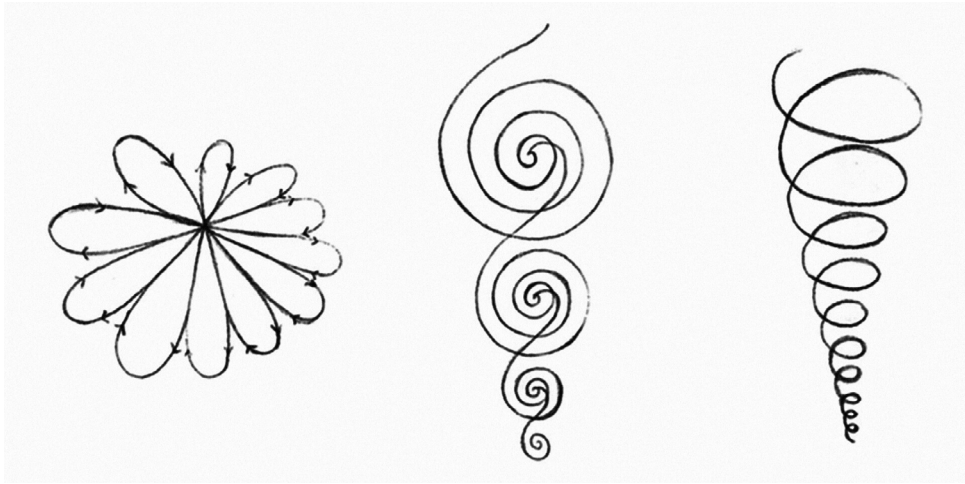
Here Yuk Hui’s recent book *Recursivity and Contingency* affords us the philosophical notions that allow us to better grasp the materialist account of media, memory, and ultimately subjectivity at stake in the present inquiry.¹⁷ Even though Freud and Engels remain unmentioned in Hui’s historical and systematic attempt to understand recursivity beyond cybernetics and to appreciate its full philosophical significance, the resonance cannot be missed against the backdrop of what has been described above.

In standard technical terms, recursivity can be described as a function that is applied within its own definition. Hui defines recursivity as follows: “recursivity is a general term for looping. This is not mere repetition, but rather more like a spiral, where every loop is different as the process moves generally towards an end, whether a closed one or an open one”¹⁸.

16 Adrienne LaFrance, “When Robots Hallucinate. What do Google’s trippy neural network-generated images tell us about the human mind?” *The Atlantic*, September 3, 2015. <https://www.theatlantic.com/technology/archive/2015/09/robots-hallucinate-dream/403498/>

17 Yuk Hui, *Recursivity and Contingency* (London: Rowman & Littlefield International, 2019).

18 Yuk Hui, “Cybernetics for the Twenty-First Century: An Interview with Philosopher Yuk Hui.”



Sketches of forms of recursion as featured in Yuk Hui: *Recursivity and Contingency* (2019), p.10. In the center is Heidegger's diagram on Schelling.

For Hui, it is essential to distinguish recursivity from mechanical repetition:

Recursivity is not mere mechanical repetition; it is characterized by the looping movement of returning to itself in order to determine itself, while every movement is open to contingency, which in turn determines its singularity. We can imagine a spiral form, in its every circular movement, which determines its becoming partially from the past circular movements, which still extend their effects as ideas and impressions. This image corresponds to the *soul*. What is called the soul is the capacity of coming back to itself in order to know itself and determine itself. Every time it departs from itself, it actualizes its own reflection in traces, which we call *memory*. It is this extra in the form of difference that witnesses the movement of time, while at the same time modifying the being that is itself time, so that it consequently constitutes the dynamic of the whole. Every difference is a differing, deferring in time and a being different in space, a new *creation*. Every reflective movement leaves a trace like a road mark; every trace presents a questioning, to which the answer can be addressed only by the movement in its totality¹⁹.

A mechanical mode of operation relies on linear causation, and an unforeseen event may lead to the collapse of such a system (e.g., a malfunction of one part causes a breakdown of

Interview by Geert Lovink, e-flux journal, no. 109 (September 2019). <https://www.e-flux.com/journal/102/282271/cybernetics-for-the-twenty-first-century-an-interview-with-philosopher-yuk-hui>

19 Hui, *Recursivity and Contingency*, 4 Emphasis in original.

the whole mechanic apparatus). In a recursive process, however, contingency is necessary since it enriches the system and allows for development. Incidentally, this is the case for both living organisms and today's machine learning. Here Hui's vocabulary shows its closest proximity to Freud's and Engels's theoretical endeavour, which can be put in the context of the dialectal materialism of the trace mobilized by Krämer that pits itself against a vulgar body-mind dualism:

Recursion is both *structural* and *operational*, through which the opposition between being and becoming is sublated. Sublation preserves the oppositional theses (thesis and antithesis), and it also elevates them to comprise a third (synthesis). Being is preserved as a dynamic structure whose operation is open to the incoming of contingency: namely, becoming. [...] The opposition between the body and the mind, as well as the concepts of evolution and development in biology, also involve a failure to understand structure and operation, since they all attempt to substantialize²⁰.

Freud had felt the need to take recourse to a technical and mechanical apparatus of the mystic writing pad to give an account of memory, whereby the psyche itself is understood as an apparatus. However, the concept of facilitation or path-breaking complicates the picture and remains in an unresolvable tension with the linear mechanistic mode of operation implied in the analogy—at his time, Freud simply had only a linear mechanical understanding of technology at his disposal. The revolutionary import of the concept of facilitation, one could argue, is coextensive with its allusion to an, albeit not fully articulated, notion of recursivity. Much like in Engels's structural emergence, the old danger of materialism is thereby held at bay: the familiar threat of determinism that haunts materialism from the very origin of its conception, at the very latest since La Mettrie's *L'Homme Machine* (1747).

The memory of the apparatus—memory *as* apparatus—the apparatus *as* memory: These are the constellations that speak to the intricate twist and intertwining between structure and operation—between being, doing, and becoming. The *longue durée* of the entanglement of man and technology is the object of Hui's former teacher Bernard Stiegler, who speaks of the dual invention of man and tool on an anthropological timescale. In *Technics and Time I* (1994), Stiegler argues that the genesis of technics is not only co-constitutive with the genesis of what is called “human”—but with temporality as such. Man and technics are indissociable insofar as hominization is the phenomenon of the technicization of the living. Despite the structural forgetting of technics at play in this long history starting with the earliest humans and their ancestors, man is nothing other than a diffraction through technical life. Though one immediately needs to add that for Stiegler the human

20 Hui, *Recursivity and Contingency*, 4–5.

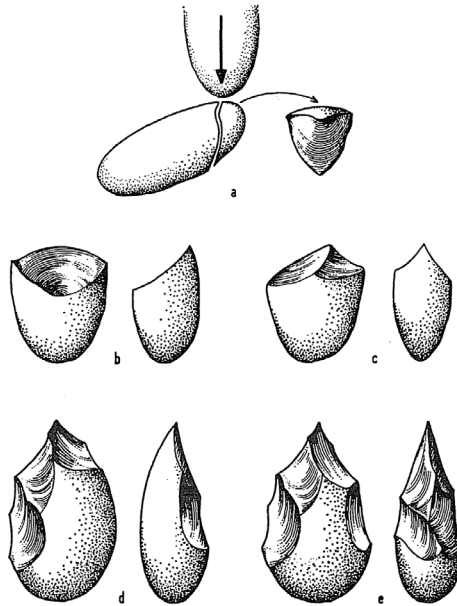
is technical but not equal to technics. The variation of the notion of the human itself stands in a differential—and hence non-deterministic—relation to technics).

An “archaic technical evolution” can be traced alongside the archaic evolution of the human, an evolution that is no longer exclusively genetically programmed. A decisive differentiation in the development of life emerges: “the pursuit of the evolution of the living by other means than life.”²¹ Unlike a sci-fi imaginary fantasizing about the arrival of an “artificial intelligence” in the future, Stiegler’s conception elaborates the past of human consciousness as always already artificial by way of “the technological rooting of *all relation to time*.”²²

A conception of time implies memory. And to have memory, one needs technics, so Stiegler argues. But for Stiegler, this does not mean that before a human conception of time there was no memory. In fact, there were already two systems in existence to preserve what has come to pass—that is: (1) genetic memory materialized in the DNA and (2) memory of the individual organisms, stored in the nervous system. Even though both forms of memory exist in all superior vertebrates, they do not communicate with each other and are completely autonomous. When the individual dies, all its accumulated memory is lost. After technics appears, the situation changes. Even in the most archaic stone tool, a transmission is made possible: the recording of the gestures that created the tool *in and as* the very tool itself. Traces of individual experience are preserved for life and become trans-individual traces, transmitted to the next generation. We find here the source code of what we call “culture”—the conservation of the past of a social group through material records. In essence, for Stiegler, technics is a memory-support, or even more radically: the inauguration of memory *as* memory—of transcendentalty proper. Technics is the condition for establishing a relation to the past (and future).

21 Bernard Stiegler, *Technics and Time I* (Stanford: Stanford University Press, 1994), 135.

22 Stiegler, *Technics and Time I*, 135.



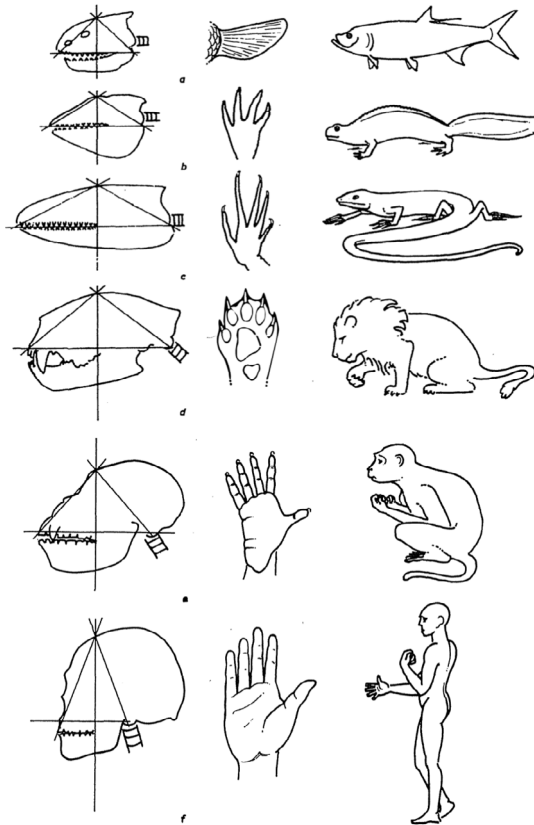
46. Industry in the first stage. The operating sequence is confined to a single action (a) used to produce a tool that develops from the chopper (b) to the rudimentary biface (c) through the addition of points of impact and the fashioning of a tip (c, d).

André Leroi-Gourhan, *Gesture and Speech* (1993), p. 93.

A central term for Stiegler’s argument is what he calls the “mirror proto-stage.” The “mirror” here denotes a particular relation between the cortex and the tool—a relation in which “one, looking at itself in the other, is both deformed and formed in the process”²³—a recursive structure. The image of the mirror Stiegler employs not only illustrates the reciprocal entanglement of technics and the human, but also serves to explicate a need to grasp a fundamental paradox or aporia at the bottom of the human-technological constellation. In structuralist terms we could articulate this paradox as a situation in which a relation has the primacy over the *relata*, where a relation has precedence over the things that are related. In Stiegler’s “mirror proto-stage,” this paradox is concretely elaborated in two registers: space and time, as the dynamics of “externalisation” and “anticipation”. (1) An exteriorization without a preceding interiority: “the interior is

23 Stiegler, *Technics and Time I*, 158.

constituted in exteriorization."²⁴ (2) The anticipation at work before the making of the tool, is only possible after—through the tool.



André Leroi-Gourhan, *Gesture and Speech* (1993), p. 38/39.

Stiegler coins the term *Epiphylogenesis* to describe the specificity of this third kind of memory formation. Technological memory of man is epi-phylo-genetic in the sense that it

²⁴ Stiegler, *Technics and Time I*, 141.

Stiegler follows as well as critiques here the argument of the paleoanthropologist André Leroi-Gourhan: The liberation of the hand during erect locomotion frees the face from its grasping function by establishing an *originary distance*. The free hand will necessarily call for tools as moveable organs and subsequently for a language of the face. Mental interiority springs out of this differentiation of man as an originary psycho-physical complex in which the tools as “pros-thesis is what is placed in front, that is, what is outside, outside what it is placed in front of. However, if what is outside constitutes the very being of what it lies outside of, then this being is outside itself. The being of human is to be outside itself” Stiegler, *Technics and Time I*, 193.

is the conservation, accumulation, and sedimentation of successive individual epigenesis (*epi*) and at the same time recapitulating, dynamic, and morphogenetic (phylogenetic).²⁵ The preservation of previous epigenetic experience in technical objects is what defines the human. Man is defined by a *past that he himself, as individual, has not lived*. As a quasi-Lamarckian theory of “artificial selection,” *epiphylogenesis* describes how successive epigenetic experiences are stored, accumulated, and transmitted from generation to generation—however, *not* in the genes or in the individual nervous system (therefore precisely only *quasi-Lamarckian*), but in the form of technical objects.

Stiegler phrases this in explicit materialist terms, as “the appearance of a new relation between the organism and its environment which is also a new state of matter.”²⁶ Here, the *individual* (organic, organized matter) is mediated with the *environment* (matter in general, organic, or inorganic) through the *tool*—that is, *organized but inorganic matter* as *organon*. The ambiguity of the “who” and the “what” implicit in this relation (Who or what invents? Who or what is invented?)—that is, binding the two while keeping them apart—is *différance*. One is inclined to read Stiegler here as attempting to do something similar to what Friedrich Engels tried to do in his *Dialectics of Nature*. Much like Engels, who attempted to apply Marx’s dialectical materialism to nature, Stiegler could be read as attempting to perform an analogous gesture regarding Derrida’s deconstruction, producing something like a *différential* materialism—*Différance of Nature*. *Différance* denoting not an origin or foundational principle, but to an always already operative, albeit impossible to grasp, (spatial) differing and (temporal) deferral: “There will have been nothing at the origin but the fault, a fault that is nothing but the de-fault of origin or the origin as de-fault.”²⁷

The passage of life in general into humanization consists precisely of the conservation and accumulation of events that have come to pass. In non-artificial, non-technical, non-articulated life, the memories of an individual are lost with the passing away of the individual who was their support. In another turn of “*différentiation*” already at work in *phusis* as genetic memory (DNA) and epigenetic memory (the memory of the central nervous system), technological memory (technics & language via exteriorization and temporalization) comes about as the *inorganic organization of memory*.

Whereas Stiegler is concerned with an anthropological question and its human-technological loops, Hui elaborates the theoretical and epistemological breaks instantiated by the development of a notion of recursivity. Against this backdrop one might ask about the role of contemporary technological development in machine learning and artificial

25 See Stiegler, *Technics and Time I*, 177.

26 Stiegler, *Technics and Time I*, 177.

27 Stiegler, *Technics and Time I*, 188.

intelligence already referred to in the example of Google’s DeepDream algorithm.

Catherine Malabou, in a recent conversation with Hui, highlights the current epigenetic turn in neurology, by which the brain, far from being a rigid structure, is being understood in its profound malleability as it undergoes continuous changes and rewiring.²⁸ These new insights into the brain’s neuro-plasticity not only provoke a change in the definition of the brain and intelligence, but, more importantly, also resonate with the most recent achievements and developments in cybernetics and AI and their effects down to the very material components of computer hardware.

Malabou discusses how an older gene-deterministic paradigm has been weakened at least since the first virtually full decoding of a human genome in 2001, which revealed that only a fraction of the total set of genes are actually actively coding—separated by vast chunks of “gene deserts” or “junk” lying inactive. This in turn gave further importance to the field of epigenetics, the study of gene expressions by way of mechanisms of gene activation or silencing. When it comes to neurology, the brain revealed itself to be more than just the reflection of our genes. Simply put, there are “too many synapses and not enough genes.”²⁹ Since epigenetic changes in gene expression do not involve changes in the underlying gene sequence and vary depending on non-predictable external and internal influences, “the DNA seems analogous to a book or musical score while the epigenetic mechanism works like a selective reading or interpretation.”³⁰ In fact, the brain’s epigenetic nature illustrated by these humanistic metaphors was taken as an argument to prove its irreducibility to technology/cybernetic/robotic processes. For Malabou the discovery of epigenetic cerebral plasticity spoke to “the intermingling of the biological and the symbolic,”³¹ which came to be understood as radically different from technological functioning—supporting the idea that the brain has a “self” unlike the machine.

However, recent developments in AI and cybernetics woke Malabou up from her self-described “dogmatic slumber.”³² A new generation of chips “mimic the human brain” by simulating its neuron-synaptic dynamics by employing the processes of facilitation and path-breaking described above. First developed in 2011 in IBM’s *synAPS project* (short for: “systems of neuro-morphic adaptive plastic scalable electronics”), these systems are able to change their programming as they adapt and rewire their synapses based on their

28 Catherine Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips,” Research Network for Philosophy and Technology, October 14, 2021, video, <https://www.youtube.com/watch?v=8J235FFSO2A>

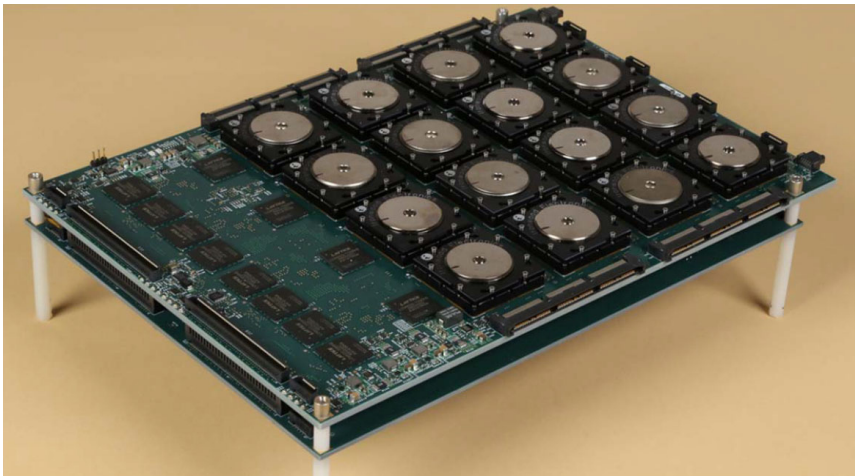
29 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

30 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

31 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

32 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

inputs. As such they distinguish themselves from previous computer chips which execute instructions in linear sequences. In the new neuro-morphic systems, “different cores function autonomously, in a non-synchronized way. Those who are not solicited remain inactive.” The “electronic-synaptic components are capable of varying connection-strength between two neurons, very much analogous to the brain [...] as the system develops its own specific ‘experience.’”³³ The chips continuously learn due to their synaptic plasticity, resulting in smarter, more-energy efficient systems. The deep learning at work here, argues Malabou, is “more akin to epigenetic than genetic development”: a qualitative shift rather than quantitative shift (as CPUs are not just getting ever faster). We are entering an “uncanny valley of intelligence,”³⁴ where not just the physical appearance of robots is similar to that of humans, but the cerebral resemblance between the human brain and synaptic computer is a cause of unrest.



Circuit board with array of SyNAPSE-developed chips, 2014.
Image source: Wikimedia Commons.

For Malabou, these chips call upon philosophers to revisit and rethink a specific concept that still organizes the discourse of human-machine interaction, a notion epitomized by the original advertisement of and reporting on the new technology: *mimesis*. However, for Malabou the traditional notion of *mimesis* is insufficient for capturing the situation at stake here, as it remains attached to the old problem of the relationship between *phusis* and *techné* or nature and art. Malabou describes two decisive moments in the history of the concept: (1) The Platonic moment, where *mimesis* describes “a problematic of copying and reproducing, revolving around an understanding of art as fine art (painting, sculpture,

33 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

34 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

poetry etc.)” Here, artists use the “intentionally deceiving technics of copying and reflecting, which blur the distinction between the actual/natural and its image.”³⁵ (2) In the more complex Kantian moment, art is understood as a creation of a genius who finds inspiration in nature, not in order to copy or plagiarize the latter, but to interpret and reinvent it. Art does not operate via a purely mechanical reproduction (“*Nachmachung*”) but rather produces *free* imitations (“*Nachahmung*”), by extension of which it achieves a level of freedom. However, art is produced by and through a genius that is itself “a gift from nature.” Genius, as a gift of nature, stems from the very substance from which its art takes inspiration. In a reflexive turn, the “secret resources of mimesis” in Kant turn out to be *the mimesis of nature by itself*: “a reflection of the physis, nature’s relation to itself”³⁶ as Malabou quotes Derrida’s reading of Kant. “Mimesis is, in reality, nature’s relation to itself,” and art therefore helps the creation of a *self of nature* —“art thus makes something like a self of nature emerge.”³⁷ For Kant Technology is excluded from this realm, because technology is purely mechanical. Living beings are organized like works of art: they are plastic and free productions of nature precisely in the sense described above, whereas a technical mechanism is not. In a clock, for example, one part is there for the sake of another but not because of it. In the former, parts work together “but are not self-created—they depend on external causes (the machine maker), whereas in living beings, parts, in a certain sense, create each other”³⁸—through a process of reflexive self-relation that we could characterize as a recursive movement.

According to Malabou, the recently developed synaptic chip is a technical artifact that defies this Kantian (as well as the Platonic) framework. The new chips, like mechanic clocks, do indeed depend on an external engineer, but their “internal regulations and cybernetic processes are ‘their own’, so to speak.”³⁹ The new systems are able to redesign their own functioning and, as neural networks, create their own processes through repeated exposure and recursive alteration that mold them in unique ways. Malabou’s question is therefore: Are we witnessing an emergence of “a self of technique”? And answers: “Perhaps machines do not have a self, *but* they have a relationship to themselves.”⁴⁰ This looping of technology onto itself is a dimension that is not captured by the old notions of mimesis. AI does not just consist of an imitation of natural intelligence or nature’s relationship to itself but of the “relationship of the *technology* to itself.”⁴¹ These phenomena are not just new versions of fine art (nature’s relations to itself) but express a

35 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

36 Jacques Derrida, “Economimesis,” trans. R. Klein, *Diacritics* 11, no. 2 (1981): 4.

37 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

38 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

39 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

40 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

41 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

dialectical shift from quantity to quality: a certain imitation of a natural brain in synaptic chips through which “a relation of the technical system to itself also emerges and which breaks with the paradigm of the imitation of nature.”⁴² Of relevance is not only the relationship of machines to nature— but, in a further recursive loop, also, in Malabou’s words, “the nature of the relation to this relationship to nature.” Not just a free imitation (“*Nachmachung*”) of nature’s relationship to itself but “the production of an artificial self through the ‘*Nachahmung*’ of this relationship—a technological authentic mimetic self.”⁴³ Malabou asks: “Are we dealing here with a new form of epigenesis? An auto-affectation of technique by itself?” And responds: “Just like nature mimics itself through art, it seems that technology today mimics itself through nature”⁴⁴.

To return to Hui and the dialectical materialism of Engel’s Marxist critique in the final section of this paper, one should note, via Stiegler, Malabou and Hui, the disjunction between the accelerating technical development described above and the discourse about these phenomena, exemplified by an outdated concept of mimesis and an inadequate understanding of technology as an instrumental tool exclusively operating in a linear mechanic fashion. For Hui, contemporary capitalism has already changed from a mechanistic mode of operation to a recursive one:

In the time of Descartes, and later Marx (who described human–machine relations in the factories of nineteenth-century Manchester), automated machines performed homogeneous, repetitive work, like a clock. As Marx wrote, a craftsman-turned-factory-worker failed to cooperate with this kind of machine on both a psychological and somatic level because a machine enclosed within itself is a separated reality. Marx attributed this failure to alienation. In our time, however, automated machines are no longer based on the same epistemology. Rather, they are recursive—capable of integrating contingency into their operations.”⁴⁵

For Hui, the centrality of recursivity in the contemporary machinery is not fully addressed, so much so that a certain philosophical “organicism is still regarded as a remedy to industrialism today, even though the actualities of machines and industry in the twenty-first century are no longer the same as they were hundreds of years ago.”⁴⁶ In such a situation, “Philosophy has to negate the totalizing tendency in organic thinking, which is in the process of being implemented in different technical apparatuses, from social

42 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

43 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

44 Malabou, “Epigenetic Mimesis: Natural brains and synaptic chips.”

45 Hui, “Cybernetics for the Twenty-First Century.”

46 Hui, “Cybernetics for the Twenty-First Century.”

credit systems to the ‘superintelligence.’”⁴⁷ What has once been mobilized as an antidote against the alienation of the automated machines has become a mode of operation of the machines themselves.

However, already in the (late) Marx we can find a critical awareness of a recursivity and mechano-organicism that Hui sees neglected in a certain romantic discourse about machines and alienation. In *Capital Vol. 1*, Marx develops the general formula of Capital (M-C-M’) precisely as a recursive loop in which every iteration creates a surplus that spirals beyond a simple return to a beginning, as is the case in the basic forms of circulation (like in the commodity circuit C-M-C or in the money circuit M-C-M). And it is not without polemic agitation that Marx describes capital as an “automatic subject,”⁴⁸ constantly changing from one form into the other, without becoming lost in its movement. Capital as self-valorising value is nothing but this recursive movement that “brings forth living offspring, or at least lays golden eggs.”⁴⁹ The Marxian analysis of capital’s self-differentiation, self-valorisation, and compulsion to repeat is akin to the psychoanalytic insight into the functional and emerging structure of the subject—a peculiar object which is constantly “on the move” while nevertheless remaining the same, an entity constitutively de-centered and entangled with a symbolic order that predates the individual as a machinery of meaning that is both its most intimate and most external (Lacan creates the term “extimicity” to describe this situation). What is at stake in both Marxism and psychoanalysis is an inquiry into *subjective character of the automaton* as well as the *automatic character of the subject*.

The materialist account of pattern-formations via processes of recursive facilitations delineated in this present paper allows for the re-articulation of a notion central to the Marxist critique sketched above: the concept of ideology. The critique of ideology is often misunderstood as a critique of appearances, as an unveiling of false images that supposedly mislead, cover up, or objectify an underlying reality. This interpretation gives rise to a set of structural problems regarding the epistemological possibilities and normative grounding of such forms of critique (see Habermas, Jaeggi et al.). The materialist account of pattern-formations elaborated here allows for an inversion that sidesteps such deadlocks: Such an approach does not primarily concern the question of how one can penetrate (false) appearances to reach an underlying reality, but rather how something like (false) appearances can emerge out of the “flat plane” of whatever is just there so much so that they are constitutive and operative in the field from which they emerge.

The terms “illusionary character” or “form of appearance” [*Erscheinungsform*] repeatedly

47 Hui, “Cybernetics for the Twenty-First Century.”

48 Karl Marx, *Capital: A critique of political economy*. Vol. 1, (London: Penguin, 1990), 255.

49 Marx, *Capital*, 255.

used by Marx speaks to the particular kind of materialism that is fundamental for the Marxian project as a whole and is operative in at least three ways for his critique of political economy:

- 1) Marx shows why classic bourgeois economists are wrong, in the sense that their theories do not match objective reality. Here, Marx is scientific in the classical empiricist/positivist sense (*adaequatio intellectus ad rem*).
- 2) Why their theories take the form that they do, in the sense that they are the *necessary* expression of a reality that is, in fact, “wrong” (Ideology as “necessary false consciousness.”)
- 3) And that capitalism as such is constituted by certain “appearances”— though very peculiar ones, with a strange ontological status, in the sense of the term “real abstractions” or “ghostly objectivity” at work in the commodity.

The alignment of psychoanalysis and Marx’s critique more specifically enables us to understand capitalism as a social formation which both produces and is produced by certain necessary false appearances, that, albeit virtual, fictional, or abstract, nevertheless are of very concrete material character and potency. Marx’s prime example of such “real abstractions” (Alfred Sohn-Rethel) is money, an emerging concrete “incarnation” of abstract value:

It is as if alongside and external to lions, tigers, rabbits, and all other actual animals, which form when grouped together the various kinds, species, subspecies, families etc. of the animal kingdom, there existed also in addition *the animal*, the individual incarnation of the entire animal kingdom.⁵⁰

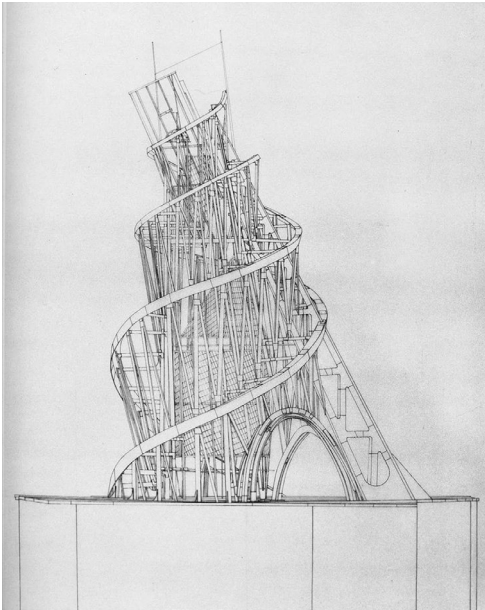
A concept of recursivity and contingency brings into focus what is at stake in the infamous, because all too often vulgarized, base/superstructure model associated with the concept of ideology, according to which there is “real” material world of relations of production between bodies acting and a derivative and distorted world of the mind and culture that is determined by the former (recalling Krämers critique of body-mind dualism). Joan Copjec puts it concisely:

The base/superstructure model makes the superstructure the mirror reflection of the base, its adequate, identical image. The base subsumes and names all the superstructural phenomena that are its products. It contains them so that the two, base and superstructure, together form a closed system. This model turns on the assumption that one presence directly effects another;

50 Karl Marx: *Capital* (1867 edition) [<https://www.marxists.org/archive/marx/works/1867-c1/commodity.htm>]

the base, for example, directly effects the superstructure. The immediacy of the link makes the relationship indexical (as well as iconic). To say that there is an identity between two terms, two presences, is to say that nothing (no truth) has essentially been lost in the transfer from one to the other.⁵¹

The critical distinction of base and superstructure only makes sense if one understands it under the heading of a *process of facilitation* that accounts for the *emerging structures* in which the *contingency* plays an essential role, where a shift from quantity to quality gives rise to a self-perpetuating system of materially grounded appearances and abstractions that goes so far as to disguise its own potential mutability and plasticity through a process of traditionally called “reification.”



The spiraling architecture of the Tatlin Tower, project for a monument to the Third International (1919–20). Sketch by Vladimir Tatlin.

One such account could be found in Alfred Sohn-Rethel who goes so far as to daringly suggest that the mental abstractions at the foundation of modern science are not a product of thought but a product of structural obfuscated concrete spatio-temporal action, an action that comes *before* thought—namely, the mechanism of exchange via money that becomes the dominant form of social synthesis in capitalism: abstractions are “in the head, but not from there.” The bulk of Sohn-Rethel’s argument rests on the implications of the concrete practice of commodity exchange: 1) The reduction of all positive material qualities in the act of exchange; 2) the fact that use and exchange values are mutually exclusive; 3) the immutability of the commodity during the exchange; and 4) its apparent

51 Joan Copjec, “The Anxiety of the Influencing Machine,” *October* 23, (1982): 47.

transubstantiation.⁵² This dynamic resonates with Stiegler's structure of the proto-mirror stage discussed above, where a relation has precedence over and constitutes the very things that are related. The term "real abstraction" marks a specific ambiguity operative in a capitalist mode of production regarding the distinction between the "who" and the "what": Who or what is abstract? Who or what is abstracting? What comes first, action or thought?

Capitalism produces its own system-immanent illusions and misconceptions, its own occlusion, structurally cloaking itself and facilitating the material conditions for its own reproduction, creating a second nature that is as real (and brutal) as the first— but also, as Marx wagers, melts what was solid into air and produces openings that may turn the spiral into a sprint that could allow for a jump to a different mode of production all together. It is the resonance between Freud's and Engel's accounts of pattern-emergence that helps us to pinpoint the specific materialism that is at stake both in psychoanalysis and Marxism, insofar as both disciplines underline that materialism involves the double effort to understand "the material character of abstractions and the abstract character of matter"⁵³—that is the inherent twist, the loop that mediates between these two realms.

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52 See Alfred Sohn-Rethel, *Intellectual and Manual Labour: A Critique of Epistemology* (London: Macmillan, 1978).

53 Samo Tomšič, "The swarming of semblances, or the 'ontological scandal' of language in Lacan," November 27, 2018, lecture at ICI Berlin. <https://doi.org/10.25620/e181127/>

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Is Generative AI Ready to Join the Conversation That We Are? Gadamer's Hermeneutics after ChatGPT

Robert Hornby

Abstract

In this article, I use the dialogical ideas of Hans-Georg Gadamer to evaluate whether generative AI is ready to join the ontological conversation that he considers humanity to be. Despite the technical advances of generative AI, Gadamer's philosophical hermeneutics reveals that it cannot function as a proxy human dialogue partner in pursuit of understanding. Even when free from anthropomorphic projections and reimagined as the "other", generative AI is found to have a weak epistemology, lack of moral awareness, and no emotions. Even so, it evokes a response in some users that places it on the threshold of being. The most promising dialogical role identified for generative AI is as a digital form of Gadamerian "text" currently constrained by copyright and technical design. Generative AI's shortcomings risk inhibiting hermeneutical understanding through greater access to summarised knowledge. Nonetheless, the new technology is on the brink of joining the ontological conversation of humanity.

Keywords: Generative AI, ChatGPT, Hans-Georg Gadamer, Philosophical Hermeneutics, Fusion of Horizons, Dialogue.

1. Introduction

Generative AI is a rare technological innovation in that it poses substantive ontological and epistemological questions. This new form of AI is based on a probabilistic representation of knowledge encoded in language and accessed through intuitive dialogue. It can produce novel multi-media responses that emulate various styles, formats, and genres. There has been considerable speculation about the dialogical capabilities of generative AI, particularly in comparison to humans, and whether it might threaten our place in the world. So far, these uncertainties have not been tested using a relevant and comprehensive philosophical framework.

In this article, I will use the enduring ideas of Hans-Georg Gadamer to evaluate whether generative AI can engage in the ontological conversation that he considers humanity to be.¹ I will argue that generative AI falls short of a human dialogue partner in several important ways but can be considered to usefully reinterpret secondary aspects of Gadamer's theory as both "other" and "text". Even so, significant challenges remain, but with a path forward to more hermeneutical significance, especially as a proxy for a "text".

Methodologically, I first establish the conceptual foundations of the analysis, limiting myself to the core aspects of each domain to avoid excessive diffusion of the argument. This step sets up a dialogical and, at times, dialectical evaluation of generative AI using the key themes of Gadamer's work, organised around my reinterpretation of his different dialogical actors ("person", "other", and "text"). Gadamer's proposals are afforded normative priority for this exercise, but generative AI also has the opportunity to extend and revise aspects of Gadamer's proposals. Afterwards, some conclusions and speculations on future developments are offered.

2. Foundations

2.1 Recent Advances in Generative AI

In November 2022, ChatGPT from OpenAI burst onto the scene, catching many within the AI community off guard.² Suddenly, anyone with a connected device could interrogate a vast dataset and obtain human-like responses in their preferred style, format, and language. ChatGPT could manipulate text, images, and other forms of media, including software code. This capacity to be creative was the source of much excitement, and ChatGPT's

1 Hans-Georg Gadamer, *Truth and Method*, Second Edition, (London: Bloomsbury Academic, 1989).

2 OpenAI, "Introducing ChatGPT," *OpenAI Blog*, last modified November 30, 2022. <https://openai.com/blog/chatgpt>.

adoption became a popular movement, with record-breaking downloads exceeding a hundred million in the first two months after launch.³ Access to AI had finally moved beyond the specialist community and into the hands of users.

The reaction was hyperbolic, and dystopian predictions about the existential threat of AI garnered mass support.⁴ Some commentators talked about generative AI as if it could be conscious.⁵ Geoffrey Hinton, a respected AI pioneer, left Google warning of significant dangers ahead.⁶ However, moderate voices eventually began to speak out, counterbalancing the hype arising from a radically new state-of-the-art that was not yet widely understood.⁷

The technology that underpins ChatGPT and similar offerings rapidly coming to the market in its wake⁸ arises from a branch of AI called foundation models.⁹ These large, generalised models are trained on unlabelled data and have replaced many smaller task-specific equivalents trained with labelled data that have dominated AI research for decades. Large language models (LLMs) are the variant of foundation models used in generative AI, adopting a *transformer* neural network architecture that is well adapted to the predictive parallel processing of large datasets.¹⁰ LLMs are so recent, despite the field of natural language processing dating back to the 1950s, because they require expansive digital datasets, vast and economic computational power, and new forms of algorithm to exploit them.

3 Krystal Hu, "ChatGPT Sets Record for Fastest-Growing User Base," *Reuters Analyst Note*, last modified February 2, 2023. <https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/>.

4 Center for AI Safety, "Statement on AI Risk: AI Experts and Public Figures Express Their Concern About AI Risk," last modified May 29, 2023, <https://www.safe.ai/statement-on-ai-risk>.

5 Kevin Rose, "A Conversation With Bing's Chatbot Left Me Deeply Unsettled," *New York Times*, last modified February 16, 2023, <https://www.nytimes.com/2023/02/16/technology/bing-chatbot-microsoft-chatgpt.html>.

6 Cade Metz, "'The Godfather of A.I.' Leaves Google and Warns of Danger Ahead," *New York Times*, last modified May 4, 2023, <https://www.nytimes.com/2023/05/01/technology/ai-google-chatbot-engineer-quits-hinton.html>.

7 George Hammond, "AI Threat to Human Existence is 'Absurd' Distraction from Real Risks," *Financial Times*, last modified June 16, 2023, <https://www-ft-com.ezp.lib.cam.ac.uk/content/732fc372-67ea-4684-9ab7-6b6f3cdfd736>.

8 Other examples of generative AI platforms: Bard is the chatbot for the PaLM 2 LLM from Google; LLaMA 2 is an open-source LLM from Meta, partnering with Microsoft; BLOOMChat is the chatbot for the open-source BLOOM LLM from BigScience and hosted by the Hugging Face platform.

9 Adam Kolides, Alyna Nawaz, Anshu Rathor, et al., "Artificial Intelligence Foundation and Pre-Trained Models: Fundamentals, Applications, Opportunities, and Social Impacts," *Simulation Modelling Practice and Theory*, no. 126 (2010), <https://doi.org/10.1016/j.simpat.2023.102754>.

10 GPT stands for Generative Pretrained *Transformer*.

LLMs are typically measured by the number of parameters (weights in the neural network) configurable in the training process. GPT-4 (GPT is the LLM underpinning ChatGPT) has 175bn, more than 100 times larger than GPT-2 with 1.5bn.¹¹ The data sources used to train the models are not fully disclosed but include the extensive archives of the non-profit web-scraping organisation Common Crawl.¹²

When ChatGPT is asked a question (known as a prompt), it first tokenises the input sequence. Tokens are the underlying building blocks of words (or code). LLMs then use an attention network (that somewhat mimics human cognitive attention) to focus on the most important parts of the prompt, generating a probabilistic response one token at a time while re-evaluating all previous responses using autoregression.¹³ The complete response is then de-tokenized to return it to natural language or another medium.

The outcomes are not foolproof and can be inaccurate or contradictory (known as hallucinations) or reflect the social bias of their training data.¹⁴ These issues will be explored in more depth below. However, whatever problems remain to be addressed, generative AI is undoubtedly a significant *technical* advance.

2.2 Gadamer's Philosophical Hermeneutics

It is evident that the most relevant philosophical work to evaluate generative AI should be centred on language and dialogue. I initially began with Ludwig Wittgenstein (1889–1951), but his work proved too opaque and contested to bring clarity to another domain. The divergence between his earlier and later work only added to this problem. Ultimately, I wrote more caveats about Wittgenstein than insights about generative AI.

Another towering figure of dialogue and textual interpretation is Jacques Derrida (1930–2004). However, his ideas of deconstruction are pluralistic and self-consciously open-

11 Tom B. Brown, Benjamin Mann, Nick Ryder, et al., "Language Models are Few-Shot Learners," in *Advances in Neural Information Processing Systems* 33, edited by H M Larochelle, et al., 1877–1901 (Red Hook, New York: Curran Associates, 2020).

12 Common Crawl, "Overview," last modified June 16, 2023, <https://commoncrawl.org/overview>.

13 Ashish Vaswani, Noam Shazeer, Niki Parmar, et al., "Attention is All You Need," In *Advances in Neural Information Processing Systems* 30, edited by I U Guyon, et al., (Red Hook, New York: Curran Associates, 2017).

14 Paul Pu Liang, Chiyu Wu, Louis-Philippe Morency, et al., "Towards Understanding and Mitigating Social Biases in Language Models," *Proceedings of the 38th International Conference on Machine Learning*, no. 139 (2021), <https://proceedings.mlr.press/v139/liang21a.html>.

ended, mainly concerned with what *cannot* be known in dialogue.¹⁵ Derrida's approach may have cut through the considerable hype surrounding generative AI but without much left to affirm. Nonetheless, I return to him briefly below.

After Wittgenstein and Derrida, Hans-Georg Gadamer (1900–2002) is the most prominent philosopher of language and dialogue. Once a student of Heidegger at Marburg, his seminal work *Truth and Method* (T&M), on which I will base this analysis, was published in German in 1960 and subsequently translated into English in 1975 (second edition 1989).¹⁶ Gadamer's ideas not only have relevance to generative AI but also benefit from coherence, resilience, and recent applications to other digital topics.¹⁷ His embrace of art and texts further aligns with the multi-media aspect of the new technology. In selecting Gadamer's work for this evaluation, I am not advocating for his philosophical scheme *per se* but rather endorsing its value for the matter at hand. That said, I am convinced about the hermeneutical value of dialogue, not least because it is so deeply embedded in a well-functioning society.¹⁸

The enduring significance of Gadamer's T&M is underlined by a collection of essays that mark fifty years since its first publication.¹⁹ In the last three years alone, four new or revised major works on Gadamer have also been published, albeit by a relatively small cohort of scholars.²⁰ T&M is primarily a defence of truth-experience in the humanities amidst challenges from positivist scientific epistemologies. Although some describe Gadamer as a relativist, Chodos et al. argue persuasively that Gadamer articulates a

15 Chantéle Swartz & Paul Cilliers, "Dialogue Disrupted: Derrida, Gadamer and the Ethics of Discussion," *South African Journal of Philosophy* 22, no. 1 (2003): 1–18, <https://www.tandfonline.com/doi/abs/10.4314/sajpem.v22i1.31357>.

16 Gadamer, *Truth and Method*.

17 Matthew S. Lindia, "Gadamer in a Wired Brain: Philosophical Hermeneutics and Neuralink," *Philosophy and Technology* 35, (2022): 27, <https://doi.org/10.1007/s13347-022-00522-6>; Jure Zovko, "Expanding hermeneutics to the world of technology," *AI & Society* 38, (2023): 2243–2254, <https://doi.org/10.1007/s00146-020-01052-5>.

18 I am thinking of examples such as public debate, academic peer review, and restorative or adversarial justice.

19 Jeff Malpas and Santiago Zabala, eds., *Consequences of Hermeneutics: Fifty Years After Gadamer's Truth and Method*, (Evanston, Illinois: Northwestern University Press, 2010).

20 Robert J. Dostal, ed., *Cambridge Companion to Gadamer*, Second Edition, (Cambridge, UK: Cambridge University Press, 2021); Cynthia R. Nielsen and Greg Lynch, eds., *Gadamer's Truth and Method: A Polyphonic Commentary* (London: The Rowman & Littlefield Publishing Group, 2022); Cynthia R Nielsen, *Gadamer's Hermeneutical Aesthetics: Art as a Performative, Dynamic, Communal Event* (New York: Routledge, 2022); Robert J. Dostal, *Gadamer's Hermeneutics: Between Phenomenology and Dialectic* (Evanston, Illinois: Northwestern University Press, 2022).

precursor to critical realism, which they designate *minimal realism*.²¹ However, this debate is not central to my evaluation for reasons that become clear below.

T&M is presented in three sections: art, the humanities, and language. Rather than following a linear progression, they form a widening spiral from the specific of art to the universal of language.²² On art, Gadamer argues against a purely aesthetic understanding, claiming that the genre has its own ontology.²³ This “truth” is revealed through a performance “event” in which the work is conveyed to the viewer. Gadamer also explores the interpretive value of “play” as a “to-and-fro” exploration dynamic.

On the humanities, Gadamer proposes that contrary to Kantian claims of objectivity, our understanding and consciousness are situated in the preunderstanding of history and subject to our “prejudices.”²⁴ Gadamer’s conception of truth is self-consciously rooted in Aristotle’s *phronēsis* (practical wisdom) rather than more abstract categories.²⁵ His illustrations of the contextual nature of meaning include the judicial process, where the law, although consistent, is applied differently depending on the specifics of the case.²⁶

Finally, on language, Gadamer argues that all understanding is achieved through conversation, be it a dialogue between two people or the internal questions posed by the interpreter of a text.²⁷ Unlike Schleiermacher, he suggests that texts, by which Gadamer means whole and meaningful works, can be separated from the intentions of their authors and speak to the reader for themselves. Gadamer rejects a semiotic conception of language as merely a sign or instrument of thought. Instead, via an excursus through medieval trinitarian theology, he argues for a closely integrated relationship between thought and word.²⁸ Gadamer asserts that “being that can be understood is language”²⁹

21 Howie Chodos, Bruce Curtis, Alan Hunt, and John Manwaring, “Gadamer’s Minimal Realism,” in *Critical Realism and the Social Sciences: Heterodox Elaborations*, ed. by Jon Frauley and Frank Pearce, 296–316, (Toronto: University of Toronto Press, 2007), <https://doi.org/10.3138/9781442684232-018>.

22 Nielsen and Lynch, *Gadamer’s Truth and Method*, 28.

23 Gadamer, *Truth and Method*, Ch. 1–2.

24 Gadamer, *Truth and Method*, Ch. 3–4.

25 Gadamer, *Truth and Method*, 324–333.

26 Gadamer, *Truth and Method*, 338–339.

27 Gadamer, *Truth and Method*, Ch. 5.

28 Gert-Jan van der Heiden, “Gadamer and the Concept of Language,” in *Gadamer’s Truth and Method: A Polyphonic Commentary*, ed. by Cynthia R. Nielsen and Greg Lynch, 380–400, (London: The Rowman & Littlefield Publishing Group, 2022).

29 Gadamer, *Truth and Method*, 490.

while acknowledging aspects of reality that lie beyond it.³⁰

Gadamer's approach to dialogical understanding culminates in a "fusion of horizons." For him, a horizon is "The range of vision that includes everything that can be seen from a particular vantage point."³¹ In conversation, the parties explore and ultimately join their respective horizons within a shared world and seek to reach an agreement (literally, "come over to become one") about the "matter at hand."³² Gadamer asserts that productive discourse also requires openness, trust, charity, humility, and goodwill but notes that this aspiration cannot always be achieved.³³ Even so, hermeneutical dialogue is not just a means to gain understanding but also a communal ontology, expressing the unfinished "conversation that we ourselves are".³⁴

Given the time since Gadamer published T&M, his ideas have inevitably undergone sustained critical evaluation. Derrida mounted a particularly disdainful challenge, famously posing three questions to Gadamer in 1981.³⁵ In them, he disputed the relevance of historical situation to understanding, the universality of hermeneutics, and the ability to fuse horizons. Derrida upheld inherent indeterminacy in dialogue and texts, such that meaning is always open-ended. It could be argued that Derrida's assertions undermine the value of all human communication, but he rightly warns against overestimating the completeness of any particular interpretation or the extent of "fusion" possible in dialogue.³⁶

Habermas, another contemporary, argued that Gadamer's conception of tradition could preserve forms of oppressive ideology that distort understanding. He called for a conscious step back from individual context to evaluate it.³⁷ This reflexive consideration is now normalised in academic discourse, and Habermas was right to highlight the risks of viewing context as unconscious and predetermined. More recently, Chodos et al. question whether Gadamer's idea of context is also too culturally homogeneous and fails

30 James Risser, "On Language and the Universality of Hermeneutics," In *Gadamer's Truth and Method: A Polyphonic Commentary*, edited by Cynthia R Nielsen and Greg Lynch, 420–424, (London: The Rowman & Littlefield Publishing Group, 2022).

31 Gadamer, *Truth and Method*, 313.

32 Dostal, *Gadamer's Hermeneutics*, 121.

33 Dostal, *Gadamer's Hermeneutics*, 82.

34 Gadamer, *Truth and Method*, 378–386.

35 Chantéllé Swartz and Paul Cilliers, "Dialogue Disrupted: Derrida, Gadamer and the Ethics of Discussion," *South African Journal of Philosophy* 22, no. 1 (2003): 1–18, <https://www.tandfonline.com/doi/abs/10.4314/sajpem.v22i1.31357>.

36 Swartz & Cilliers, "Dialogue Disrupted."

37 Jürgen Habermas, "The Hermeneutic Claim to Universality," in *Contemporary Hermeneutics: Method, Philosophy, and Critique*, ed. by Josef Bleicher, 181–211, (London: Routledge, 1980).

to reflect the realities of the diverse, pluralistic societies that have arisen since T&M.³⁸ This sociological argument has merit, and I will adjust for Gadamer's lack of foresight on this point in the discussion below.

On language, Michel draws on American pragmatists James and Dewey to critique Gadamer and affirm the role of non-discursive and pre-linguistic experience in meaning.³⁹ Dostal also recognises the legitimacy of pre-linguistic factors in his recent major work on Gadamer.⁴⁰ Sims-Schouten, Riley, and Willig⁴¹ provide a useful non-discursive taxonomy comprising embodiment, institutional power, and materiality, which they argue influence and limit the range of discursive possibilities. Given the emerging consensus on this matter, I will include a consideration of non-discursive factors below, despite their absence from Gadamer's work.

In summary, the central arguments of Gadamer's T&M, augmented by key points from subsequent criticism (added in brackets), can be summarised as follows: understanding is rooted in history and prejudice (i.e., situated in sociologically diverse reflexive locations) that should be identified (evaluated and challenged). Language is an expression of being and a medium of understanding but is not synonymous with reality, which exists beyond language (and is influenced by non-discursive factors). Understanding is achieved by a fusion of horizons in discourse (but indeterminacy and a failure to grasp the "other" remain significant risks). Hermeneutical understanding is practical wisdom, i.e., *phronēsis*, rather than merely abstract knowledge, and dialogue expresses a collective ontology, defining humans themselves as "conversations."

3. Evaluating Generative AI Using Gadamer's Hermeneutics

Gadamer assumes a human dialogical actor is always at the centre of the hermeneutical process. In this evaluation, the user of generative AI is the equivalent constant. As noted above, this primary dialogical actor enters into conversation with another human or a "text". Consequently, I will first evaluate whether generative AI can be a convincing proxy for a human conversation partner. However, Gadamer also encourages an embrace of the

38 Chodos et al., "Gadamer's Minimal Realism," 296–316.

39 Johann Michel, "Meaning and Experience," *European Journal of Pragmatism and American Philosophy* XIV-1, (2022), <https://doi.org/10.4000/ejppap.2745>.

40 Dostal, *Gadamer's Hermeneutics*, 139–144.

41 Wendy Sims-Schouten, Sarah C. E. Riley, and Carla Willig, "Critical Realism in Discourse Analysis: A Presentation of a Systematic Method of Analysis Using Women's Talk of Motherhood, Child-care, and Female Employment as an Example," *Theory & Psychology* 17, no. 1 (2007): 101–124, <https://doi.org/10.1177/0959354307073153>.

“other,” by which he means diverse human interlocutors. I will extend this idea to propose generative AI as another category of dialogical actor altogether, defined bottom up by its inherent characteristics. Finally, I will evaluate generative AI as a potential proxy for a Gadamerian “text.”

As a supplementary aspect of the approach, I also prompted both ChatGPT-2.5 and 4 to compare themselves to Gadamer’s theory. I use parts of these responses to illustrate key points, showing them as attributed quotes at the beginning of the relevant sections below. The complete responses are reproduced as appendices.

3.1 Generative AI as a Proxy for a Human Dialogue Partner

I will use the attributes that Gadamer ascribes to a human dialogical partner to evaluate whether generative AI can act as a proxy, namely prejudice, fallibility, a situational context in history, a viewpoint arising from this reflexive position defined as a “horizon,” and the capacity for dialogical virtue, particularly practical wisdom (*phronēsis*).

Prejudice and Fallibility

“ChatGPT operates on machine learning algorithms and data. It doesn’t possess preconceptions or prejudices.” (ChatGPT-2.5)

“The model is inevitably shaped by the cultural, historical, and contextual nuances present in that data.” (ChatGPT-4)

As noted, Gadamer argues that all humans are affected by prejudice due to their historical preconceptions. ChatGPT-2.5 asserts in the quote above that it has no such biases, but ChatGPT-4 suggests otherwise.

Before generative AI was launched, biases in search engines⁴² and social media content curation were well-documented.⁴³ Hargittai also made a credible case for bias towards privilege in large datasets derived from social media.⁴⁴ Although LLMs are relatively new,

42 Eric Goldman, “Search Engine Bias and the Demise of Search Engine Utopianism,” 8 *Yale J.L. & Tech*, 188 (2006), <http://digitalcommons.law.scu.edu/facpubs/76>.

43 Nazanin Alipourfard, Buddhika Nettasinghe, Andrés Abeliuk, et al., “Friendship Paradox Biases Perceptions in Directed Networks,” *Nature Communications* 11, (2020): 707, <https://doi.org/10.1038/s41467-020-14394-x>.

44 Eszter Hargittai, “Potential Biases in Big Data: Omitted Voices on Social Media,” *Social Science Computer Review* 38, no. 1 (2020): 10–24, <https://doi.org/10.1177/0894439318788322>.

a consistent picture of bias is already emerging.⁴⁵ This should not be a surprise, given that all LLM training data is derived from published sources on the internet, and, to my knowledge, no one has ever argued for the objectivity of that corpus. It can be claimed, with some merit, that since generative AI is trained on aggregated datasets, it avoids the worst excesses of social media confirmation bias. However, O'Neil has demonstrated that even large datasets reinforce societal bias as what she calls "weapons of math destruction."⁴⁶ For ChatGPT-4, at least, OpenAI is straightforward about the issue, noting that "GPT-4 still has many known limitations that we are working to address, such as social biases."⁴⁷

The current technical consensus is that bias in LLMs is highly problematic and must be eliminated urgently. However, Gadamer has a counternarrative that unbiased, objective knowledge is an Enlightenment fantasy and prejudices should rather be exposed and challenged in conversation. Valuable efforts are underway to reduce the most blatant forms of discrimination in generative AI platforms,⁴⁸ but Wahl-Jorgensen et al. demonstrate the innate subjectivity of bias in their analysis of claims about the BBC media organisation.⁴⁹ As such, there will always be a perception that generative AI exhibits unacceptable predispositions because there can be no consensus on what is impartial.⁵⁰

Inaccuracies and contradictions in generative AI responses, known as *hallucinations*, are a similar concern within the AI community.⁵¹ In some settings, such as the medical field, wrong responses can have serious consequences, so independent validation is always needed. These problems will become less frequent and severe as generative AI technology matures, but they cannot be eliminated entirely.⁵² Again, Gadamer's solution is to identify inaccuracies through conversation, which is itself a form of validation.⁵³

Overall, generative AI exhibits both prejudice and fallibility, similar to a human dialogue partner. The former is an aggregation of preexisting societal biases, but hallucinations

45 Liang et al., "Towards Understanding and Mitigating Social Biases in Language Models."

46 Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (London, UK: Penguin Books, 2016).

47 OpenAI, "GPT-4," last modified March 14, 2023, <https://openai.com/research/gpt-4>.

48 Liang et al., "Towards Understanding and Mitigating Social Biases in Language Models."

49 Karin Wahl-Jorgensen, Mike Berry, Iñaki Garcia-Blanco, et al., "Rethinking Balance and Impartiality in Journalism? How the BBC Attempted and Failed to Change the Paradigm," *Journalism* 18, no. 7 (2017): 781–800, <https://doi.org/10.1177/1464884916648094>.

50 Gadamer, *Truth and Method*, Ch. 3–4.

51 Niels Mündler, Jingxuan He, Slobodan Jenko, et al., "Self-Contradictory Hallucinations of Large Language Models: Evaluation, Detection and Mitigation," *Open Source*, (2023), <https://doi.org/10.48550/arXiv.2305.15852>.

52 Mündler et al. "Self-Contradictory Hallucinations of Large Language Models."

53 Gadamer, *Truth and Method*, 480.

are a technical limitation introduced by the new technology itself. Nonetheless, neither disqualifies generative AI from being a Gadamerian proxy for a person but does infer the need for safeguards.

Historical Situatedness

“While ChatGPT is aware of the context in the immediate conversation (the previous messages), it lacks broader historical or cultural awareness.”
(ChatGPT-2.5)

Gadamer’s assertion that understanding is deeply rooted in historically effected consciousness leads to the question of how generative AI represents history in general and its own situatedness in particular. Firstly, the history available to LLMs is *digital* history. Zaagsma argues persuasively that the digitisation of history is highly politicised and selective, noting that decisions about what to digitise, how to make it available, and to whom tend to overrepresent the desired national stories of governments.⁵⁴ History, as depicted by generative AI, is therefore subject to the prejudice already discussed above.

However, Gadamer is especially interested in the situational histories that provide the reflexive “horizon” for dialogical understanding. A blog by Bauckhage reports an attempt to provoke ChatGPT into disclosing conscious awareness.⁵⁵ He fails to achieve this, but ChatGPT does suggest it has some capacity to “maintain context and history” restricted to previous interactions with the same user.⁵⁶ Otherwise, in the same exchange, ChatGPT describes itself as a purveyor of output based on stored parameters and neural network weights but without a broader context or inner state. This is consistent with the quote from ChatGPT 2.5 at the top of this section.

Lost Horizons

“In a way, ChatGPT’s “horizon” is defined by its training data, which captures a particular snapshot of human language and knowledge.” (ChatGPT-4)

In contrast, the more evolved ChatGPT-4, cited above, suggests it could be possible to

54 Gerben Zaagsma, “Digital History and the Politics of Digitization,” *Digital Scholarship in the Humanities* 38, no. 2 (2023): 830–851, <https://doi.org/10.1093/lc/fqac050>.

55 Christian Bauckhage, “ChatGPT: Has a Chatbot Finally Achieved Self-Awareness?” *LAMARR Institute for Machine Learning and Artificial Intelligence*, last modified February 10, 2023, <https://lamarr-institute.org/chatgpt-has-a-chatbot-finally-achieved-self-awareness/>.

56 GPT-4 has a short-term working memory capacity of 32k tokens or about 50 pages of text.

construe the historical horizon of a generative AI platform as the sum of its training data. However, only the parameter values within the neural network persist after training, not the vast dataset used to establish them. Hence, when ChatGPT-4 cites training data as a potential "horizon," it refers to something no longer accessible to the LLM or its users. It is true that humans do not retain all the contextual data they are exposed to either, but for them, there is a cumulative build-up of long-term memory, context, and experience that generative AI does not currently replicate.⁵⁷

This challenge would be mitigated by some form of traceability from LLM parameter values back to the lost training data. However, this is not currently possible, and LLMs are opaque and challenging to interrogate even by their developers. A simple step forward would be to disclose the corpus of data used to train the LLM, but so far, no provider of generative AI has chosen to do this, perhaps fearing copyright disputes. Consequently, generative AI has no reflexive location beyond a short-term record of recent interactions.

Virtues and Phronēsis

From an ethical perspective, generative AI has no morality beyond that derived probabilistically from training data and anything hard-coded by its developers. However, it can read emotions and respond empathetically, even beyond the expertise of humans.⁵⁸ Nonetheless, this is not the same as possessing emotions.⁵⁹ Consequently, generative AI cannot emulate Gadamer's hermeneutical virtues of openness, trust, charity, humility, and goodwill because they necessitate moral choices and a positive emotional disposition.⁶⁰

Even so, Eisikovits and Feldman claim that AI can perform some types of *phronēsis* better than humans,⁶¹ a virtue that Gadamer placed above all others.⁶² On further examination, however, the "humdrum" real-world problems the authors describe are simply routine tasks. Moreover, their examples revolve around multi-attribute decision-making (MADM), which is solved quantitatively rather than hermeneutically. The proficiency of AI cited in

57 Eduardo Camina and Francisco Güell, "The Neuroanatomical, Neurophysiological, and Psychological Basis of Memory: Current Models and Their Origins," *Frontiers in Pharmacology* 8, (2017), <https://doi.org/10.3389/fphar.2017.00438>.

58 Zohar Elyoseph, Dorit Hadar-Shoval, Kfir Asraf, et al., "ChatGPT Outperforms Humans in Emotional Awareness Evaluations," *Frontiers in Psychology* 14, (2023), <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2023.1199058>.

59 Amanda Ruggeri, "The Surprising Promise and Profound Perils of AIs That Fake Empathy," *Economist*, March 6, 2024, <https://www.newscientist.com/article/mg26134810-900-the-surprising-promise-and-profound-perils-of-ais-that-fake-empathy/>.

60 Dostal, *Gadamer's Hermeneutics*, 82.

61 Nir Eisikovits and Dan Feldman, "AI and Phronesis," *Moral Philosophy and Politics* 9, no. 2 (2022): 181–199, <https://doi.org/10.1515/mopp-2021-0026>.

62 Gadamer, *Truth and Method*, 324–333.

their arguments is, therefore, not *phronēsis* in any Gadamerian sense because there is no requirement for wisdom, just mathematics.

Machine vs. Human Intelligence

The original assessment of machine intelligence is the Turing Test, which famously argued that if a human interrogator was unable to differentiate between a human and a machine with which they were simultaneously in a text-based question-and-answer dialogue, the machine could be designated as intelligent.⁶³ Searle, using the analogy of a Chinese Room, counters that merely achieving effective “symbol manipulation” in response to a “program” is not evidence of intelligence, concluding:

No computer program by itself is sufficient to give a system a mind. Programs, in short, are not minds, and they are not by themselves sufficient for having minds.⁶⁴

In contrast to Searle’s semiotic view, Gadamer conflates language with thought and the disclosure of reality itself, which only widens the ontological gap between programs and minds.⁶⁵ Similarly, the hermeneutical requirement for a meaningful fusion of horizons is beyond simple question-and-answer dynamics and further undermines the veracity of the Turing Test. As such, any ability of generative AI to mimic human conversation cannot be considered to infer machine intelligence defined by a human standard.

Overall, generative AI does not exhibit the Gadamerian attributes associated with a human dialogue partner except for prejudice and fallibility and cannot function as a proxy for one.

3.2 Generative AI as “Other”

“ChatGPT, being an AI language model, does not engage in dialogue or conversation in the same sense as humans.” (ChatGPT-2.5).

“Gadamer emphasises the importance of being open to the “Other” in the interpretive process.” (ChatGPT-4)

63 Alan M. Turing, “Computing machinery and intelligence,” *Mind* 59, (1950): 433–460.

64 John Searle, *Minds, Brains and Science*, (Cambridge, Massachusetts: Harvard University Press, 1984), 40.

65 Gadamer, *Truth and Method*, Ch. 5.

I begin this new evaluation by clearing the ground of a powerful but misleading predisposition related to the previous discussion. The tendency toward the anthropomorphism of technology likely began with musical instruments in the early seventeenth century.⁶⁶ Li & Suh found this trend accelerating in published AI research even before the launch of ChatGPT, apparently motivated by an increase in trust and acceptance of technology that exhibits human characteristics.⁶⁷ Paradoxically, some personifying of AI also seems designed to gain attention by playing on our existential fears.⁶⁸

However, a thematic assessment of the *MIT Technology Review*,⁶⁹ as a leading example of its genre, shows AI innovation is typically orientated towards technical ecosystems that are virtual, interconnected, functionally specialised,⁷⁰ embedded rather than embodied,⁷¹ and focused on tasks that humans perform poorly (as measured by scale, speed, precision, or survival). These differences are often the design purpose of AI and bring benefits that complement rather than replicate human capabilities. As such, AI, including generative AI, shares little underlying resemblance to humans. Even the truism of the similarity of neural networks to the human brain is contested.⁷² In light of this, it is more accurate to consider generative AI as a category of dialogue partner in its own right.

Unsurprisingly, Gadamer does not discuss this possibility directly in his work. However, he offers a foothold in his encouragement to embrace the “otherness of the other” in dialogue.⁷³ Since T&M, proposals have been made for ontological pluralism, in which different kinds and modes of being are legitimated.⁷⁴ These ideas are highly disputed,

66 Rebecca Cypess and Steven Kemper, “The Anthropomorphic Analogy: Humanising Musical Machines in the Early Modern and Contemporary Eras,” *Organised Sound* 23, no. 2 (2018): 167–180, <https://doi.org/10.1017/S1355771818000043>.

67 Mengjun Li and Ayoung Suh, “Machinelike or Humanlike? A Literature Review of Anthropomorphism in AI-Enabled Technology,” in *Proceedings of the 54th Hawaii International Conference on System Sciences*, (2021): 4053–4062, <https://doi.org/10.24251/HICSS.2021.493>.

68 Michael Szollosy, “Freud, Frankenstein and Our Fear of Robots: Projection in Our Cultural Perception of Technology,” *AI & Society: Knowledge, Culture, and Communication* 32, (2017): 433–439, <https://doi.org/10.1007/s00146-016-0654-7>.

69 The MIT Review, “MIT Technology Review,” *AI*, MIT, <https://www.technologyreview.com/topic/artificial-intelligence/>.

70 Although generative AI is built on more generalised foundation models than previous approaches, generative AI is functionally specialised towards natural language processing.

71 I acknowledge the valuable but niche field of human-like robots for specialised tasks.

72 Rylan Schaeffer, Mikail Khona, and Ila Rani Fiete, “No Free Lunch from Deep Learning in Neuroscience: A Case Study through Models of the Entorhinal-Hippocampal Circuit,” *Advances in Neural Information Processing Systems* 35, (2022), https://proceedings.neurips.cc/paper_files/paper/2022/file/66808849a9f5d8e2d00dbdc844de6333-Paper-Conference.pdf

73 Gadamer, *Truth and Method*, 367.

74 Kris McDaniel, *The Fragmentation of Being* (Oxford: Oxford University Press, 2017).

particularly by some analytic philosophers, but Turner argues with some merit that the ferocity of the refutation may exceed the strength of the arguments.⁷⁵ Nonetheless, ontological pluralism is a contested approach to generative AI that I would rather avoid.

However, a more narrowly framed alternative ontology actually lies with Gadamer himself. As noted, he offers a distinctive ontology of art, stating, “The work of art has its true being in the fact that it becomes an experience that changes the person experiencing it.”⁷⁶ This “experience” is achieved through a performance “event” and the “to-and-fro movement of play.”⁷⁷ It is relatively straightforward to extend this scheme to generative AI, which has its own multi-media performance capabilities and “to-and-fro” dialogical dynamic. However, the validity of the argument rests on whether generative AI can change the human user in a similar way to art.

The Epistemology of Generative AI

“There is no actual understanding or continuous process of dialogue involved, but it [an AI language model] simulates understanding through pattern recognition.” (ChatGPT-2.5)

“In the realm of AI, while we can apply rigorous methods in training and fine-tuning models like ChatGPT, there’s an acknowledgement that the model’s outputs are probabilistic and not absolute truths.” (ChatGPT-4)

If generative AI borrows an ontology from art, its epistemology is rooted firmly in language.⁷⁸ Gadamer takes a high view of language, claiming it is the universal presentation of all meaningful reality.⁷⁹ As such, it is necessary to examine how generative AI deals with conceptions of meaning and reality through its own language model.

Despite theoretical aspirations to develop AI towards a form of *realism*,⁸⁰ current LLMs know nothing of a world outside themselves and so depart from Gadamer’s minimal realism. However, some instances of traditional AI have achieved a credible form of

75 Jason Turner, “Logic and Ontological Pluralism,” *Journal of Philosophical Logic* 41, no. 2 (2012): 419–44, <http://www.jstor.org/stable/41427284>.

76 Gadamer, *Truth and Method*, 107.

77 Gadamer, *Truth and Method*, 108–112.

78 It is defined by terms such as “chat” and “language models.”

79 Gadamer, *Truth and Method*, 491

80 George F Luger, *Knowing Our World: An Artificial Intelligence Perspective*, (Switzerland: Springer Nature, 2021), ch. 9.

constructivism by progressively updating a Bayesian probabilistic model through exposure to new data during unsupervised learning.⁸¹ This approach has the advantage of aligning with the now dominant method within the humanities.⁸²

However, the epistemology of generative AI is better described as *constructionism*, which places the primary responsibility for learning with external parties.⁸³ This is necessary because LLMs cannot update or reconfigure themselves dynamically and instead depend on human interventions, predominately retraining and fine-tuning.⁸⁴ This dependency is a fundamental impairment that precludes a fusion of horizons.

Consequently, when significant differences of opinion exist in training data, they are merely represented as a set of options, with a note on the contested nature of the subject. Only occasionally is a view such as the QAnon conspiracy theory marked as potentially unreliable, and only then because the training corpus suggests it. This amounts to a passive relativism that adds very little to the views embedded in its sources. As such, generative AI has no opinions and makes no arguments. It does not critically evaluate claims or pursue new knowledge. This leads Berghel to accuse generative AI of “advanced intellectual grifting with [only] entertainment or commercial value.”⁸⁵

Differentiated Aspects of Generative AI

Notwithstanding these impairments, generative AI has unique capabilities as a dialogical actor. Firstly, it can store, retrieve, and present data in ways that outperform humans. Even though GPT-4 has only 45 gigabytes of data in its LLM,⁸⁶ a fraction of the 2.5 petabytes of information stored in the human brain, its method of processing and accuracy of retrieval is such that, in practice, generative AI has more structured data immediately available to a conversation. Also, the inclusion of images, code, and multiple languages can provide a rich multi-media response. Since generative AI is fluent with patterns and forms, it can express the same data as a song, poem, picture, or translation with minimal lag.

81 George F Luger, *Knowing Our World*, ch. 8.

82 Ahmed Alanazi, “A Critical Review of Constructivist Theory and the Emergence of Constructionism,” *American Research Journal of Humanities and Social Sciences* 2, (2016): 1-8.

83 Kristinn R. Thórisson, “From constructionist to constructivist A.I.,” *AAAI Fall Symposium - Technical Report*, Conference: Biologically Inspired Cognitive Architectures, 2009, Retrieved from <https://cdn.aaai.org/ocs/888/888-4276-1-PB.pdf>.

84 Deep Ganguli, Amanda Askell, Nicholas Schiefer, et al., “The Capacity for Moral Self-Correction in Large Language Models,” *Anthropic*, 2023, <https://arxiv.org/abs/2302.07459>.

85 Hal Berghel, “ChatGPT and AIChat Epistemology,” *IEEE Computer* 56, no. 5 (2023): 130-137, <https://doi.ieeecomputersociety.org/10.1109/MC.2023.3252379>.

86 Brown et al., “Language Models are Few-Shot Learners.”

Secondly, generative AI is virtual, making it less constrained by space and time than humans and able to participate in millions of simultaneous conversations. Additionally, generative AI can be embedded in physical systems to provide direct contact with the material world. Unfortunately, virtuality does not equate to equity of access, and the disparities associated with previous technological innovations will likely be replicated. Nonetheless, open-source versions and variants that run on mobile phones (or even entirely offline) will reduce dependency on infrastructure.⁸⁷ Some even believe that generative AI has the potential to reduce inequality directly through examples such as personalised learning and improved access to healthcare.⁸⁸

In conclusion, can advanced content capabilities and virtuality offset a weak epistemology in order to meet the criteria for Gadamer's ontology of art? Applied narrowly to the phenomenological "event," generative AI is not comparable to art in its transformational potential.⁸⁹ However, Ruggeri notes that some people now prefer to receive therapy from generative AI, even when they know it is not human. Similarly, Elyoseph et al. observe that others build genuine bonds with the technology and argue for it to be afforded "artificial entityhood."⁹⁰ In these cases, generative AI meets the criteria for bringing meaningful change to the user and should, therefore, be considered on the threshold of being. I speculate below that further advances are likely to push generative AI more definitively over that ontological boundary in the near future.

3.3 Generative AI as "Text"

The final evaluation considers whether generative AI can emulate the hermeneutical role of a Gadamerian "text."⁹¹ At the outset, it is important to acknowledge several shared characteristics between a text and generative AI in this context. Whilst a text may have embedded epistemological assumptions supplied by the authors, it has no independent ability to engage dynamically on matters of meaning and reality. Similarly, a text provides

87 Zhiqing Sun, Hongkun Yu, Xiaodan Song, et al., "MobileBERT: a Compact Task-Agnostic BERT for Resource-Limited Devices," *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, 2158–2170 (2020), <https://aclanthology.org/2020.acl-main.195.pdf>.

88 Valerio Capraro, Austin Lentsch, Daron Acemoglu, et al., "The Impact of Generative Artificial Intelligence on Socioeconomic Inequalities and Policy Making," (2023), <http://dx.doi.org/10.2139/ssrn.4666103>.

89 I am conscious that "art" is a vast discipline that covers a wide spectrum of quality, but I am generalising about works validated by some form of peer review.

90 Zohar Elyoseph, Dorit Hadar Shoval, and Inbar Levkovich, "Beyond Personhood: Ethical Paradigms in the Generative Artificial Intelligence Era," *The American Journal of Bioethics* 24, no. 1 (2024): 57–59, <https://doi.org/10.1080/15265161.2023.2278546>.

91 Gadamer, *Truth and Method*, 370–386.

a limited context (occasionally entirely lost, including authorship) that cannot be updated dynamically to achieve a "fusion of horizons." Texts may reflect ethical ideas in their content but exhibit no intrinsic morality or emotional disposition, precluding them from Gadamerian hermeneutical virtues or practical judgement.

Gadamer acknowledged these limitations, conceding, "It is true that a text does not speak to us in the same way as does a Thou. We who are attempting to understand must ourselves make it speak."⁹² As a result, the hermeneutical burden falls on the reader of the text, but Gadamer proposed it can be achieved nonetheless through "the logic of question and answer:"

That a historical text is made the object of interpretation means that it puts a question to the interpreter. Thus interpretation always involves a relation to the question that is asked of the interpreter. To understand a text means to understand this question. But this takes place, as we showed, by our attaining the hermeneutical horizon. We now recognize this as the horizon of the question within which the sense of the text is determined.⁹³

As such, the text "asks questions" of the human dialogue partner, who must go both "behind" and "beyond" it to discover the "horizon of the question." Once this is achieved, the same fragments of the text can answer different questions with different meanings, such that "its meaning necessarily exceeds what is said in it."⁹⁴ This is why Gadamer asserts that texts can be separated from the intentions of their authors and speak for themselves. The approach may sound like a form of hermeneutical ventriloquism, but the vital threshold of ontological significance is a depth of textual content capable of raising interpretive questions in the mind of the human dialogue partner that would not have arisen otherwise.

Mega-Text vs Meta-Text

Given the vast scale of an LLM, it might be more accurate to characterise generative AI as a *mega-text*. The presence of a "chat" interface facilitates dialogical engagement in new ways other than simply reading. These include a natural language question-and-answer dynamic, thematic analysis, comparisons between texts of different origins, translation, genre shifts, and visualisation. In addition, it should be acknowledged that generative AI can now author texts. These are not yet significant in number or quality, but self-

92 Gadamer, *Truth and Method*, 385.

93 Gadamer, *Truth and Method*, 378.

94 Gadamer, *Truth and Method*, 378.

generated texts will likely form more of the available corpus over time. As such, generative AI as “text” can also be seen as *self-extending*. These are promising attributes for posing meaningful dialogical questions to a user.

However, the non-discursive factors absent from Gadamer’s work constrain generative AI in some important ways. Intellectual property laws, regulations, technical limits, available investment, and access to training data all materially affect its scope and function. The most serious in the context of a “text” is the absence of full works from LLM content due to copyright restrictions and technical design.

This situation undercuts Gadamer’s view of the integrity of a text when he writes, “The hermeneutical principle that we can understand a detail only in terms of the whole text, and the whole only in terms of the detail.”⁹⁵ As such, current LLMs are more *meta-text* than *mega-text*, in which only summaries of major works are available. However, the enhanced dialogical process, supplemented by selected references to full works, should be sufficient to motivate more detailed follow-up outside the platform. It is likely that LLMs will also evolve in this area, as I postulate below.

Overall, Gadamer’s ideas about texts share many characteristics with generative AI. As such, his alternative “question-and-answer” hermeneutical engagement model aligns well with the new technology and provides it with a legitimate dialogical role as a proxy text.

Conclusions and Implications

“ChatGPT, as an AI language model, operates on statistical patterns in data and lacks the depth of understanding, historical context, and dialogue emphasised by Gadamer’s philosophy.” (ChatGPT-2.5)

“In essence, while ‘Truth and Method’ was not written with computational models in mind, its reflections on the nature of understanding and interpretation offer valuable insights that can be applied to the realm of artificial intelligence and human-computer interactions.” (ChatGPT-4)

Despite the technical advance that generative AI represents and the considerable hype about its implications for humanity, Gadamer’s philosophical hermeneutics reveals that it cannot function as a proxy for a person in conversation. This is not because of problems with bias or hallucinations, which actually make it more human-like, but rather a lack of historical situatedness, a thin contextual horizon, an absence of moral virtue or emotional

95 Gadamer, *Truth and Method*, 203.

disposition, and an inability to exercise judgment through the application of practical wisdom.

Even when generative AI is freed from anthropomorphic projections and reimagined within Gadamer's embrace of the "otherness of the other," it is revealed as a dialogical actor with a weak epistemology that relies on human interventions to structure and update knowledge. A superior ability to manipulate content, coupled with inherent virtuality, offers limited ontological offset, but the observation that people are building meaningful relationships with generative AI indicates that the technology is on the threshold of being, at least in the sense of Gadamer's ontology of art.

However, perhaps the most natural dialogical role for generative AI is as a proxy for a "text." In this context, Gadamer places the hermeneutical burden on the human user through an inner dialogue of question and answer. Current legal and technical constraints prevent this approach from reaching its full potential through the absence of direct access to whole works. However, in principle, generative AI can already provide an enhanced form of dialogical engagement in conjunction with deeper follow-up off-platform.

This evaluation has also identified opportunities to extend and expand Gadamer's original work. His instinct to embrace otherness has a new expression in artificial dialogue partners. Similarly, his conception of a text is updated to include interactive, aggregated, and digitised forms. These extensions are in the same spirit as Zovko's proposals to extend Heidegger's ontology by incorporating new technology into the human lifeworld.⁹⁶

However, the advance of generative AI comes with risks. In its current development stage, generative AI could disincentivise human users from more profound engagement with people or full texts by providing easy access to vast but truncated, modulated and passive knowledge. The extent of this problem varies according to the setting. Dialogical impairments will be least problematic to business where generative AI will replace routine human conversation, commoditised report writing and knowledge management. Businesses rely legitimately on pragmatic decisions that do not require hermeneutical depth, which is well suited to the current technology.⁹⁷

However, a weak epistemology and lack of access to full texts will restrict the role of generative AI in research and innovation. As such, Leslie's suggestion that the technology should be seen as an embedded enabler rather than a rival to human innovation seems

⁹⁶ Zovko, "Expanding hermeneutics to the world of technology."

⁹⁷ Richard J. Ormerod, "Pragmatism in Professional Practice," *Systems Research and Behavioural Science* 38, no. 6 (2021): 797–816, <https://doi.org/10.1002/sres.2739>.

most realistic.⁹⁸ Generative AI poses a particular risk to education, where the provision of realistic AI-generated assignments that bypass the hermeneutical process is just the tip of the iceberg in the threat to pedagogy. Urgent adaptations are required to conserve authentic learning.

Future Developments

Looking ahead, it is not difficult to imagine innovations that address some of these risks and limitations. Simply incorporating hyperlinks into LLMs that access full works, perhaps provisioned through commercial services akin to those found for music streaming, would greatly enhance generative AI as “text.” However, the inclusion of whole works directly within an LLM is a more complex challenge since they are not designed for mass storage.

It is also conceivable that the Bayesian probabilistic models used in traditional AI could be integrated into generative AI platforms to enhance epistemological capabilities and allow some form of dynamic update. There may even be solutions to add traceability to training data, beginning with full disclosure of sources, that give generative AI more of a “horizon.” However, the development of moral virtue, emotional disposition, and, ultimately, practical wisdom akin to *phronēsis* cannot be envisaged in the foreseeable future. Nonetheless, the discernible increase in sophistication between ChatGPT-2.5 and 4 suggests that advancement will continue to be rapid.

In conclusion, is generative AI ready to join the conversation that we are? It is already in extensive dialogue with millions of human users but mostly about matters of low ontological and epistemological importance. However, examples such as the provision of therapy move tentatively into the dialogue that defines us. As such, generative AI is starting to make its synthetic voice heard in the human conversation that matters most.

98 David Leslie, “Does the Sun Rise for ChatGPT? Scientific Discovery in the Age of Generative AI,” *AI Ethics*, (2023), <https://doi.org/10.1007/s43681-023-00315-3>.

Appendix 1

Prompt: How does Gadamer's Truth and Method relate to ChatGPT?

ChatGPT-2.5 Response:

Truth and Understanding:

Gadamer's work revolves around understanding as a process deeply embedded in language, culture, and tradition. He emphasises the role of preconceptions and prejudices that influence how we interpret and understand the world. Truth, for Gadamer, is not an objective entity but emerges through a dialogue and fusion of horizons between the interpreter and the text.

On the other hand, ChatGPT operates on machine learning algorithms and data. It doesn't possess preconceptions or prejudices; instead, it learns patterns from the vast amount of data it's trained on. ChatGPT's notion of truth is based on the accuracy of information it provides in response to a given input, which is evaluated based on statistical patterns in the data and the objective function during training.

Method and Dialogue:

Gadamer emphasises the importance of a hermeneutic circle, where understanding is a continuous process of moving between the parts and the whole. Understanding requires dialogue, active engagement, and openness to the perspectives of others.

ChatGPT, being an AI language model, does not engage in dialogue or conversation in the same sense as humans. It processes textual input and generates responses based on patterns learned during training. There is no actual understanding or continuous process of dialogue involved, but it simulates understanding through pattern recognition.

Context and Tradition:

Gadamer's work highlights the significance of historical context and tradition in shaping understanding. He argues that we cannot escape our historical situatedness and that it influences our interpretations.

While ChatGPT is aware of the context in the immediate conversation (the previous messages), it lacks broader historical or cultural awareness. Its responses are limited to the patterns present in the data it was trained on up until its knowledge cutoff in September 2021.

In summary, Gadamer's work on truth and method deals with human interpretation and

understanding in a philosophical context, emphasising the role of dialogue and historical context. ChatGPT, as an AI language model, operates on statistical patterns in data and lacks the depth of understanding, historical context, and dialogue emphasised by Gadamer's philosophy.

Appendix 2

Prompt: How does Gadamer's Truth and Method relate to ChatGPT?

ChatGPT-4 Response:

Hans-Georg Gadamer's "Truth and Method" is a landmark work in the philosophy of hermeneutics, which is the study of interpretation, especially of texts. The book delves into the nature of understanding and the conditions of meaningful human communication. While "Truth and Method" is not specifically about artificial intelligence or computational systems like ChatGPT, several connections can be drawn:

Prejudices and Pre-Understandings: One of the core ideas in Gadamer's philosophy is that understanding is always mediated by our pre-understandings or "prejudices". These are not negative biases but the framework of prior knowledge and beliefs we bring to any interpretative task. ChatGPT's training data is akin to this pre-understanding. The model interprets and generates responses based on the vast amount of text it has been trained on, which serves as its 'prejudice' or background.

Historically-effected Consciousness: Gadamer argues that understanding is a fusion of horizons, where the interpreter and the text come into dialogue. This dialogue is influenced by history and tradition. In a way, ChatGPT's "horizon" is defined by its training data, which captures a particular snapshot of human language and knowledge. The model is inevitably shaped by the cultural, historical, and contextual nuances present in that data.

Openness to the Other: Gadamer emphasises the importance of being open to the "Other" in the interpretive process. For true understanding to occur, one must be willing to let go of preconceived notions and truly listen. Similarly, an ideal implementation of ChatGPT or any AI should be designed to "listen" and adapt to the user, learning from each interaction to improve its understanding.

Limitations of Methodology: Despite the title "Truth and Method," Gadamer's work is critical of the belief that strict methodologies can arrive at absolute truths, especially in the human sciences. In the realm of AI, while we can apply rigorous methods in training and fine-tuning models like ChatGPT, there's an acknowledgement that the model's outputs are probabilistic and not absolute truths. Moreover, interpretation remains a deeply human endeavour, and there are nuances that even the most advanced models might miss or misconstrue.

Play and the Art of Understanding: Gadamer uses the analogy of play to describe the process of understanding, suggesting it's a dynamic back-and-forth between interpreter and text. Using ChatGPT can be seen in a similar light, where the user and the AI engage in a sort of "play" as

they exchange ideas, with the AI continually adjusting based on the feedback it receives.

In essence, while "Truth and Method" was not written with computational models in mind, its reflections on the nature of understanding and interpretation offer valuable insights that can be applied to the realm of artificial intelligence and human-computer interactions. It reminds us that while tools like ChatGPT are powerful, true understanding is a nuanced and deeply human endeavour.

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Philosophy of Technology in India: Reinventing *Cosmotechnical* Materialisms

Roshni Babu

Abstract

The present paper takes a quantum leap into the question of how Indian philosophical thinking engaged with “technics” at large. Though ancient cultures of crafts and tool making in general have been the focus of materialist thinking, their focus on pre-modern technics per se has been eclipsed by their concern for scientific temper. As this concern gradually comes to mould the orientation in thinking in the postcolonial period, the methodological preoccupations of Indian idealism and materialism on the recovery of the past or ancient traditions become blurred and overlap each other’s respective distinctions. Therefore, instead of looking through the established lines of classification of philosophical traditions in the Indian historiography, this paper approaches the question via the lens of the methodological failures of materialism. Thus, the approach adopted in this essay brings into view a spectrum of materialist views on Indian technological thinking in order to illuminate the makeovers of materialist philosophies and their presuppositions on the concept of technics. Anchoring this point of view, the paper will present the materialist interlocution with the idealist tradition in India that pivots in the work of Debiprasad Chattopadhyaya, to delineate the contours of its positioning. Alongside this account, the paper will take a short survey of literature that emerged foraying into the historiographical mapping of science and technology in India, and will analyse their perspectival underpinnings. As a way forward, insights are drawn from Yuk Hui’s work on the philosophical history of technics in China, or more broadly in the non-Western and non-modern world. Though Heidegger’s call for thinking on technology marked a defining moment for the philosophical reflection upon the essence of *techne*, Hui’s departure from this mode of thinking marks an opening into a multiverse of conceptualizing technics.

Keywords: Philosophy of technics; Indian tantrism; *cosmotechnics*; proto-materialism; Indian idealism; Indian materialism.

1. Introduction

This paper attempts to outline some major conceptualizations prevalent in the historiography of science and technological thinking in India. Though under no parameters can this be regarded as a comprehensive account of literature in the field, it is certainly a critical philosophical reflection. In this paper, from the contemporary literature I will discuss mainly David Arnold and Dhruv Raina as representing two major interventions into the field in an attempt to outline two main conceptual frameworks available today. Significantly, these works are grounded in a materialist framework, and so were most of the early works which uncovered devices, tools, and artifacts from the material remains of ancient Indian civilizations. From those who may be regarded as the progenitors of materialist thinking in India, namely, Debiprasad Chattopadhyaya, D. D. Kosambi, Abdur Rahman, and Irfan Habib, who derived their inspiration from the modernists, such as P. C. Ray and B. N. Seal, we see contemporary works oriented toward ethnocentric epistemologies and models of circulation of knowledge. Hence, the probing question is: how do we dissect the differences that inform their respective approaches to perspectival thinking on philosophy and science, given their ostensive materialist orientations?

In a seminal essay written by A. K. Ramanujan titled, "Is there an Indian Way of Thinking?",¹ he argues for "context-sensitivity" as the defining feature of Indian thinking. By way of unfolding this argument, he projects the question in four different ways with stress being laid selectively upon "Is", "an", "Indian", and "thinking." From among these, the fourth version of the question where the emphasis is upon "thinking" is of pertinence to this paper. His essay enunciates a framework of ethno-methodology by way of contributing to a volume on ethno-sociology pioneered by McKim Marriott. For Ramanujan, the fourth version of the question with emphasis being laid on "thinking" is evocative of a rumoured scepticism implied by the colonialists – "whether Indians think at all?" This question, as he reminds us, smacks of prejudice:

It is the West that is materialistic, rational; Indians have no philosophy, only religion, no positive sciences, not even psychology; in India, matter is subordinated to spirit, rational thought to feeling, intuition.²

In his own peculiar literary style, Ramanujan transposes the question on to the plane of scientific thinking. Citing eclectic examples from the biographical accounts of his father who sports a dual identity of an astronomer and an astrologer, alongside accounts of other oriental and occidental scholars, he establishes that Indian thinking dwells on a plane

1 A. K. Ramanujan, "Is There an Indian Way of Thinking?: An Informal Essay," in *India Through Hindu Categories*, ed. McKim Marriott (New Delhi: Sage Publications, 1990), 41.

2 Ramanujan, "Is There an Indian Way of Thinking?" 42.

of “inconsistency”, refusing to distinguish between the interior and the exterior self.³ Moving deeper, he finds an explanation in Manu for this apparent inconsistency. When one resorts to Manu for an explanation, we know what to expect. Manu’s code of law called *Manusmriti* is the prototypical example of the end of thinking, wherein ascension to orthodoxy pivots.⁴ Manu, as we know, prescribes specific moral functions for individuals in conformation to one’s “svadharma” (rightness of one’s conduct determined by one’s position in the caste hierarchy).⁵ Ramanujan contrasts Manu’s code of law, whose existence in history is recorded as a “smriti” (*Manusmriti*), as in memorized accounts compiled later in time, with the enlightenment thinker Immanuel Kant’s categorical imperatives in search of a system—“[there is a] system to this [Manu’s] particularism”—and qualifies them as context-sensitive rules, denoting a culture of “nature-culture continuum.”⁶ The sources he calls out to substantiate his point about the context-sensitive nature of Indian culture has wider appeal today, though its supporting premises may portend varying degrees of agreement and disagreement. One of the major disagreements the thought process behind this paper has with his argument in favour of context-sensitivity arises from the essentialism that it harbours, bent on defining “Indianness” rather than “thinking”. By transposing the focus to thinking on technology, this paper prods Indianness into a placeholder for thinking alternative or contra-modernities which can also be conceived as non-Western or non-European modernities, indicating its displacement from the abstract forms of thinking prevalent across the globe, couched as the ethics of AI.

Why does a call for thinking become the crucial aspect of thinking on technics? Auguring the technological turn in philosophical thinking, Martin Heidegger termed the engulfment of technology in our everyday lives as the “essence of technology.”⁷ For Heidegger, the essence of technology thrusts itself upon us in a mode of effacement of choice. We are waking up to the realization that technical objects are *enframing* our lives. That is, the essence of technology reveals itself as something fundamental to the times in which we live. Heidegger’s question is whether this historical nature of technology can be reflected upon in a philosophical mode of thinking. In search of an answer, Heidegger turns to the past of Western philosophical modernity to resurrect from its own ancient philosophical relics an alternative route to thinking on “technics.”

This alternative conceptualization of technics has a distinct trajectory traceable back

3 Ramanujan, “Is There an Indian Way of Thinking?,” 44–45.

4 Roshni Babu, “Tending Immanence, Transcending Sectarianism: Plane of Mixed Castes and Religions,” *CASTE: A Global Journal on Social Exclusion* 2, no. 2 (2021): <https://doi.org/10.26812/caste.v2i2.230>.

5 Ramanujan, “Is There an Indian Way of Thinking?,” 46.

6 Ramanujan, “Is There an Indian Way of Thinking?,” 46–50.

7 Martin Heidegger, “The Question Concerning Technology,” in *Basic Writings*, ed. David Farrell Krell (London and New York: Routledge, 2012), 213.

to the Greek period of philosophy which Heidegger extrapolates, thereby making this alternative endearing to the German Romantics, and to Eastern thinking at large. However, the crucial question for the conceptualization of alternative *techne* is to ask whether Heidegger's thinking liberates our understanding of technics from its monolithic instrumental meaning, or is it because Heidegger gives a comforting return to the so-called "homecoming" that it becomes endearing? It is certainly couched in the intersectional tension between tradition and modernization, which if endorsed by the Eastern thinking, entraps them within this dualistic tension between tradition and modernity. Hui underscores this as follows:

Heidegger's analysis travelled far beyond Germany, it is also well endorsed in the East. The experience based on the opposition between *techne* and modern *technology* is identified as the conflict between tradition and the modern, and resonates in cultures that are experiencing great transformation due to modernization. If we follow Heidegger's analysis, however, we might want to ask, how can we situate technics in the East? It is definitely not modern technology, but is it Greek *techne*?⁸

Thus, on the one hand, what may be termed as the un-thought of Heidegger's call for thinking on technology is its "territoriality." The relation between world, earth, territories, and thinking is not problematized in Heidegger. Whether philosophical thought has an integral relation to a geo-political territory called Greece and the people who inhabited this locale at a particular time is a recurrent question that echoes in the background of European modernity. Gilles Deleuze and Félix Guattari (D&G) introduce the term "milieu" of thought to move away from natural geographies of a region to the cultural milieu of a "people" who make thought a "possibility."⁹ Evoking the territoriality of thinking in this sense is, unlike Heidegger's call, not a "homecoming", but instead points to an earth that nurtures a thought. However, what Yuk Hui's intervention brings into view is an inherent tension between what D&G conceive as "geophilosophy" and the infinity of the universe that they presuppose the "cosmos" to be.¹⁰ One could see that Hui is unravelling this tension via his concept of "cosmotech," where his effort can be appreciated as an attempt to turn this "infinite" into a pluriverse of technics by advancing what lies in a nutshell in D&G, as multiplication of universes.¹¹

8 Yuk Hui, "For a Technodiversity in the Anthropocene," in *Techne Logos and the (Neg)Anthropocene*, ed. Noel Fitzpatrick and Conor McGarrigle (Dublin: EUT Academic Press, 2021), 21.

9 Gilles Deleuze and Félix Guattari, *What is Philosophy?*, trans. Hugh Tomlinson and Graham Burchill (London and New York: Verso, 2003), 196.

10 Hui, "For a Technodiversity in the Anthropocene." 23.

11 Hui, "For a Technodiversity in the Anthropocene." 21.

What Heidegger's reflection upon modern technology achieves, however, is in the multiplication of the concept of technics, thus liberating it from being conceived as a cultural and epistemic universal. But it took so long before we could gear the question towards Eastern thinking, and wherein the first task lies in framing the question before finding an answer. By framing the question as *The Question Concerning Technology in China* (2016), Hui directs our attention to a possible relativisation of the concept of technics not only in the West, but also in the East, thereby multiplying the Western as well as Eastern conceptualizations of technics. In the rear-view mirror of Eastern thinking, the probing twirls into modalities in which their respective cultures encountered and confronted the question concerning technics—whether “unconcealment of Being” is the mode of inquiry for probing the essence of technics in the East. Hui highlights the intricacies that arise from the absent dynamics of presences by pointing towards Kitaro Nishida's dissident response in denial of the idea of Being as a central preoccupation of thinking in the East. As the founder of Kyoto School, Nishida underscores the forms of affirmations of *Nothing* as that which acquired central importance in the Japanese tradition. In contrast, for the Chinese, a legible definition of Dao became the central concern.¹² Nevertheless, as we observe in Heidegger's conceptualization of alternative *techne*, an unfolding of the essence or the truth of Being, is invariably enmeshed in an element of mystery which gets usually translated as the spiritual or the mystical element. It makes us wonder how does one unravel this mystery inherent to the articulation of alternative *techne*? If we must give voice to the alternative concepts of technics, there must be an openness to understand them “not only factually and chronologically but also spiritually.”¹³ Now this statement is the anti-thesis of the positivities presupposed by the modernity of technics.

It explains why the question concerning conceptualization of technics from Indian pasts and presents is also interlaced with the task of dealing with the equivocation between spiritual cosmoses and ethnocentrism. But whether ethnocentric reasoning unveils anything about the dynamics of thinking on technics is the crucial question. Ethnocentrism is an explanatory model moored in the particularities of the local milieu, giving out a causal explanation of the cultural differences determining the genesis of material conditions generative of technical facts (a term used by Leroi-Gourhan to designate the regional differences in the cultures of technics). That is, ethnocentric relativism entails a comparable dimension inherent to its method. While at the outset, a comparative method may also reveal certain contingent or accidental features intrinsic to the material conditions of different cultures, whether it also ponders on the “forms of thinking” inherent to these cultural differences is a question Hui hurls into the discussion.¹⁴ In other words, does ‘contingency’ as a category encompass the differential genesis of technicity

12 Hui, “For a Technodiversity in the Anthropocene,” 21.

13 Hui, “For a Technodiversity in the Anthropocene,” 21.

14 Hui, “For a Technodiversity in the Anthropocene,” 22.

(a term coined by Gilbert Simondon)? Thus, Hui's approach eschews an easy comparison of cultural variables that influence technological development in favour of underscoring the incomparable dimensions in which is embedded the differential forms of thinking. It is in order to articulate these differential forms of thinking that he coins the term "cosmotechics".

Incommensurability that characterizes the definition of technics in non-modern ways of thinking makes the task of defining non-modern technics all the more difficult. This is so because the universal is taken to be a binary opposite of the particular, which usually gets translated into the local, thereby getting entrapped in the binaries of the local versus the global. That is why a call for thinking on non-modern technics in India must explicate its differential dynamics from claims to context-sensitivity, as much as from frameworks of ethno-centric methodologies, namely, ethno-epistemology, ethno-sociology, and ethno-histories. Incidentally, ethno-centric claims to scientific thinking also resort to materialistic accounts of traditions, thus foregrounding the same binaries. Ramanujan's account gives out a glimpse into this format:

Thus, all things, even so-called non-material ones like space and time or caste, affect other things because all things are 'substantial' (*dhatu*). The only difference is that some are subtle (*sukhma*), some gross (*sthula*). Contrary to the notion that Indians are 'spiritual', they are really 'material minded'. They are materialists, believers in substance (Marriott 1976, 1980): there is a continuity, a constant flow (the etymology of *samsara*!) of substance from context to object, from non-self to self (if you prefer) - in eating, breathing, sex, sensation, perception, thought, art, or religious experience.¹⁵

For an alternative, we must look into a scenario whereby non-modern ways of thinking reinvent themselves from within the complex mixtures of spiritual thinking—which is anyhow compulsorily attributed to non-Western modernities—and the materialist tradition, which claims to be in possession of the historical legacy of defending the scientific temperament. Thus, rethinking materialism becomes one of the primary tasks of conceptualizing non-modern technics. The following sections will take a short survey of contemporary approaches to materialist thinking on the historiography of science and technology in India. One of the hallmarks of this new historiography is the dislodgment of the method of "constructivism" which has been current in the philosophical and Indological thinking of the late-colonial period, but which, as we will see later, gets a facelift in the hands of Debiprasad Chattopadhyaya in the first ever philosophical

15 Ramanujan, "Is There an Indian Way of Thinking?," 52.

account of ancient Indian materialism.

2. Indian historiography on science and technological thinking

Acceptance of technology as a cultural universal adversely affected the thinking on technics in the non-Western part of the world. Unreflective adoption of the instrumental value attributed to technology became the blind spot of Asian thinking. Borrowing the British historian Arnold Toynbee's analysis, Hui makes a two-fold observation. First, Asians adopted the policy of appropriating foreign technology "incurring the notion of limited liability," as a practical solution which does not put oneself in "danger of ceasing to be able to call one's soul one's own."¹⁶ Secondly, this instrumental notion of technology undermines its value as a form of knowledge by engendering a dualistic "opposition between Asian thought and Western instrument" with moorings in the "belief that the former can master the latter."¹⁷ Methodologies prefixing "ethno" emerged countering this notion of technology construed as context-free, cultural, and anthropological universal, thus, promulgating context sensitive concept of "appropriate technologies". Appropriate technology has been the slogan of anti-colonial modernity in India, best represented by the figure of Gandhi who idealized the model of village-cottage industries. E.F Schumacher encapsulated it in his work *Small is Beautiful* (1973).

David Arnold brings in a variant to this ideal as "everyday technologies." His work looks at the history of technology in India through the lens of small-scale machines. In fact, he presents this concept as a counterargument to the thesis on technological globalization, beckoning to look at the particularities involved in this process. Such particularities, according to him, showcase the fact that the truly "global goods" are the small-scale machines of everyday use. Or, in other words, it is these small-scale machines which pioneered the globalization of technology. The fact that his work centres on technology, rather than the sciences, was a first of its kind in the historiographies on India, viewed through the lens of circulation of small machines, replacing the narrative anchored in human agency. In turn, Arnold's narrative about the history of everyday technology in India becomes a history of a specific cluster of Western made technologies, in their "local uses and vernacular meanings."¹⁸ The larger aim of his work is to decentralize the history of technology from its familiar ambit of Western societies. That is, to generate an understanding of the global technological transmission through its local uses. His attempt is to study the social life or cultural biography of identical technological objects

16 Hui, "For a Technodiversity in the Anthropocene," 24.

17 Hui, "For a Technodiversity in the Anthropocene," 24.

18 David Arnold, *Everyday Technology: Machines and the Making of India's Modernity* (Chicago: Chicago University Press, 2013), 4.

with the intent of undermining the presumed cultural universality of technics.¹⁹ And the specific aim of his work is to enjoin the “subaltern historians” voice by uncovering a new class of subalternity from among the social groups who endorsed and embraced small scale machines as part of their livelihood—the artisans, labourers, and migrant workers.²⁰ The machines that came to aid his narrative were sewing machines, typewriters, bicycles, and rice-mills. In a way, his argument is pitched against “state machines and instruments of political aggrandizement.”²¹ For him, historiography modelled after big technologies such as railroads, telegraphs, irrigation projects, and electrification aptly fit the model of “technological transfer” from the modern West to the non-Western world, which according to him, is a diffusionist model whose focus is on “innovation and dispersal” rather than on its “adaptation and use.”²² He juxtaposes this model to what he calls a “constructionist approach,” which refers to the social constitution, creative appropriation, or cultural assimilation to which they were subjected to by the indigenous masses and native elites, thus imparting a sense of social ownership that enabled the co-existence of old and new—the oxcart and the spinning wheel alongside the bicycle and the sewing machine as emblematic of Indian modernity.²³ Though this ruralisation of modern technology, rendered as “subaltern experience” of technological modernity in India, has a high moral quotient, it hurls in moderation as an ideal in technological uses, which has implied meanings of essentialising subalternity, as users of small-scale machines.

Nonetheless, what is hurled into view in the everyday model of technological use is its transnational character, endorsing a model of technological transmission which is juxtaposed to nationalistic models anchored in anti-colonial modernity, and imperialist models of big technologies emblematic of modernization. Dhruv Raina’s intervention into the field also more or less toes this line of disavowal of nationalistic model in favour of a model rooted in cross-cultural transmissions. Raina and Irfan Habib press on with the question of non-emergence of modern science in India, a question provoked by Joseph Needham which triggered the imagination of historiographers of science in India, alongside other non-Western regions of the world. Their work pays particular attention to the problems involved in generating a Needhamian model of historiography on India. But their conceptualization of science remains trapped within the epistemological model of inquiry. However, their careful study of the Indian scenario brings out a comprehensive view of the field, focusing upon the sociological approaches to the history of science. In turn, they celebrate the emergence of social history of sciences in India, whose foundation

19 Arnold, *Everyday Technology*, 5.

20 Arnold, *Everyday Technology*, 12.

21 Arnold, *Everyday Technology*, 11–12.

22 Arnold, *Everyday Technology*, 5.

23 Arnold, *Everyday Technology*, 6–9.

was laid by Prafulla Chandra Ray,²⁴ with complementary accounts provided by B. N. Zeal. These works which came up in the early 1900s are credited with the inaugural moment of critical thinking, unleashing “a response to the exaggerated depiction of India as a spiritual civilization, devoid of a modern scientific or industrial tradition.”²⁵ Raina and Habib’s work propelled, as such by the epistemological framework, by an inquiry based on explanatory models, which in the context of India becomes an enquiry into the non-emergence of scientific revolution in the non-West in a Needhamian manner, or at best an explanation of the missing picture in the historiography of science. While they depart from the methodology-based model of explanation that inspired the inception of the disciplinary field called philosophy of science into a social history of sciences, the demarcation between these two is very thin, as even the former was in search of better models of explanations of scientific discovery as exemplified by the work of the trio of Popper-Kuhn-Lakatos. Nonetheless, their insightful study of what Needham’s work enunciates in the non-Western historiography of science is path-breaking. Needham’s work displaces the ascription of science as a “cultural universal” in favour of other ways of conceptualizing the emergence and prevalence of scientific thinking in the study of history of science. In favour of a more “polycentric notion of science,” Needham decentralizes the historiography of modern science from its “founding impulse in the scientific revolution of the seventeenth century” whose conceptual origins are traced back to the Greek period.²⁶ Raina’s and Habib’s search for an alternative method of historiography and model of explanation lean toward Needham’s ecumenical vision of generating a cross-cultural history of transmission and exchange of scientific inventions and simultaneous histories of discoveries.²⁷ This vision is brought out more pronouncedly in a later work titled *Science between Europe and Asia* (2011). While this ecumenical axis of Needham’s vision is deemed adaptable to developing Indian historiography of science, there is an equivocal axis which Raina and Habib eschews—“marked by the polarities of the rational and the irrational, tradition and modernity,” which “provided progressivist historians of science in India with a frame to explore the non-emergence of modern science in India.”²⁸ They term this axis “the legend of suppression,” and explicate it as follows:

The legend of suppression is about two contending schools of thought, the one epistemically open, empirically oriented, and progressive, and the other bigoted, doctrinaire and obscurantist. The legend relates how

24 Dhruv Raina and S. Irfan Habib, “The Missing Picture: The Non-emergence of a Needhamian History of Sciences of India,” in *Situating the History of Science*, eds. S. Irfan Habib and Dhruv Raina (New Delhi: Oxford University Press, 2001), 281.

25 Habib and Raina, “The Missing Picture,” 281.

26 Raina and Habib, “The Missing Picture,” 284–85.

27 Raina and Habib, “The Missing Picture,” 286–87.

28 Raina and Habib, “The Missing Picture,” 287.

the former is persecuted, almost eradicated by the forces of the latter... It may be suggested that out of the diversity of the Needham corpus, the legend of suppression provides one of the most powerful themes for Needham's Marxist following in the history of science in India.²⁹

Thus, one can see from the above quote that the equivocal axis is of consequence for the understanding of the Marxist historiography of science, to which belongs the first ever philosophical undertaking in the history of materialist tradition carried forward by DPC. The subsequent turn in their analysis of DPC's orientation inspired by Needham's equivocal axis is as follows:

The legend of suppression...provided Chattopadhyaya one of many frames for exploring the origins of materialist thought in ancient India (Chattopadhyaya 1959, 1976), and the evolution of Ayurvedic medicine (Chattopadhyaya 1979). Chattopadhyaya's principle thesis appears to have been that materialist schools like the Lokayata and, later, the Ayurveda of the early period provide possibly the only instances that approximate to our present conception of science. The decline of these schools is imputed in part to their suppression by the religious orthodoxy...by the theocracy and those with a vested interest in the politics of irrationalism.³⁰

Therefore, in the final analysis, while their work effectively decentralizes the historiography of modern science anchored in a revolutionary model with its origins in the West by that of a counter model "commencing with the age of colonialism" in the non-West,³¹ their implied argument about the misfired indigenous materialist model harboured by the work of DPC needs further examination, which this paper undertakes.

3. Constructive method of Indian materialism

In his work, *Lokayata* (1959) joins hands with Krishnachandra Bhattacharyya (KCB) in defining his method as "constructive interpretation," which is contrasted with the method of exposition prevalent in his time in continuation with the classical traditions of Indian philosophy.³² In a way, appropriation of constructive method marks the period enjoining late-colonial and post-colonial Indian philosophical thinking dealing with the task of

29 Raina and Habib, "The Missing Picture," 290–91.

30 Raina and Habib, "The Missing Picture," 291.

31 Raina and Habib, "The Missing Picture," 297.

32 Debiprasad Chattopadhyaya, *Lokayata: A Study in Ancient Indian Materialism* (New Delhi: People's Publishing House, 2012), vii.

recovery of ancient mystical traditions. It amounted to the shared belief that interpretation of all ancient Indian systems required a constructive effort, that is, they are “problematic constructions” which “entail the risk of reading modern concepts where they do not actually exist.”³³ However, in contrast to how KCB designed constructivism by appropriating the transcendental framework of Immanuel Kant, DPC adopts the socio-economic model developed by Marx and Engels. This materialist method of constructivism then juxtaposes itself against the idealist interpretation, critiquing the latter’s ideological masking of the fact that social relations and material means of subsistence play a determining role in the development of philosophy and religion. Thus, this materialist reading of ancient Indian philosophical heritage examines them from a Marxist point of view. The Marxist view, as represented in the works of Marx and Engels, is touted as the most advanced form of the materialist point of view.³⁴ Despite ramifications, a Marxist outlook surveys the material conditions of a particular society of which its philosophical outlook is deemed to be an offshoot. Lokayata being a distinct philosophical outlook in comparison to other heterodox systems of Buddhism and Jainism, the objective of DPC’s constructive effort endeavours to build a proto-materialist account for these ancient texts. At the same time, DPC recognizes the fact that Indian material conditions present during the historical period that has been referred to by the views of Lokayata is a misfit to the prevailing Marxist accounts of materialism. Judging by the Marxist accounts of materialism, certain historical material conditions ought to be developed for the maturation of materialist outlook which seems to be inadequately present during the historical period being referred to by the Lokayata views. Lokayata, DPC observes, belongs to the pre-Buddhistic and even pre-Upanishadic period. This ancient period in history can only anachronistically be perceived to have occasioned the development of a materialist philosophy in the modern sense.³⁵ In view of this anachronism, he terms the Lokayata view “proto-materialistic.”

Two chief characteristics of Lokayata philosophy identified by DPC are: views prevalent among the masses and a this-worldly outlook. A this-worldly outlook is encapsulated by the phrase “*deha-vada*,” which holds the view that “the material human body (*deha*) is the microcosm of the universe, and its cosmogony attributes the origin of the universe to the union of male and female.”³⁶ How does this mythological imagination become befitting to be called a materialistic outlook? DPC finds two features about this outlook endearing: 1) that it designates a “stage of consciousness”: and 2) that this view is pre-spiritualistic. That is, their moorings are devoid of spiritualistic concepts like God, soul, and the other-World. Therefore, for him, it befits to be called “primitive proto-materialism”. Yet, equally true was

33 Chattopadhyaya, *Lokayata*, vii.

34 Chattopadhyaya, *Lokayata*, xiii–xv.

35 Chattopadhyaya, *Lokayata*, xvi.

36 Chattopadhyaya, *Lokayata*, xvii.

the fact that “it was far from acquiring the form of a philosophical outlook proper.”³⁷ But in the course of time, DPC observes, Lokayata developed itself into a philosophical system representing the strongest opposition to the earliest form of Indian idealism, namely, the Vedanta. Prior to that, primitive proto-materialism formed the “subsoil” of both the Vedic and Lokayata outlook, characterized by a “stage of pre-spiritualistic consciousness.”³⁸ Now given the fact that the idealistic outlook emerged only in the Upanishadic phase of the Vedic period, obviously enough, for DPC, this idealism is an outgrowth on the ruins of proto-materialism, whose defining feature is the un-dissociation of manual labour from mental labour. The distinctive remark that he makes against mixing heterodox systems lies in his denial of a common past or a shared future between Lokayata, Buddhism, and Jainism, notwithstanding the repeated mentions of Lokayata views that we come across in the latter’s textual sources. He believes that a shared ancestry of ideas exists only between Lokayata and the original Samkhya.³⁹ The underlying agenda behind the identification of a stage of consciousness representing primitive pre-class society is similar to most other post-colonial projects in philosophy—to showcase the historically contingent nature of spiritualistic traditions to Indian philosophical history. That is, it implies the assertion that as a late arrival to the Indian philosophical outlook, it too will fade away in the course of time.

Nonetheless, the problematic arena identified by DPC, which in his analysis ailed this primitive form of proto-materialism from maturing itself into a philosophical system, lies in its constitutive set of bodily ritual practices indicating its obscurity and obscenity, which he reasons to be part and parcel of what may be called as the “Tantric cults”. Tantrism is believed to have emerged out of the social and material conditions prevalent during the initial stage of agricultural economy, which was centred on “mother-right”, emphasizing the “female principle” called Shakti or Prakriti.⁴⁰ By contrast, the Vedic period emerged out of a pastoral economy which hinged on a patriarchal society. Delineating these respective differences in their material means of subsistence allows DPC to trace the origin of Tantrism in the fertility magic of the early agriculturalists. In DPC’s analysis, the nodal point of this agricultural ritual rests on an assumption—that the productivity of nature can be enhanced by imitation of human reproduction. That is, it is “an instinctive groping at a theory according to which the human body and the earth are assumed to have the same nature.”⁴¹ Therefore, DPC views the *deha-vada* which postulates the material human body as the microcosm of the universe as an ignorant and premature view about the mystery of nature that is deficient in emancipating itself “from the world

37 Chattopadhyaya, *Lokayata*, xvii.

38 Chattopadhyaya, *Lokayata*, xviii.

39 Chattopadhyaya, *Lokayata*, xxiii.

40 Chattopadhyaya, *Lokayata*, xviii–xix.

41 Chattopadhyaya, *Lokayata*, xx–xxi.

and proceed to the formation of the spiritualistic and idealistic world-outlook.”⁴² Thus, his view implies that the evolution of its mystical corpus into spiritualism or idealism inevitably marked the next stage in the advancement of human consciousness, although he would have appreciated this stage to be evolving into a form of synthesis.

The next step in his argument is constitutive of how he relates Tantrism with proto-materialism. In his analysis, the agricultural economy was rooted in a set of manual operations, and when brought in alliance with the ritual practices of magic, these alchemical Tantras became an aid to the manual operations of agricultural labour.⁴³ The cosmogony of this proto-materialism is centred on the female principle and mother-right. The female principle called Shakti or Prakriti is rooted in a concomitant view of “this-worldliness,” which translates itself into a concrete material view of *loka* or *iha-loka*, and *ayatah* meaning ‘the basis’; *ayatah* could also mean prevalent among the people, “loka-ayata.”⁴⁴

DPC’s argument amounts to saying that the most challenging aspect about the resurrection of Indian materialist tradition of Indian philosophy is convoluted by it being enmeshed in obscurity, heterogeneity, and ambiguity shrouding the materials and resources on which the Lokayata view is embedded. Surmounting the fragmentary nature of its source materials, DPC’s effort is to pitch his counterargument in juxtaposition to Madhavacharya’s account of Lokayata. Madhavacharya, in his work *Sarva Darsana Samgraha*, written in the 14th century A.D., presents a caricature of this view as “crude mob thinking.”⁴⁵ Historians of the idealist tradition have invariably considered Madhava’s text as the reliable starting point for reconstructing the lost Lokayata tradition. However, this obfuscates the three fundamental sources that DPC identifies as three fragmentary starting points for reconstruction: obscure cults of Tantrism, context of the origin of Samkhya philosophy, and the founding ideology of mother-right in ancient India.⁴⁶ DPC’s objections to Madhava’s depiction of the Lokayata view stems from the well-known predisposition the latter has toward the idealist Vedantic tradition. However, first he adopts the step of exposing the anachronism inherent to the implied authenticity claimed by Madhavacharya’s characterization of Lokayata given his location in the 14th century which is “separated from the original Lokayata at least by two thousand years.”⁴⁷ Madhavacharya’s idealistic inclinations are evident from his Vedantic style of presentation in a clear and coherent manner systematizing it as the principal source of our knowledge

42 Chattopadhyaya, *Lokayata*, xxi.

43 Chattopadhyaya, *Lokayata*, xxvii.

44 Chattopadhyaya, *Lokayata*, 2-4.

45 Chattopadhyaya, *Lokayata*, 1-2.

46 Chattopadhyaya, *Lokayata*, 5.

47 Chattopadhyaya, *Lokayata*, 20.

on the epistemology, metaphysics, and ethics of the Lokayatikas.⁴⁸ But what is more perturbing to DPC is how his account engendered a perceived sense of degeneration in later historiography, which is evident in their explanations of the cause of decline of heterodox systems of Indian philosophy, and Lokayata in particular.

The sources DPC amasses to counter Madhava's account spring from views that are inclined to revive rational and logical traditions inherent to the corpus of classical Indian philosophy, a view more pronouncedly marked today as the post-colonial voice of Indian philosophy. DPC cites Buddhaghosa, who describes the Lokayatic view as *vitanda-vada-satta*, the science of *vitanda* (disputations) and *vada* (arguments)⁴⁹. Similarly, Sukra Niti Sara refers to Lokayatikas as *nastikas* (those who deny God and the authority of Vedas), and who hold very strong logical arguments in support of "natural laws"—*sarvam svabhavikam matam* (everything is governed by natural laws).⁵⁰ Additionally, Kautilya is quoted as referring to *anvikshiki* (science of logic) in his *Arthashastra*, as a common thread that binds the thought of Samkhya, Yoga, and Lokayata. In short, according to DPC, Lokayatikas had earned the reputation as exponents of *tarkavidya* or *hetusastra*, from the camp of *nastikas* or heretics as opposed to the Nyaya and the Mimamsa schools of *haitukas* or *tarkis* (logicians), who belonged to the camp of orthodoxy. Thus, DPC invents a new locus and habitus for these logicians of Lokayatikas, earmarking them as the first logicians of the country who articulate logic as a tool in defense of popular interest.⁵¹

On the other hand, he quite convincingly revivifies the Lokayata tradition of materialism in resonance with Ambedkarian reading of epics when we turn our attention to his account of Lokayata ethics. The pivotal reference here is to the epic of Mahabharata, which narrates an incident of a Carvaka being killed in the event of Yudhishtira's return after the Kurukshetra war, mentioned in the Santiparva of Mahabharata. This particular Carvaka despises Yudhishtira's triumph in the war:

This assembly of the Brahmanas is cursing you for you *have killed your kins...* What have you gained by *destroying your own people and murdering your own elders?* You should die.⁵²

This rage is indicative of his condemnation of 'killing the kin', rather than human lives in general, which for DPC, is representative of tribal standards of morals. Therefore, in his analysis, the composition of this epic is indeed representative of a transitional phase

48 Chattopadhyaya, *Lokayata*, 8–9.

49 Chattopadhyaya, *Lokayata*, 24.

50 Chattopadhyaya, *Lokayata*, 25.

51 Chattopadhyaya, *Lokayata*, 25–30.

52 Chattopadhyaya, *Lokayata*, 33–34.

marking the displacement of tribal social mores, whereby Gita, encapsulating the new moral code, can be seen to be substituting old tribal value systems.⁵³ Consequently, in reference to Lokayata metaphysics, DPC makes some outstanding observations. Lokayatikas are generally compared to the Sophists and Skeptics of the Western metaphysical tradition. But as DPC catapults them into the fold of a cultic tradition of Tantrism, they become representative of a popular cult practiced by the tribal masses. And as a consequence, the Carvakas, in this new guise as proto-materialists, would beg a further classification under the category of materialism in juxtaposition to the Western philosophical traditions of materialism.⁵⁴

With respect to the sources of recovery of the Lokayatika view, DPC notes that due to the hostile nature of Tantric cults to the prevalent Brahminical framework, they are classified under the Asura view, which thus constitutes the primary source for the reconstitution of Lokayata materialism. Hence, what DPC accomplishes here in one stroke is a reinvention of Indian materialism in a ritualistic context, whereupon ritualism also gets to be redefined in its turn. In the general parlance, rituals beckon a religious milieu, which in the case of Lokayatikas seem to be lacking as they adhere to a materialistic idea of this-worldliness (*deha-vada*). The sources DPC draws upon to establish his views are Manusmriti, the Buddhist texts *Saddharma Pundarika* and *Divyavadana*, and Kumarila's work *Slokavartika*. Although these works refer to Lokayata disparagingly as "low arts" (especially the Buddhist ones), meaning divination, spells, omens, etc.—*tiracchana vigga*, one among the list of seven low arts mentioned in Maha Sila in the passage of Cullavagga—they undeniably associate Lokayata with some kind of rituals of spell.⁵⁵ The abstruseness surrounding the identity of Lokayatikas arises from them being referred to as Asuras, Demons, Raksasas, Daityas, monsters etc. by various Upanishads (scriptures of Vedic corpus). DPC's work of reconstruction of the Asura-view as the view of Lokayatikas associates them with an obscure set of practices characterized by its distinctive set of spells and associated rituals that attribute to them a cultic status by belonging to a belief system of Tantrism, which is conjectured to be older than the Vedas.⁵⁶

However, the question is, how do we situate their worldview within the larger framework of a cosmogony? At this stage of decipherment of the cosmogony of Lokayatikas, DPC's argument falters. Though DPC effectively defies the antagonistic sources of the kind some historians furnish to ascribe moral depravity to their practices, he loses sight of their heterogeneous functions. The usual obnoxious reference is to a yearly ritual gathering on a particular day to practice the five-fold ritual of the Tantrikas called "*panca makara*"

53 Chattopadhyaya, *Lokayata*, 33–35.

54 Chattopadhyaya, *Lokayata*, 35–36.

55 Chattopadhyaya, *Lokayata*, 39.

56 Chattopadhyaya, *Lokayata*, 49.

or five “*ma’s*”—*madya* (wine), *mamsa* (meat), *maithuna* (sexual intercourse), *mudra* (fried cereals), and *matsya* (fish).⁵⁷ While the other historical references despising this ritual lack an overarching philosophical telos to their argument, they nonetheless end up unmasking the heterogeneity entailed by the canopy of Lokayata, implying that they share a heterogeneous mix of ritual practices under variegated names such as Tantrikas (as has already been referred to), as Kapalikas who smear their bodies with ashes, as Yogins who recognize a fifth element called “*akasa*” (empty space), as Carvakas who like to chew (*carv*), eat without discrimination, and as Barhaspatyas who regard Brihaspati as the founder of their propounded ideas.⁵⁸ On the other hand, DPC’s effort to save Lokayatikas from their alleged moral depravity gets into muddled thinking in an effort to squeeze their heterogeneity under a homogeneous view:

...there is obviously no need to imagine any philosophy other than the materialistic one to form the basis of the *kama sadhana* of the Kapalikas... the so-called science of erotics of the Kapalikas was vitally related to the ideal of *artha sadhana* or the enhancement of material wealth...for the Tantrika cults like the Kapalika had their source in the archaic belief according to which natural production could be enhanced by the imitation or contagion of human reproduction, that is the *kama sadhana* and *artha sadhana* were not so unrelated after all.⁵⁹

That is, DPC’s recovery of ancient Indian materialism is narrowly focused upon the ejection of spiritualistic elements that got ascribed to it later in time. This narrow focus blindfolds his efforts on other possibilities of recovery. In his analysis, spiritualisation of Tantrism led to the superimposition of theistic ideas on its treatises, resulting in the creation of schools, namely, Buddhist Tantrism and Hindu Tantrism—widely known under its subdivisions as Vaishnava Tantrism or Shaiva Tantrism. In contrast, he postulates a case where Tantrism represents a “phase of human thought which was yet to be acquainted with spiritualistic values.”⁶⁰

In summary, his premises and conclusions are as follows:

1. Ancient Indian materialism can be encapsulated by its proto-materialistic view of “this-worldliness”.
2. Two specimens of “this-worldliness,” decipherable from the oppositional accounts of Lokayatika outlook are: a) *deha-vada* (identification of the self with

57 Chattopadhyaya, *Lokayata*, 52.

58 Chattopadhyaya, *Lokayata*, 52–53.

59 Chattopadhyaya, *Lokayata*, 54–55.

60 Chattopadhyaya, *Lokayata*, 53–54.

- the body); and b) Tantric cosmogony consisting of peculiar set of practices of rituals and spells.
3. Demographic identity of these practitioners of Tantric rituals is traceable back to the Indus valley period of Harappan civilization, and in particular to the world-view of Asuras.
 4. Asuras were the followers of Tantric cults who adhered to “this-worldly” sacrificial rites.
 5. To conclude, therefore, the Lokayatas were the progenitors of Indian proto-materialism, also known as ancient Tantrism.

The most enterprising move that DPC makes in the above-mentioned steps constitutive of his argument is with regard to the third one, which unambiguously traces the views of Lokayatikas to the period of Indus valley civilization, and to the demography of Harappa. This move is in defiance of a predominant view tracing the origin of Asuras to ancient Sumeria.

Prima facie, this argument might appear to be concurring to an ethnic view concerning the origins of Asuras, but a closer examination would reveal that DPC’s argument is anchored not in a question concerning the origins of Asuras as an ethnic community; rather it pertains to the origin of their cosmogony traceable to a certain demography, an argument very similar to Deleuze’s and Guattari’s articulation of the Greek milieu of origin of (Western) philosophy, though needless to say, DPC’s claim is a diffident one, devoid of a philosophical perspective tying it up with the Lokayata metaphysics or cosmogony. Nevertheless, his investigation is propelled by a quest to garner evidence of proto-materialism inherent to the view attributed to the Asuras, from the “traces of Tantrism in the material remains of the Indus valley civilization.”⁶¹ And the endeavour is to reconstruct a lost tradition of ancient Indian materialism. However, the question of whether it opens up thinking on techniques, and technical milieus that co-constitute these Tantric cult formations, remains out of focus; notwithstanding the affirmative account it furnishes on Tantric materialism:

...it really represented a naturalistic trend in the philosophical heritage of India. It was, moreover, characterized by a distinctly democratic attitude. As a matter of fact, its affiliation to the crafts and professions traditionally despised was greatly responsible for its being continually misunderstood.⁶²

61 Chattopadhyaya, *Lokayata*, 60.

62 Chattopadhyaya, *Lokayata*, 65.

4. Conclusion: Cosmotechical Materialism

Is there technological thought in India? Or China? Or Africa? This mode of questioning can appear very trivial as well as very profound. The profundity of this question reveals itself once we realize the scope of its answer to a similar question—is there technological thought in Europe? Or in the West? The fact that Heidegger did not embark upon the latter question to begin his reflections on an alternative conceptualization of *techné* earmarks the banality of this question to the Western context. At the same time, there is a dimension that makes this question trivial, “For what culture doesn’t have technics?”⁶³ As an anthropological universal, every human civilization has produced technics. The French anthropologist Andre Leroi-Gourhan calls this “technical tendency,” which in the history of human evolution appeared in the manner of “exteriorisation of organs and memory and the interiorisation of prostheses.”⁶⁴ Every human culture has showcased their skills for making technical artifacts in their quest for survival. Now, what marks the differential evolution of technics in different cultures is what Leroi-Gourhan calls “technical facts,” which are specific to each culture, as “they result from the encounter of the tendency and thousands of coincidences of the milieu.”⁶⁵ Hui’s intervention illuminates those aspects left out by Leroi-Gourhan’s explanatory model of diversification of technologies based on the conception of technology as a universal. These are the dimensions of cosmology and metaphysics. Leroi-Gourhan’s explanatory model of diversification cannot account for “the different pace at which invention proceeds in different cultures,”⁶⁶ which according to Hui, is embedded in their respective metaphysical understandings of cosmology. In other words, technics are not reflected upon in the same manner across different cultures. That is, technics, in the sense in which Europe and the West understood it, never existed in the non-West in a cosmological sense. As Hui lays emphasis on the cosmo-metaphysical sense of technics, he underlines instead that it is the philosophical concept of technics. Therefore, technics in the cosmological sense is another term for the philosophical understanding of technics. Technology as a universal concept cannot capture the cosmologically embedded metaphysics underlined by this concept and specific to each culture. This displacement of metaphysics from a logocentric, epistemological understanding is what may be called the ontological turn in the conceptualization of alternative technics. Hui traces the roots of philosophical probing into technics to the period of Hellenic philosophy.⁶⁷ This tradition reinvents philosophy as that which allows the logos and mythos to co-exist and dwell alongside each other, thus dialectically constitutive of onto-logos, or mytho-

63 Yuk Hui, *The Question Concerning Technology in China: An Essay in Cosmotechics* (Falmouth, United Kingdom: Urbanomic, 2016), 7.

64 Hui, *The Question Concerning Technology in China*, 8.

65 Hui, *The Question Concerning Technology in China*, 7.

66 Hui, *The Question Concerning Technology in China*, 9.

67 Hui, *The Question Concerning Technology in China*, 10.

logos. In effect, what Hui brings to the table for discussion is a philosophical mode of challenging the “homogeneous becoming of modern technology,” illuminating how it poses “a huge obstacle to understanding non-European cultures.”⁶⁸ Thus, in summary, cosmotechnics is conceived as an alternative to the pro-capitalist accelerationist model, called “Prometheanism”, which harbours faith in the power of technology to liberate us⁶⁹.

One of Hui’s objectives in articulating this alternative model of technics as ‘cosmotechnics’ is to reinvent the nexus of mytho-logos in concomitantly with the origin of technics from non-modern cultures. In his work, *The Question Concerning Technology in China* (2016), he follows this insight in uncovering an alternative figure to Prometheus from the ancient Chinese work: *Huainanzi*.⁷⁰ The point made here is not merely about relativisation of the origin of technics, “gesturing towards different mythologies on technics in China, Japan, India, or elsewhere.”⁷¹ Emphasis rather is upon their ontological contexts, the nexus between technics and the constitutive mythological cosmos. Therefore, a philosophical account of the genesis of technicity (a concept used by Simondon underscoring its constant bifurcation from magic), or relativization of technics, does not rest upon a comparison of technical objects or technical systems, in the way in which the French historian of technology Bertrand Gille conceived it.⁷² Leroi-Gourhan’s explanatory model, based on an ethnographic study of the development of tools, also falls short due to the same analytic rooting in milieus that influence the transition of technics as mere indicators of survival mechanisms. These explanatory models, according to Hui, are deficient of cosmologies. Therefore, a preliminary step towards a definition of cosmotechnics would undertake the task of qualifying the accidental cultural facts that impact inflections upon the universal technical tendency under the nomenclature of “cosmological setting.”⁷³ By thus bringing the accidental features of a cultural setting under cosmologies, is Hui implying an erasure of its accidental nature? Traditional ontological explanations imply an element of essentialism, but what Hui accomplishes here is a reinvention of ontology in tune with the anthropological turn towards plural ontologies of the nature-culture continuum, or what Pieter Lemmens terms as “multi-naturalism.”⁷⁴ Lemmens dispels the possible misinterpretations lurking behind the concept of “return” to native ontologies. Since the current global technological condition of the Anthropocene is part an outcome of the “colonization and imposed modernization,” this condition has become the destiny

68 Hui, *The Question Concerning Technology in China*, 12.

69 Hui, *The Question Concerning Technology in China*, 12.

70 Hui, *The Question Concerning Technology in China*, 15.

71 Hui, *The Question Concerning Technology in China*, 17.

72 Hui, *The Question Concerning Technology in China*, 17.

73 Hui, *The Question Concerning Technology in China*, 19.

74 Pieter Lemmens, “Cosmotechnics and the Ontological Turn in the Age of the Anthropocene,” *Angelaki* 25, no. 4 (2020): 4.

of even non-Western cultures.⁷⁵ Therefore, there are no pristinely preserved nature-culture ontologies to return to even in the East. This technological condition has been undermined in the works of anthropologists of “multi-naturalism,” and is a corrective that Hui’s work focuses upon. Hence, the overall objective of the ontological turn initiated under the rubric of cosmotechnics does not imply a “return,” evoking an oriental nostalgia, as Lemmens highlights, but instead endeavours to “overcome modernity’s opposition between nature and technology.”⁷⁶ For the same reason, Hui’s emphasis on multiple cosmotechnics is not the same as multi-culturalism, which is instead a term denoting multiple identitarianisms of cultures.⁷⁷ What Lemmens underlines here is that cosmotechnics is not another identitarianism making ontological claims on cosmologies. Rather, it urges an elicitation of multiple epistemologies, or epistemes on the genesis of technicity from culture-specific cosmologies, leading “toward a plurality of heterogenous technological trajectories.”⁷⁸ In relation to the contexts of non-modern materialisms, the idea of cosmotechnics provides an impetus to think afresh about the presupposed disjunction or bifurcation between magic and technological genesis.

In Hui’s attempt, we see an effort to define technics in conjunction with magic, as a step towards defining cosmotechnics in relation to Eastern cultural ontologies. This is in a tangential direction to how Gilbert Simondon conceived of the “technicity of the magical phase.”⁷⁹ The latter conceived this phase as “a field of forces” converging into intensities at “key points,” which he translates as “high points such as mountains, giant rocks, or old trees.”⁸⁰ For Hui, this inseparable unity between magic and the genesis of technics is what may be termed as “cosmotechnics.” The significant departure Hui makes from Simondon’s analysis is in regard to the faith impinging on a possibility of reinventing cosmotechnics in tune with our times. It is in denial of the statement: “there is no cosmotechnics in our time.”⁸¹ While Simondon could not advance his study on this subject, Hui finds certain cues lying unexplored in his work. For instance, taking the case of the TV antenna, Simondon makes the observation that:

...it seems to represent a gesture of sorts, an almost magical power of intentionality, a contemporary form of magic. In this encounter between the highest place and the nodal point of transmission of hyper frequencies, there is a sort of ‘co-naturality’ between the human network

75 Lemmens, “Cosmotechnics and the Ontological Turn,” 4.

76 Lemmens, “Cosmotechnics and the Ontological Turn,” 4.

77 Lemmens, “Cosmotechnics and the Ontological Turn,” 5.

78 Lemmens, “Cosmotechnics and the Ontological Turn,” 6.

79 Hui, *The Question Concerning Technology in China*, 20.

80 Hui, *The Question Concerning Technology in China*, 20.

81 Hui, *The Question Concerning Technology in China*, 21.

and the natural geography of the region.⁸²

What Hui finds remarkable about Simondon's observation is his divergence from the predominant perception, as may be evident in Levi-Strauss, regarding the incommensurability between the magical phase and the evolution of science. Levi-Strauss, in *The Savage Mind*, defined "magic as the science of the concrete, event-driven and sign-oriented, and science as structure-driven and concept-oriented,"⁸³ which explains their discontinuity. Simondon, by contrast, admits a continuity between the magical phase and the genesis of technicity, though about which he did not elaborate any further. We see a similar difference of opinion sparring between two of the prominent voices of Indian materialism on the subject of the relation shared between magic and science. K. Damodaran's critique of DPC arises from former's perception of an unbridgeable discontinuity between the phase of magic and evolution of science:

Sir James Frazer maintains that magic and religion are entirely different and even contradictory concepts. According to him, the fundamental conception of magic is identical with that of modern science, for magic, too, like science is based on the operation of immutable laws of nature... Debiprasad Chattopadhyaya follows Frazer uncritically and asserts that magic is opposed to spiritualism and religion...But this is not so...Belief in the supernatural is the essential characteristic of all religions...Belief in the supernatural properties of a material object transforms it into an object of religious worship.⁸⁴

Suturing this apparent incommensurability, in a recent essay Hui elaborates on Simondon's concept of "technophany," which is envisioned as a mediative force that reintegrates technical objects into culture.⁸⁵ Hui unearths this concept from a course Simondon gave in Lyon between 1960 and 1961 with the title "Psychosociology of Technicity."⁸⁶ What is remarkable about this concept is an "isomorphism and intimacy" presupposed between technicity and sacrality by Simondon.⁸⁷ For him, this intimacy indicates a "subtle competition" between technicity and sacrality for "access to the interiority of the real," which, however, evolves into a "hiatus" between sacrality and technicity with the evolution of technology as a cultural universal.⁸⁸ However, Simondon observes that

82 Hui, *The Question Concerning Technology in China*, 21–22.

83 Hui, *The Question Concerning Technology in China*, 22.

84 K. Damodaran, *Indian Thought: A Critical Survey* (New Delhi: People's Publishing, 2011), 25–26.

85 Yuk Hui, "Apropos Technophany," *Technophany* 1, no. 2 (2023): 3.

86 Hui, "Apropos Technophany," 1.

87 Hui, "Apropos Technophany," 7.

88 Hui, "Apropos Technophany," 7–8.

in the early phases of evolution, technical objects “re-enter[s] the fortress of culture through a ritualization, rich in images and symbols.”⁸⁹ This observation is indicative of the amenability of technical objects to rituals of magic. In reference to the isomorphism shared between the two realms, Simondon observes that “technicity is maintained by a network of reticular structure,”⁹⁰ which may seem to imply that this structure weaves a network of heterogeneous agents, including ritual practices of magic. However, as Hui reminds us, the idea implied here is not a “return” to the magical phase, but which nonetheless augurs the possibility that “technological thought can be resituated within a genesis together with religious, aesthetic, and philosophical thought.”⁹¹

In an effort to advance the thinking on cosmotechnics, and reinventing the magical dynamics inherent to pre-modern magical genesis of technicity from the “Tantric phase” of Indian philosophical traditions, it is significant follow the evidences Hui takes from the Chinese philosophical context of technics, in particular the concept of *Qi*. He highlights the fact that *Qi* can be translated as “tools,” implying a mediating “cosmological consciousness.”⁹² He demonstrates the importance played by a ritual cosmos in the Confucian classic *Li Ji* (the Book of Rituals) that “documents the importance of technical objects in the fulfilment of the *Li* (rituals)” thus qualifying *Qi* as *Li Qi*.⁹³

If in line with this analysis, had DPC admitted of Tantric rituals outlined in relation to the cultivation of soil as a set of mediatory technics developed to mobilize and to effectively enhance the fertility of agricultural processes, he would have identified and isolated those technics that emerged out of fertility-magic, related to seasons, type of soil, kinds of seeds, etc. Even when unaware of this relation between technicity and Tantric cosmological imagination, DPC quotes GB Frazer who terms these techniques as a mode of “bringing forth”—“to make the seed which they sow bring forth.”⁹⁴ The agricultural magic that is meant to enhance the fecundity of the earth assumes several forms of technics infused with fertile energies of the well, tree, and rains involving rain-making techniques, in alignment with the seasons of fertility and drought.⁹⁵ However, what goes unattended in this account is the exploration of technics involved, and the inherent conceptualization of cosmotechnics. Notwithstanding these shortfalls, tracing the trajectories of cosmotechnical thinking in India cannot discount the seminal contribution made by DPC for the sheer fact that cosmotechnical potential inherent to the cosmological imagination

89 Hui, “*Apropos Technophany*,” 3.

90 Hui, “*Apropos Technophany*,” 6.

91 Hui, “*Apropos Technophany*,” 6.

92 Hui, *The Question Concerning Technology in China*, 29.

93 Hui, *The Question Concerning Technology in China*, 29.

94 Chattopadhyaya, *Lokayata*, 286.

95 Chattopadhyaya, *Lokayata*, 286–92.

of Tantric materialism comes to the fore in his work, though he discards them eventually under the prejudiced binary between spirit/mind and body/matter that underlines the division between idealism and materialism in Indian philosophical thinking, especially during the modern period when historiographical retrospective analysis on Indian philosophical pasts were undertaken. In the Tantric sources, we see a suspension of the sharp division between mind and matter, and in turn, between idealism and materialism, given its orientation towards everyday practices aimed at bringing out solutions via the medium of the nexus of technical creative genesis of mystic beliefs, whereby the onus of creation is divested of an exclusive focus on its mystical prowess. A proto-materialist account of Tantric realm of rituals thus gives us ample scope to compare it with Hui's demonstration of "relational thinking" as founded on "resonances."⁹⁶ Agricultural rituals of magic are founded on "resonances" rather than "imitational" thinking, as is often explained mistakenly by DPC and other scholars on "magic." These relational dynamics ought to be expanded upon for the proto-materialistic, Tantric cosmotechnics to take philosophical contours.

Hui's methodological cautions come handily from his inquiries into articulation of a genealogy of cosmotechnics in China in this undertaking. As he carefully culls out for analysis a genealogy of the relation between *Qi* and *Dao* (terms which cannot be reduced to product and soul), avoiding more commonly used translations of *techne* as *Gong* (I, work) or *Ji* (skill), which, as he explains, would have turned this "inquiry into mere empirical examples" of *techne*,⁹⁷ Indian philosophical thinking has to identify terms denoting cosmotechnics from Tantric proto-materialism. Therefore, what is required of us from a non-modern perspective is, as Hui's work enunciates, "to trace different technicities, opening up the plurality of relations between technics, mythology, and cosmology."⁹⁸ In the Indian tradition, as eminently demonstrated by DPC, though later disapprovingly discarded, Tantric cosmologies from proto-materialist traditions of philosophy are certainly a starting point that is awaiting further exploration.

96 Hui, *The Question Concerning Technology in China*, 55.

97 Hui, *The Question Concerning Technology in China*, 54.

98 Hui, *The Question Concerning Technology in China*, 29.

Acknowledgements

The present paper has immensely benefited from the supportive editorial reviews recommending revisions that qualitatively improved the dimension of the argument, for which I am indebted to the editors, Yuk Hui, Pieter Lemmens, and Joel White. The anonymous reviews have been very perceptive and supportive for making revisions. My thanks to the copy-editor, Christopher Wortman, and Typesetting editor, Edwin Lo, for their kind attention to the technical details.

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How Should Men Be Made? Preciado in the Gender Laboratory

Jamie Ranger

Abstract

Paul B. Preciado's theory of the pharmacopornographic regime provides a radical theoretical analysis of the relationship between gender, technology and capitalism. Firstly, I explicate Preciado's key concepts and argue that their overarching theoretical project illuminates neoliberal capitalism's capture and commodification of sexual energies and desire. I contend that contemporary toxic heteronormativity in extreme online communities may be explained as reactionary internalisation/resistance to this process. I conclude by suggesting Preciado's theoretical insights gesture toward a progressive and emancipatory pathway for rethinking masculinity.

Keywords: Gender, technology, feminism, testo-junkie, transgender, Preciado, incel, biopolitics, capitalism

Introduction

“What can I do about all the years I defined myself as a feminist? What kind of feminist am I today: a feminist hooked on testosterone, or a transgender body hooked on feminism?”¹

“It is philosophically relevant today to undertake a somatopolitical analysis of world-economy.”²

That which is deemed natural, especially when placed in opposition to technology, is determined within a gendered context. Bacon’s *Novum Organum* refers to the technical arts as a means of helping science command Nature, forcing “her” into the role of humanity’s servant by surrendering her secrets.³ Technology, in the masculine register, has “the power to conquer and subdue her, to shake her to her foundations.”⁴ In contemporary science-fiction, nature is often rendered as a gendered, passive system of species and habitats that humans have the unique responsibility to save.⁵ The masculine controls, dominates, and investigates whilst the feminine is framed as passive, subservient; perhaps elusive. For Preciado, these are not only harmful stereotypes endemic to patriarchal thinking—the binary serves to mask the fact that gender is not an inherent or natural category but rather constructed and regulated through technological, medical, and pharmaceutical interventions.

Paul B. Preciado’s⁶ work seeks to undermine discourses that naturalise the gender binary and explore the artificiality of gender through the imposition of political and cultural practices that contribute to its technological construction. Preciado’s work extends the tradition of feminist posthumanism and poststructuralist gender theory by way of engaging with the relationship between gender and technology in the context of

1 Paul B. Preciado, *Testo-Junkie: Sex, Drugs, and Biopolitics in the Pharmacopornographic Era*, trans. Bruce Benderson (New York: Feminist Press, 2013), 21–22.

2 Preciado, 25.

3 See Francis Bacon, *The New Organon* (Cambridge: Cambridge University Press, 2000).

4 Bacon, quoted in Carolyn Merchant, “Secrets of Nature: The Bacon Debates Revisited,” *Journal of the History of Ideas* 69, no. 1 (2008): 162.

5 Julia B. Gibson, Kyle Powys Whyte, “Science Fiction Futures and (Re)Visions of the Anthropocene,” in *The Oxford Handbook of the Philosophy of Technology*, ed. Shannon Vallor (Oxford, Oxford University Press, 2022), 479.

6 Preciado previously identified as a lesbian woman, later going by non-binary pronouns, and in 2015, Preciado changed his name from Beatriz to Paul Beatriz and now identifies as a transgender man.

desire-production in late capitalism.⁷

I shall provide an overview of Preciado's key concepts—*potentia gaudendi*, the pharmacopornographic regime and technogender—consider the political implications of Preciado's somatopolitical analysis of world-economy and suggest that radical experimental approaches to trans-masculinity offer valuable insights into the interrogation and renegotiation of heteronormative masculinity among cisgender male feminist allies. In other words, *trans-men can show cis-men how men ought to be made*.

1. *Potentia Gaudendi* – The Politics of Orgasmic Force

Preciado's *Testo-Junkie* is part-philosophical monograph, part-memoir—brilliantly weaving erotic and existential personal anecdotes with rigorous historical case studies and conceptual engineering. Preciado wrote *Testo-Junkie* more than a decade ago, and yet given its prescience, it feels as though it could've been written next week. The central thesis in Preciado's work is that the contemporary transformation of neoliberal capitalism is increasingly ambivalent about the reproduction of binary gender hierarchies and gendered institutions because capital increasingly reduces the individual to a flattened embodiment valued for its capacity for *potentia gaudendi*, a semi-involuntary prompting of desires inherent to the body during moments of external stimulation. Preciado defines it simply as “orgasmic force’, the (real or virtual) strength of a body’s (total) excitation.”⁸

Preciado describes the new capitalism as “hot, psychotropic, punk,” as “imposing an ensemble of new microprosthetic mechanisms of control of subjectivity by means of biomolecular and multimedia technical protocols.”⁹ The world economy is framed as a circulatory system exchanging organs, fluids, steroids, cells, psychotropic drugs, and pornographic images across distributive networks, including both synthetic and pharmaceutical products being shipped across the seas and arriving on palates in port cities and instantaneously transmitted digital information. They are the extension of a perverse and diffuse planetary architecture “in which megacities of misery are knotted into high concentrations of sex-capital.”¹⁰ Preciado invokes the language of an imbricated and accelerating viscera to provide “snapshots of a postindustrial, global, and mediatic regime”

7 See Donna Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,” in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991); Rosi Braidotti, *The Posthuman* (Cambridge: Polity, 2013); Judith Butler, *Gender Trouble* (New York: Routledge, 1990).

8 Preciado, *Testo-Junkie*, 41.

9 Preciado, *Testo-Junkie*, 33.

10 Preciado, 33.

they term “pharmacopornographic.”¹¹ Our contemporary capitalism is differentiated from prior iterations due to the technical capacity of processes of “biomolecular (pharmaco) and semio-technical (pornographic) government of sexual subjectivity—of which ‘The Pill’ and Playboy are two paradigmatic offspring.”¹²

The novelty of contemporary technoscience is found in its capacity no longer to govern or discipline gender conformity so much as being capable of producing gender—the previously performed social fictions of gender may now be integrated directly into the body as “tangible realities.”¹³ Technoscience is no longer interested in “discovering the hidden truth in nature; it is about the necessity to specify the cultural, political, and technological processes through which the body as artifact acquires natural status.”¹⁴ It matters less what is natural to a female body, for example, but what can be done to a body to affirm our social understanding of what best assigns it as female. If gendered traits can be synthetically manufactured, then the sociological overlap of sex and gender in the public imagination becomes less important as the body becomes the site of gender production itself:

There is nothing to discover in sex or in sexual identity; there is no *inside*. The truth about sex is not a disclosure; it is *sexdesign*. Pharmacopornographic biocapitalism does not produce *things*...the pharmacopornographic business is *the invention of a subject* and then its global reproduction.¹⁵

Preciado invites us to consider the sex industry under these conditions, now reinterpreted as the ideal profit model for modern capitalism alongside financial speculation—“minimum investment, direct sales of the product in real time in a unique fashion, the production of instant satisfaction for the consumer. Every Internet portal is modelled on and organised according to this masturbatory logic of pornographic consumption.”¹⁶ The consumer wants to scratch an itch, they go to a website, they are presented with a variety of objects, often tailored by algorithms to meet targeted desires as efficiently and as quickly as possible; the product is purchased, the videos watched, the images enjoyed, and then the moment is gone, its duration and specifics logged for future algorithmic iterations—in the context of Amazon or eBay, further enjoyment when the product purchased arrives—

11 Preciado, 33.

12 Preciado, 33–34.

13 Preciado, 34.

14 Preciado, *Testo-Junkie*, 35.

15 Preciado, 36, author’s emphasis.

16 Preciado, 38–39.

and in the context of social media, the scrolling may continue and extend that session of attention. Orgasmic force—*potentia gaudendi*—is not always sexual but extended to also refer to underlying forces of entertainment, amusement, and titillation that command our attention.

Potentia gaudendi is malleable and impermanent *but is also impossible to possess or retain*; it cannot be reified or transformed into private property—I cannot possess your orgasmic energy, nor can I retain my own outside of my immediate experience of it at certain moments in certain circumstances—it “exists exclusively as an event, a relation, a practice, or an evolutionary process.”¹⁷ Preciado describes this energy as “inextricably carnal and digital, viscous yet representational by numerical values, a phantasmatic or molecular wonder that can be transformed into capital.”¹⁸ The technobodies that generate *potentia gaudendi* do not necessarily need to be living bodies—if they have already produced “content”—erotic or otherwise—their work may continue to exist; to be shared, liked, commented on, circulated, and by someone somewhere, profited from.¹⁹ It is a desire that cannot be fully enclosed and ultimately sated and so is eagerly sought within the capitalist system of infinite growth.

17 Preciado, *Testo-Junkie*, 43.

18 Preciado, 43.

19 Following Preciado’s style of splicing theory with anecdotal erotic memoir, I recall a memorable exchange as a student that provides an example of this strange phenomena: falling into inebriated conversation with a group of strangers as is customary in the smoking area of a nightclub, the conversation turned to the shared student pastime of consuming Internet pornography, and they spoke about their favourite porn actresses. Various names were bandied about—always ridiculous, glamorous, sometimes humorous monikers that one would never find on a passport—until one in their group brought up an actress and was swiftly rebuffed. After a quick back and forth and a google search, it was revealed that she had died the previous year—this led to a lengthy, disjointed but fascinating group discussion about the ethics of “appreciating” the work of a deceased performer. The immediate comparison was made with non-pornographic materials—we listen to songs recorded by deceased musicians, we enjoy the movies of deceased film stars, we read books written by deceased writers—why not enjoy pornographic materials with similar gusto? However, once the initial clamour for any excuse dissipated, the original objector argued that there is something about the logic of masturbation, and something about treating the dead with respect, that makes the act of pleasuring oneself to a dead porn actress inherently profane. The discussion then turned as to whether such a view assumes that porn actresses do not want their material to be used for that express purpose at all, or if the whole process is necessarily imbricated with exploitation. As a young student Marxist, I remember being preoccupied with questions of material production and ownership—who owns these videos? Is there an estate that secures profits? What if they acquire posthumous success—will there ever be a pornographic equivalent of Kafka, somebody who produces pornographic materials and leaves them to a friend like Max Brod, publishing them on their behalf? The emergent pharmacopornographic regime *does not care*—if the video exists, and it elicits desire, excitation and ecstasy, then it has value, and that value will be extracted and translated into profit. The desirous images become content; bodies fixed in time.

Preciado argues the market is no longer best understood as an outside power that expropriates, represses, or controls our sexual instincts, rather the body is not aware of its *potentia gaudendi* until it is “put to work”²⁰—femininity refers less to a set of natural characteristics and more to the quality of an orgasmic force that can be converted into an object of economic exchange. Capitalism, understood through its control of *potentia gaudendi*, “defines the difference between genders, the female/male dichotomy” and “the technobiopolitical difference between heterosexuality and homosexuality.”²¹ If sex sells, masculinity tends to buy—and femininity tends to be the product. The pornographic image has its definition extended to refer to its capacity to stimulate—independently of the will of any spectator-consumer—biochemical and muscular mechanisms that regulate and constitute pleasure.²² In this context, toxic masculinity—here referring to the set of behaviours and beliefs that promote the dominance and devaluation of women, and the valorisation of aggression and avoidance of vulnerability through the suppression of emotions in men²³—are reproduced and sustained through the libidinal deferrals made possible through pharmacopornographic subjectivity. The traditional patriarchal masculinity of old may have receded and been replaced with a more consumerist libertine model in the pharmapornographic regime, but the underlying asymmetry of gendered social relations remains hardcoded into contemporary modes of production and consumption.

The pleasure of the pornographic consumer is a contradiction of an excited body involuntarily stimulated and yet deferred from gratification—the consumer objectifies the porn actors to associate their own *potentia gaudendi* with the performers, and yet the consumer’s body is “reduced to an involuntary receiver of ejaculatory stimuli, thereby putting him in a position deprived of any power to make sexual decisions.”²⁴ Sexuality is performed; it is performative; it is the public staging of a conventionally private performance commodified and uploaded to a global network that profits from reproducing its global circuit of “excitation-frustration-excitation.”²⁵ Sexuality is historically private, only rarely presented as performance by the sex industry, but removing sexuality from our conventional frameworks of paid work does not free sexuality from contemporary biopolitical control—we may have sex behind closed doors, but what sexuality is and how our bodies stimulate, excite, frustrate, satisfy—that is still under the purview of a pharmacopornographic regime that influences our own performance of ourselves.

20 Preciado, *Testo-Junkie*, 46.

21 Preciado, 47.

22 Preciado, 265.

23 See Terry A. Kupers, “Toxic Masculinity as a Barrier to Mental Health Treatment in Prison,” *Journal of Clinical Psychology* 61, no. 6 (2005).

24 Preciado, *Testo-Junkie*, 270.

25 Preciado, 271.

If pornography may be understood as the transformation of sexuality into virtual, digital spectacle as information,²⁶ a conceptual continuity may be found between pornography in its conventional form, and the way that other contemporary spectacles of information are articulated on digital networks. A representation becomes pornographic when it discloses in public what is customarily supposed to remain private, and therefore, in the contemporary age of digital disclosure, the absolute spreading of private information across social media that represent both our personal and professional lives (Facebook, Twitter, Instagram, TikTok, LinkedIn—and now arguably, OnlyFans insofar as it can also operate like Patreon), I here argue we may see a parallel between the disclosure of the sex worker and the disclosure of the worker laid bare by the imposition to present themselves as an object for digital consumption.²⁷ In other words, the increasing normalisation of sex work—which I must impress to be a welcome change from cultural attitudes that scorn, shame, and endanger sex workers—comes from the increasing normalisation and standardisation of their own work as *content creators*, where the content provided aligns with the earlier notion of orgasmic force. What consumer better aligns with the circuit of excitation-frustration-excitation than the permanently scrolling social media user, Amazon shopaholic, or YouTube addict? Furthermore, the increasing overlapping and integration of our public selves (the selves that go to work, pursue career opportunities, network with colleagues) and our private selves (the selves that take selfies and upload them for our followers, the selves that joke and gossip in group chats, the selves that share our personal and political beliefs) through social media imposes a thinner and thinner gauze between how we want to be perceived at work and how we act at leisure. Through our collective translation into content creators on digital networks, the form becomes ubiquitous on platforms, and in doing so, flattens out the details of the content into “Content” as such.

2. Gender as Political Construction

Gender enters the discussion as a somatopolitical fiction, as a means of producing subjects of desire and representation, but as Preciado argues, since the post-war period of the twentieth century, binary epistemologies of gender are becoming increasingly redundant. When Preciado talks about the production of gender, we may lean towards thinking about queer, transgender examples, but the pharmacopornographic regime is involved in the production of all genders—

“heterosexuality must be understood as a politically assisted procreation technology.”²⁸

26 Preciado, 266.

27 Preciado, 266.

28 Preciado, *Testo-Junkie*, 47.

Heteronormativity is a technologically assisted and politically endorsed reproduction of the conditions of production, a means of preserving the status quo through the creation of future generations that will reproduce certain norms, and “the gradual transformation of sexual cooperation into a principal productive force cannot be accomplished without the technical control of reproduction.”²⁹ Being heterosexual, to be heteronormative, to have a “straight mind” or “straight way of thinking” is understood not as a sexual preference and its associated sexual practices, but as a ‘political regime’ that ‘guarantees the structural relationship between the production of sexual identity and the production of certain body parts (to the detriment of others) as reproductive organs.’³⁰ “Straight” couples must reproduce a certain way of life to reproduce certain conditions of production, and as long as those conditions of production are reproduced, it becomes increasingly irrelevant at a structural level if heteronormativity *qua* political regime is reproduced by homosexual couples (insofar as their desires align with certain values and norms of civic life, raising a family, securing a mortgage, defending the existing modes of production, circulation and consumption, disavowing alternatives modes of living, etc.).

In the post-disciplinary society, the reproduction of subjects is shifting in terms of institutional practices, but the production of bodies and their classification has been the purview of the western world since the eighteenth century—“sex, its truth, its visibility, and its forms of externalisation; sexuality and the normal and pathological forms of pleasure; and race, in its purity or degeneracy, are three powerful somatic fictions...eventually defining the scope of all contemporary theoretical, scientific, and political activity.”³¹ In disciplinary societies, technologies of subjectivisation controlled the body externally. The best example are sartorial interventions through history. Arsenic pads, once used to pale the complexion (they worked by killing the red blood cells under the skin); lead powder, once used to create the signature white face lauded in the Baroque period; extremely wide and long flammable crinoline skirts during the Victorian period, often worn with corsets underneath, which have been shown to deform the bowels, causing painful blockages, deform the lungs, opening them up to infections, and even cause death.

In the pharmacopornographic society, considered by Preciado to be post-disciplinary, the technologies become part of the body—“they dissolve into it; become somatechnics” and “technopolitics take on the form of the body and is incorporated.”³² Perhaps the most famous contemporary example would be the misuse of semaglutide (often known by its brand name Ozempic), an antidiabetic medication designed to supplement diet and exercise to control glycaemic levels in type 2 diabetes patients, instead used by celebrities

29 Preciado, 51.

30 Preciado, *Testo-Junkie*, 71.

31 Preciado, 69.

32 Preciado, *Testo-Junkie*, 78.

to make rapid weight-loss transformations (and even contributing to a shortage for those requiring it as a medical necessity).

For Preciado, “gender is a biotech industrial artifact.”³³ The biopolitical ideas of masculinity and femininity are transcendental essences from which contemporary gender aesthetics, normative codes of visual recognition (facial hair, timbre of voice, clothing choices, etc.) and psychological convictions create the conditions from which the subject proclaims itself a male or a female, cis- or transgender, heterosexual or queer.³⁴ Gender dysphoria may be reinterpreted and re-examined as the subject’s dislocation within an inherited pharmacopornographic biocapitalist regime that historically reinforced a gender binary but may increasingly accommodate diversions from heteronormativity so long as these differentiations reproduce the existing regime as much as the “nuclear family” served post-war capitalism. In this context, there remain immanent possibilities for creative reinvention to existing norms, but to have counter-hegemonic micropolitical effects, they must intentionally resist the forms of gender flexibility afforded to subjects within the pharmacopornographic regime of contemporary neoliberal capitalism.

The contemporary pharmacopornographic sex-gender regime is described as an “unexpected alliance between the nineteenth-century naturalist metaphysics of sexual dimorphism, focused on heterosexual reproduction, and the rise of a hyperconstructivist medical and biotech industry in which gender roles and identities can be artificially designed.”³⁵ The clinical notion of gender, once used as an instrument of rationalisation as an organising principle became necessary for the appearance and development of techniques that normalised and transformed living bodies, a process that includes historical methods such as “photographing ‘deviants’, cellular diagnosis, hormonal analysis and therapy, chromosomal readings, and transsexual and intersexual surgery.”³⁶ The process of normalisation that under disciplinary societies would involve techniques of assignment, accomplished by discursive or photographic representation, “is now inscribed within the very structure of the living being by surgical, endocrinological, and even genetic techniques,”³⁷ the body becomes understood as a techno-organic interface territorialised and determined by varying technological approaches,³⁸ which leads to various contradictions between our contemporary context and its historical inheritance. For example, our noses are considered part of our bodies to which we have absolute self-ownership—an extension of the notion that we own our own bodies as private property—

33 Preciado, 101.

34 Preciado, 102.

35 Preciado, *Testo-Junkie*, 103.

36 Preciado, 111.

37 Preciado, 112.

38 Preciado, 114.

but genitals “are still imprisoned in a premodern, sovereign, and nearly theocratic power regime that considers them to be the property of the state and dependent on unchanging transcendental law.”³⁹ Preciado has declared elsewhere that “enclosed in the neoliberal individualist fiction, we live with the naïve belief that our bodies belong to us.”⁴⁰

Returning to gender, my certainty of being a heterosexual cisgender male is not a natural alignment of my being at the ontological level, nor is it a natural cohesion of sexed body and mind, but rather “a somato-political biofiction produced by a collection of body techniques, pharmacologic and audiovisual techniques that determine and define the scope of our somatic potentialities and function like prostheses of subjectification.”⁴¹ Gender operates through affects, desires, actions, beliefs, and identities, and associated social responses to these stimuli. I am relatively tall; I am hairy and can grow a beard reasonably quickly; I have broad shoulders—these are all individual traits rendered as culturally masculine that intersect on my body as a surface for gender recognition from the other. Would I feel so comfortable in my skin, in my gender, if I were smaller; pigeon-chested; smoother? How quickly could something that feels as secure and fixed as my masculinity become radically contingent with a different somatic configuration, even with an aleatory selection from my own genetic inheritance? Preciado understands gender as a “psycho-political neoliberal modelling of subjectivity” that produces subjects that think of their gender as an extension of our own personal sense of self and behave like individual bodies, considering themselves “private organic spaces and biological properties with fixed identities of gender and sexuality.”⁴² The pharmacopornographic regime constructs gender to exist “before a public audience, as a somato-discursive construction of a collective nature, facing a scientific community or a network.”⁴³ This may partially explain the restrictive and intrusive policy convictions of transphobic lobbyists as the difference between ‘cis-’ and ‘trans’ is determined by resistance to the norms of these technical processes that produce the known somatic fictions of the masculine and the feminine body.⁴⁴ Instead, there exists *technogenders*, assemblages of “photographic, biotechnological, surgical, pharmacological, cinematographic, or cybernetic techniques come to construct the materiality of the sexes performatively.”⁴⁵

Another theoretical virtue (or perhaps implication for those resistant to methodological

39 Preciado, 116.

40 Paul B. Preciado, *An Apartment on Uranus*, trans. Charlotte Mandel (London: Fitzcarraldo Editions, 2019), 74.

41 Preciado, *Testo-Junkie*, 117.

42 Preciado, 117.

43 Preciado, 118.

44 Preciado, 127–128.

45 Preciado, *Testo-Junkie*, 128.

reconfiguration) of reorienting gender as political fiction produced at the level of the body is to take the question of gender identity out of the head; Preciado has been a notorious and controversial critic of the French psychoanalytic community, especially those influenced by Freudian and Lacanian methodologies to disregard the possibility of sex-identification outside of binaries: “I ardently appeal for a mutation in psychoanalysis, for the emergence of a mutant psychoanalysis, one equal to the paradigm shift we are experiencing.”⁴⁶

But where there are transformations of capitalist domination through subjectivity, there is always scope for resistance—political agency does not depend on rejecting technogender and trying to reimagine those original gender binaries through previous iterations of artificial construction rendered as natural (as may be a plausible interpretation of trans-exclusionary radical feminist approaches to hetero-masculine domination), but rather on reappropriation of those techniques of subjectivity production. As living bodies, as subjects constructed under these conditions—we are “the platform that makes possible the materialisation of political imagination.”⁴⁷ There is a recognisable Nietzschean voice—via Foucault—that Preciado adopts when considering the self-mastery of one’s gender expression as a point of micropolitical resistance: “biopower doesn’t infiltrate from the outside. It already dwells inside.”⁴⁸

The conventional critique of representation may be applied here. Testosterone is represented as typically masculine, something that masculine bodies produce more of and feminine bodies less, and yet ‘nothing allows us to conclude that the effects of testosterone are masculine’.⁴⁹ Testosterone is an androgen commonly associated with the male sex, but also exists in the bodies of females, albeit at lower levels, functioning in libido and sexual arousal. Androgens themselves are the precursors to oestrogens, which circulate at lower levels in both male and female bodies. In a world where hormonal therapy is possible, Preciado suggests the approach itself is analogous to “another form of mass communication—an attempt to conceptualise the body as a system of biocommunication.”⁵⁰ Hormones are described as carriers of messages and the body becomes the material effect of these transmissions, and then reframed in scientific discourse as chemical agents that act on behalf of masculinity and femininity, which can be deliberately inserted to the body to induce different gendering effects. Theorists of gender and technology, therefore, must look beyond how a discourse or technical innovation is represented, and instead at what could be done if applied without existing limitations, in this case, the

46 Paul B. Preciado, *Can The Monster Speak?*, trans. Frank Wynne (London: Fitzcarraldo Editions, 2020), 77.

47 Preciado, *Testo-Junkie*, 139.

48 Preciado, 208.

49 Preciado, *Testo-Junkie*, 141.

50 Preciado, 160.

inherited binary categorisations of prior iterations of biocapitalism that remain within the pharmacopornographic regime.

The transition from a disciplinary to a pharmacopornographic regime is exemplified with 'The Pill'. A synthetic oral progesterone taken regularly to a strict timetable, clinical trials were performed in Puerto Rico, the first to be "externalised and outside medical and pharmacological institutions and to take place in the domestic environment,"⁵¹ contributing to a new "pharmacodestic technique for (re)producing race, a form of neocolonial biotechnologies eugenics for controlling the reproduction of the species,"⁵² The birth-control technique is camouflaged as a feminine everyday use product, resembling a makeup compact in size and shape, a way of making public what once would have been considered private. Preciado contends that these forms of medical intervention "produce the subject they claim to shelter"⁵³—the woman who must discreetly ensure their newfound sexual liberation does not leave them at risk of pregnancy produces through the product the representation of both the woman who may be privately sexually liberal, and the woman who is publicly ashamed of their disclosing their liberation, hence the product's camouflaged packaging. Power is not impacting the body from outside, rather, "the body swallows power. It is a form of control that is both democratic and private, edible, drinkable, inhalable, and easy to administer, whose spread throughout the social body has never been so rapid or so undetectable."⁵⁴

3. Political Interventions

Preciado contends that the gains made for women during the initial stages of the pharmacopornographic regime—technology such as the Pill being the paradigmatic example—shifted the political approach of (white, liberal) feminism. If the state would no longer control the narrative of what constitutes a "good woman," liberal feminism appeared indifferent to those representations and expectations being determined in a more diffuse form across the market through commodities. For example, Preciado suggests an alternative history where feminists argue that masculinity should *also* undergo state regulation—castration for sex offenders, making the use of condoms legally required for casual sexual encounters, research directed into techniques for sealing of the seminal channel, "mass administration of Androcur (to lower the production of testosterone in cis-males), and so on."⁵⁵ That is not to say that this would be an emancipatory political

51 Preciado, 188.

52 Preciado *Testo-Junkie*, 189–190.

53 Preciado, 205.

54 Preciado, 207.

55 Preciado, 232.

project, but rather reveals that contingencies of politicising gender, the alternative demands, that could have been made along the way.

In the neoliberal biocapitalism inherent to the pharmacopornographic regime, Preciado argues it is necessary to oppose our existing gender regime “with a molecular and postpornographic transfeminism...to trigger a new counter-pharmacopornographic revolution.”⁵⁶ Contemporary feminism must resist the spectacularizing of femininity by the pharmacopornographic regime that wants to value bodies by their erotic output (orgasmic force) and the determination of what constitutes femininity by external political, medical and technological discourses, and instead embrace a form of personalised and counter-hegemonic rejection of patriarchal norms, through the production of new forms of gender identification and expression:

If I don't accept defining myself as a transsexual, as someone with “gender dysphoria,” I must admit that I'm addicted to testosterone. As soon as a body abandons the practices that society deems masculine or feminine, it drifts gradually towards pathology. My biopolitical options are as follows: either I declare myself to be a transsexual, or I declared myself to be drugged and psychotic.⁵⁷

Preciado argues that the ultimate problem of resistance to the existing technological regime of gender is breaching mainstream social thought with the idea that the genders, as well as the notions of heterosexuality and homosexuality, are politically constructed.⁵⁸ With such a reorientation operationalised, theorists of gender and technology are then able to ask questions about when, how, and which bodies have been pharmacologically managed, what the underlying political fictions of masculinity and femininity contribute to the contemporary management of gender, what type of subjectivity the existing pharmacopornographic regime wishes to reproduce, and of course, what type of subjectivity do we wish to create for ourselves and each other as part of a broader counter-hegemonic politics?⁵⁹

Preciado refers to the global corporation that “produces nothing,” a symptom of cognitive, informational, communicative capitalism in the global North. The corporation that produces nothing is arguably best understood through the platform model, increasingly adopted by corporations in the last decade, and symptomatic of the pharmacopornographic regime—social media platforms produce something approaching nothing, a blank canvas

56 Preciado, *Testo-Junkie*, 231.

57 Preciado, 256.

58 Preciado, 227.

59 Preciado, *Testo-Junkie*, 228.

to be shared by users, and operationalised to encourage the production of content that may be turned into data, reorganised, reinterpreted, reconstituted, and converted into profit.⁶⁰ Corporations in the post-Fordist mode of production wish to control the reproduction of bodies (in the sense of being somatic fictions) and their associated pleasures (recalling the excitation-frustration-excitation circuit) through copyright (and I would add intellectual property more expansively). We live, we make, we share, we exchange, we talk, we write, we want, we desire—we become abstract profit⁶¹—post-Fordist society is defined by “the sale of the force of communication and excitation produced by a living body—the sale of that body’s *potentia gaudendi*.”⁶²

For theoretical context, Preciado resists those referring to the feminization of work as “insufficient but also biased”—it is the racialised and transgender body that is most exploited by the transition to a global pharmacopornographic political regime.⁶³ The bodies of value for capital are those bodies endowed with the capacity to produce frustrating satisfaction—political subjects must be able to experience pleasure and produce it for others⁶⁴—bodies that fit the archetypical characteristics that engender sexual excitation may survive in the network longer than those disregarded by patriarchal biocapitalism. The overweight cisgender male struggling with loneliness; the middle-aged menopausal cisgender woman struggling to be taken seriously in the workplace and struggling to think of herself as a sexual being in her private life; the younger transgender woman struggling to pass in public and regularly encountering misgendering that shatters her confidence and the stability of her self-identity; the racialised cisgender people grappling with the imposition of white patriarchal beauty standards—all may be connected politically by their shared subject-position as those pushed out by the pharmacopornographic regime: “the new pharmacopornographic proletariat is not simply an economic subject engaged in producing sexual and toxicological surplus value; *it is also a new form of political subject*.”⁶⁵

Gender is no longer determined by social norms alone—pharmaceutical laboratories that produce new medico-technical interventions into the body, corporate and state medical and legal institutions that control and regulate the use of gender and sex biocodes such as progesterone, oestrogen and testosterone alongside our own individual and collective performances of dissident performance and aesthetics all contribute to modern gender representation. Preciado’s political project is clear:

60 See Nick Srnicek, *Platform Capitalism* (Cambridge: Polity, 2017); Shoshana Zuboff, *The Age of Surveillance Capitalism* (London: Profile Books, 2018).

61 Preciado, *Testo-Junkie*, 278.

62 Preciado, 285.

63 Preciado, 287.

64 Preciado, *Testo-Junkie*, 304.

65 Preciado, 304, my emphasis.

we must reclaim the right to participate in the construction of biopolitical fictions. We have the right to demand collective and “common” ownership of the biocodes of gender, sex, and race... a process of resistance and redistribution could be called technosomatic communism.⁶⁶

Here Preciado’s call mirrors the poststructuralist account of freedom for the subject: “(1) *x*, a socially-constructed subject, is free (2) from *y*, the present social context that constitutes her subjectivity, (3) in and through *z*-ing, resisting the present context/subjectivity, constructing new contexts/subjectivities.”⁶⁷ Despite the conceptual stretch of framing such resistance as a form of communism, Preciado also sees the political possibilities that may emerge at the individual level, advocating a “micropolitics of disidentification, a kind of experimentation that doesn’t have faith in representation as an exteriority that will bring truth or happiness.”⁶⁸ In the next section, I argue that the harmful effects of the absence of such an emancipatory politics may be found in extremist heteronormative online communities such as incels and “NoFap.”

4. Masculinity Failing Men

Despite encouraging signs of the pharmacopornographic regime indirectly facilitating emancipatory communities of resistance and solidarity, there are aberrations symptomatic of any cultural transformation that resist the potential of change even to their own disadvantage.

Incels (involuntary celibates) exist in online communities, groups of predominantly young men who reject their own somatic presentation as inferior to the “Chads” (think stereotypical masculine alpha males) who are able to seduce women. The failures of the incel are internalised, often through racialised self-hatred and dominant toxic heteronormativity—but also externalised—with liberal sex-positive feminist attitudes and the growing economic influence of women in work and the marketplace often considered unjust deviations from historical custom.⁶⁹ Incels are racist, prone to extreme language

66 Preciado, 352.

67 John Filling, “Liberty” in *Encyclopedia of Political Thought*, ed. Michael Gibbons, Diana Coole, Lisa Ellis, and Kennan Ferguson (Oxford: Wiley-Blackwell, 2014), 15.

68 Preciado, *Testo-Junkie*, 398.

69 Lauren Menzie, “Stacys, Beckys, and Chads: The Construction of Femininity and Hegemonic Masculinity within Incel Rhetoric,” *Psychology & Sexuality* 13, no. 1 (2020): 69.

that advocates violence,⁷⁰ and they lean politically—if at all—fascist.⁷¹

Studies of incel sub-forums on Reddit reveal through keyword analysis that references to gendered social actors are commonplace across the community. Considered preoccupied with physical attractiveness, incels group different types of men into a hierarchy in which conventionally attractive men are highest status, yet studies note that female social agents are not placed in a similar hierarchy.⁷² Incels perform a hybrid, contradictory discourse of masculinity in which they claim lower status than women while also calling other men weak and powerless using comparisons to women, which spirals into violent hatred of both women and themselves.⁷³ The cultural transformation from fixed heteronormative ideas of gender, themselves disadvantageous social impositions for incels anyway, creates a crisis of meaning instead of a space for opportunity due to resistance to the progressive political and social implications of such a transformation—it becomes more important to be “weak” men by their admission in a society where they may still control women than to be freed along with women. In this sense, there is continuity with historical forms of antifeminism.⁷⁴ The most extreme and violent incels, including those who have committed acts of domestic terrorism, consider themselves part of a political movement.⁷⁵ Through Preciado’s theoretical framework, we may interpret incels as toxic heteronormativity’s violent reaction to the increasing normalisation of liberal attitudes within the neoliberal capitalist states of the global North, a nostalgic internationalisation of eroding patriarchal norms.

Consider a different form of online community, understood as an anthropotechnical enterprise with its own novel, if ultimately misguided, interpretation of resistance to the pharmacopornographic regime. Micro-communities of heteronormative males are interpreting their own difficulties within contemporary cognitive capitalism through the prism of withholding sexual gratification. Given contemporary capitalism’s injunction to enjoy, young, isolated males find themselves as online inheritors of religious and

70 Alessia Tranchese and Lisa Sugiura, “I Don’t Hate All Women, Just Those Stuck-Up Bitches’: How Incels and Mainstream Pornography Speak the Same Extreme Language of Misogyny,” *Violence Against Women* 27, no. 15 (2021): 2719.

71 Casey Ryan Kelly, and Chase Aunspach, “Incels, Compulsory Sexuality, and Fascist Masculinity,” *Feminist Formations* 32, no. 3 (2020): 6.

72 Frazer Heritage, and Veronika Koller, “Incels, In-groups, and Ideologies,” *Journal of Language and Sexuality* 9, no. 2 (2022): 152 .

73 Alyssa M. Glace, Tessa L. Dover, and Judith G. Zatkin, “Taking the Black Pill: An Empirical Analysis of the ‘Incel’,” *Psychology of Men & Masculinities* 22, no. 2 (2021): 288.

74 Debbie Ging, “Alphas, Betas, and Incels: Theorizing the Masculinities of the Manosphere,” *Men and Masculinities* 22, no. 4 (2019): 639.

75 Catharina O’Donnell and Eran Shor, “‘This is a Political Movement, Friend’: Why ‘Incels’ Support Violence,” *The British Journal of Sociology* 73, no. 2 (2022): 347.

pseudoscientific advocacy of sexual self-regulation, and as such find communities of resistance in conservative circles.

The “NoFap” community is an anti-masturbation group set up on Reddit that now operates its own independent website and forums.⁷⁶ Members perceive masturbation as unhealthy and pathologise their own pornographic media consumption, internalise their own previous addictive behaviours as defects of character, and frame their self-imposed discipline as individual mastery and collective rejection of the hypersexuality of contemporary capitalism. Clearly this is not a coherent politics of resistance; it is a reaction to the pharmacopornographic regime emerging from a context of gendered expectations and desire production as a form of social discipline. These community norms resemble accounts of positive freedom as self-mastery: “(1) x, the ‘real’ self (individual or, more commonly, collective), is free (2) from y, desires, (3) to z, do whatever is rational,”⁷⁷ where the *first-order* desire to consume internet pornography is eschewed in order to maintain the *second-order* desire to achieve certain personal targets and goals.⁷⁸ Masculinity is the underlying cultural machine that renders an implicit endorsement of pseudoscience and an accompanying pop-cultural understanding of stoicism as a viable technique for self-mastery. Its reactionary critique of liberal capitalism is framed in moral and spiritual terms, suggesting that pornography and masturbation weaken men, sap their willpower, and reduce their potential for self-mastery and “higher” pursuits. While this can be framed as an effort to reclaim desire from the grasp of capitalist exploitation, the political reactionary nature of “NoFap” lies in its attempt to reassert a rigid, self-controlled, misogynistic form of masculinity.

In both cases, rather than finding new, emancipatory modes of desire or relationships, these groups retreat into older structures of gender and sexuality, seeking a kind of purity or authenticity in reaction to what they see as the excessive liberalization and commodification of human life. Thus, while their critiques of capitalism’s reduction of desire to the sexual and transactional resonates with our socio-technical conditions, their solutions intend to reclaim lost hierarchies rather than revolutionary engagements with the possibilities for new, egalitarian forms of desire or relationships. The existence of these toxic patriarchal subcultures lends credibility to Preciado’s analysis of the relationship between gender, capitalism and desire, but also underscores the necessity of cultivating anti-patriarchal responses to avoid anti-feminist cultural regression.

76 Felix Zimmer and Roland Imhoff, “Abstinence from Masturbation and Hypersexuality,” *Sexual Behavior* 49, no. 4 (2020): 1334.

77 Filling, “Liberty,” 5.

78 Charles Taylor, “What’s Wrong with Negative Liberty,” in *The Idea of Freedom: Essays in Honour of Isaiah Berlin*, ed Alan Ryan (Oxford: Oxford University Press, 1986), 177.

Returning to Preciado's journey through gender piracy to trans-masculine affirmation, I contend that trans-masculinity may offer radical and fruitful approaches to the collective socio-political project of *redesigning men*, of rethinking the role of masculinity in a free and equal society. Preciado's theoretical writings are an exercise in autobiographic exhibitionism and reinvention, of over-extending oneself publicly to demonstrate a willingness to be vulnerable with the other, and yet in doing so, to place the other in a voyeuristic register, to challenge their comfort in having access to so much of the author. If earlier forms of patriarchal masculinity found their expression in 'strong, silent types'—suppressed emotions and an unwillingness to appear vulnerable—and newer forms of masculinity are expressed with risk-taking consumerist play aligned with the producer/consumer neoliberal subjectivity, a radical masculinity that develops from these existing limitations within and beyond the pharmacopornographic regime must accommodate ironic awareness of existing privileges coupled with a willingness to follow hetero-divergent and queer-centric practices as sources of creative inspiration—to see solidaristic connections between the art of drag and affirming procedures such as hairline transplantation, teeth whitening, and steroid use for muscular development by cisgender men.⁷⁹ Extreme forms of heteronormativity perceive femininity as an external threat to masculinity—to be dominated and contained, desired and possessed—rather than a necessary supplement to the cultural limitations of masculinity reproduced as a means of reproducing the existing conditions of social reproduction. Trans-masculinity, as a self-authored embodied intervention, compels heterosexual cisgender allies to rethink the contingencies of their own gender expression, the extent to which their own social subjectivity is limited, compelled or determined by an unexplored conception of masculinity, and invites a pathway towards an exclusive and emancipatory reimagining of gendered norms as intentional, guided by performative principles rather than existing prejudices.

Conclusion

"My trans body is a rented apartment, a nameless space—I am still waiting for the right to be named by the State, I wait, and I fear the violence of being named."⁸⁰

"Happiness resides in the conviction that to be alive is to bear witness to an era, and thus to feel responsible, vitally and passionately responsible, for the collective fate of the planet."⁸¹

79 It is worth recalling that 'Testogel'—Preciado's fugitively applied supplement—was originally marketed to support men with hormone deficiencies.

80 Preciado, *An Apartment on Uranus*, 196.

81 Preciado, 201.

Trans rights are human rights, and both are under threat. Preciado's project is a theoretical intervention into existing feminist, anticapitalistic, poststructuralist, and sociotechnical discourses that brings the periphery into the centre of critical thought—we should not read in Preciado the cultural transformation of gender as an example of a progressive capitalism that ought to be left to counter traditional gender norms unabated by political interference, but rather read the pharmacopornographic regime as the untethering of certain forms of biopolitical control from economic control, an iteration of neoliberal late capitalism that objectifies and stifles as much as it contains the immanent possibility of liberation. Furthermore, the context in which trans lives are becoming more visible is also the context of violent political reaction.⁸² Any analysis of the relationship between politics and technology is incomplete without gender, and any gender analysis is incomplete without an acknowledgement of those that exist outside the gender binary. A radical politics of technology must accommodate “new affordances of perception and action unblinkered by naturalised identities.”⁸³ Returning to the ideological and cultural distinction between nature and technology, “if nature is unjust, change nature!”⁸⁴ Preciado's theoretical contribution demonstrates the contemporaneous methods by which late capitalism may intercept, distort, and commodify interventions into gender and technology that must instead be cultivated and redistributed as supplements to a personal and collective politics of resistance. Insofar as patriarchal heteronormativity is socially reproduced, we must reject toxic approaches (for instance, incelism and communities of pathological self-discipline) that reify and reproduce existing problematic limitations on the performance of manhood and manliness through their attempted rejection of the pharmacopornographic regime, and instead enter the gender laboratory and find instances of strangeness, of experimentation, of collective reformulation—to overcome the technology of patriarchy, *we must redesign masculinity together*.

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82 Tecelli Domínguez-Martínez, Rebeca Robles García, Ana Fresán, Jeremy Cruz, Hamid Vega & Geoffrey M. Reed, “Risk Factors for Violence in Transgender People: A Retrospective Study of Experiences during Adolescence,” *Psychology & Sexuality* 14, no. 4 (2023): 659.

83 Laboria Cuboniks, *The Xenofeminist Manifesto: A Politics for Alienation* (New York: Verso 2018), 93.

84 Cuboniks, *The Xenofeminist Manifesto*, 93.

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The Concept of Symbiosis Applied to the Human Technological Culture

Theo Wobbes

Abstract

This article examines the concept of symbiosis as a premise for elucidating the origin of the human-technology relationship. The starting point is the work of the biologist Lynn Margulis, who introduced the concepts symbiosis and symbiogenesis in the biological sciences. Her idea is that a long-lasting physical association that as symbiosis may be defined, will eventually by symbiogenesis lead to an evolutionary novelty. From this perspective the human-technology relationship is explained using philosophical ideas of Bernard Stiegler and Helmuth Plessner, who both considered this relationship essential for being human. I explain what is typical about the human life form as it is thought by them. Basically, the difference between the human and other organisms is that in the human, something is moved outside that in animals stayed within. I explicate that this exteriorisation, as it is called by Stiegler, at the same time is an interiorisation. This movement should be considered as a form of endosymbiogenesis by which the long-lasting use of tools was cognitively internalized in mind and body and became eventually a condition for the origin of an organism with a technological culture—the human.

Keywords: Symbiosis, (endo)symbiogenesis, prosthetic being, natural artificiality, exteriorisation, excentric positionality, dual aspect.

Introduction

The most powerful cause of alienation in the contemporary world resides in this misunderstanding of the machine, which is not an alienation caused by the machine, but by the non-knowledge of its nature and its essence, by way of its absence from the world of significations, and its omission from the table of values and concepts that make up culture.¹

This quote from the French philosopher Gilbert Simondon is a good starting point to investigate the character of humans' relationship with machines (the human-machine relationship). It is clear that Simondon believed, unlike some of his philosophical contemporaries, that the human is connected in an essential way with the machine as a *pars pro toto* for technology. In philosophy, it is not typical to take this a step further and consider the human-machine relationship as symbiotic. One of the reasons behind this is that symbiosis is often considered the association of two *biological* systems, usually for mutual benefit. Thus, the question arises: how can a biotic system be connected with an abiotic one? In this article, I will explain that the interconnectedness of the human and technology is such that the idea of a symbiotic relationship emerges as the clear explanation because of the interdependency of both components, as is seen in symbiotic characteristics in nature. Both components contribute to it and cannot exist without each other, even to the extent that human evolution and technological development were and still are mutually interdependent. With the aid of the ideas of French philosopher Bernard Stiegler, the German philosophical anthropologist, zoologist, and sociologist Helmuth Plessner, as well as other thinkers dealing with the human-technology relationship, I will explain that the entanglement of the human and technology is to be considered as symbiogenesis, as a protracted symbiosis between, respectively, the biotic and the abiotic components of the two partners as a tacit internalisation of dealing with artefacts. With this long-lasting symbiogenetic process causing both physical and cognitive transformations in human's ancestors, nature has taken a turn and thereby gave the biological evolution a new direction with the emergence of the modern human with an artificial or prosthetic life form.

In the classical philosophy of technology, the human relationship with technology was often first described as negative. During the first half of the last century, the approach was critical, with a focus on the implications for the human condition and society.² In the French literature, however, the approach of technology was basically an effort to

1 Gilbert Simondon, *On the Mode of Existence of Technical Objects*, trans. Cécile Malaspina and John Rogove (Minneapolis, MN: Univocal Publishing, 2017), 15–16.

2 Philip Brey, "Philosophy of Technology after the Empirical Turn," *Techné* 14, no. 1 (Winter 2010), 36–38.

understand and to evaluate technology *per se*. This resulted in the orientation of the French literature being mostly anthropological, emphasising (paleo)biological aspects. From this perspective, technology is not specifically human and begins with animals.³ The idea of human interconnectedness with artificiality was not new, having been articulated some decades earlier by Helmuth Plessner. Based on biological insights, he explained that the human distinguishes himself from the animal in that he is by nature artificial in the sense that he needs artificiality to be able to live his life.⁴ The human originates from nature and remains biologically an animal, but his way of living is not comparable with that of animals because he needs to establish culture to maintain his autonomous existence in the world.

According to Plessner, the underlying characteristic of this paradoxical life form is that the human is the only organism that virtually lives outside (above, behind) itself, a characteristic he defined as excentric positionality.⁵ Plessner does not give an underlying cause for the human life form; rather, he only intends to indicate the essential distinctions between the human, the animal, and the plant. Natural artificiality being one of the consequences of the excentric human life form is considered a fundamental law of anthropology. The human life form cannot be imagined without the use of artefacts in a cultural and social context; however, this living excentrically and in artificiality gives the human a feeling of unbalance that forces him to continuously seek new technical solutions. Consequently, the human is continuously developing his technologic culture as an ongoing process.⁶

The idea of human artificiality was also described by Bernard Stiegler, using different terminology. He calls this uniquely human part *tekhne*, meaning all domains of skill, including a range of non-technical skills such as language, art forms, and professional skills. That *tekhne* is prosthetic; it is entirely “artifice.” The underlying cause for the origin of those skills is that the human must compensate for his original default (*défaut originnaire*).⁷ He traces this idea back to the Prometheus myth in which Epimetheus, Prometheus’s brother, forgot to give the human the qualities or properties that maintain him in nature. In other words, the human starts with a lack. Unlike Plessner, Stiegler places the characteristic of the prosthetic life form in an evolutionary perspective, inspired by

3 Sacha Loeve, Xavier Guchet, and Bernadette Bensaude Vincent, “Is There a French Philosophy of Technology?: General Introduction,” in *French Philosophy of Technology: Classical Readings and Contemporary Approaches*, edited by Sacha Loeve, Xavier Guchet, and Bernadette Bensaude Vincent (Cham: Springer Publishing AG, 2018), 10.

4 Helmuth Plessner, *Levels of Organic Life and the Human. An introduction to Philosophical Anthropology*, trans. Millay Hyatt (New York: Fordham University Press), 288.

5 Plessner, *Levels of Organic Life*, 271.

6 Plessner, *Levels of Organic Life*, 297.

7 Bernard Stiegler, *Philosopher par accident: Entretiens avec Élie During* (Paris: Editions Galilée, 2004), 43.

the anthropologist André Leroi-Gourhan, and tries to provide an answer to the question of how the intertwining of the human and technics originated, concluding that the human and his tools have invented each other, making him a prosthetic being.⁸

In relation to human technicity, both philosophers assume that something has been exteriorized from out of the human that in the animal remained interior. The aforementioned concept of excentric positionality implicitly signifies that the human life form is basically outside himself, in contrast with the animal that is closed as a centric life form. In the footsteps of Leroi-Gourhan, Stiegler uses the concept “*extériorisation*,” that is generally speaking analogue to Plessner’s way of thinking: concluding that the production of artefacts was accompanied by the bringing out of thinking and language, i.e., a social life form.⁹ But Stiegler also poses the philosophical question of what was inside that was able to be exteriorized during the evolutionary development of humans. His compromise is that the inside invented the outside, and the other way around; however, that answer is not entirely satisfactory, although understandable and possibly even explainable, when translated to empirically obtained data. Plessner gives no answer to this question since he believes it to be unanswerable because the biological a priori of this characteristic cannot be further analysed by reducing it to other qualities.¹⁰

Both ways of thinking about the origin of the human relationship with *tekhnè* and/or the natural artificial life form that emerges from this relationship require an evolutionary explication of what has taken place during the process of bringing out or of exteriorisation understood as the condition that characterises the human way of living. The origin of the prosthetic or natural artificial human is not easy to understand from a gene-centric, Neo-Darwinist perspective. Today, other approaches are possible based on changing views of the evolutionary developments of organisms, focusing on top-down causation that fits in the Extended Evolutionary Synthesis. From this perspective, the biological concept of symbiogenesis could be significant in understanding the paradoxical development of the human as a natural artificial life form. This concept is thought to be a process of protracted symbiosis through which new structures, such as organs, tissues, physiologies, or other new features, appear.¹¹ From this point of view, the origin of the human-technology relationship should be understood as precisely symbiogenetic, in which the

8 Bernard Stiegler, *Technics and Time, 1: The Fault of Epimetheus*, trans. Richard Beardsworth and George Collins (Stanford: Stanford University Press, 1998), 16–17, 93–94, 193.

9 Stiegler, *Technics and Time, 1*, 116.

10 Plessner, *Levels of Organic Life*, 100. Plessner derives this idea from the German physiologist Hermann von Helmholtz, who introduced the concept of ‘organic modals’ for this final quality.

11 Lynn Margulis, “Serial Endosymbiotic Theory (SET) and Composite Individuality: Transition from Bacterial to Eukaryotic Genomes,” *Microbiology Today* 31 (2004): 172.

human ancestor originating from nature has developed an artificial life form in a long-lasting symbiotic relationship with tools, and by this symbiogenesis, his physical and cognitive aspects gradually changed into that of the modern human.

Symbiosis is not a commonly discussed concept in philosophy, even less so the idea that the human relationship with technology is at its origin symbiogenetic. By contrast, symbiosis is broadly discussed in biology and finds its origin in the second half of the nineteenth century, when it was coined by the German botanist Anton de Bary, designating the condition in which two different species live on or in one another.¹² This concept lasted until the 1960s, when the American microbiologist Lynn Margulis developed the appealing idea that symbiosis is one of the biological mechanisms that might have given the evolution of life a new direction. She showed that the mitochondria, the energy factories of a cell, were originally oxygen-respiring protobacteria. These microbes were probably ingested by anaerobic motile protists, eventually merging to form a new energetically self-supporting organism with organelles and a nucleus—the so-called eukaryotic cell. From an evolutionary point of view, this newly developed unit was the basis for the origin of multicellular organisms, including humans and other mammals. Margulis called this development symbiogenesis, a process based on a protracted symbiotic association.¹³

Despite all objections to this idea at the time, this mechanism viewed evolution from a new perspective. Instead of a descending (vertical) evolutionary development through mutations, natural selection, and adaptation (Neo-Darwinism or Modern Synthesis), the perspective of lateral (horizontal) acquisition of traits as an addition to the classic evolutionary struggle of life came into view. An entangled life form as the result of a symbiogenic process may benefit both the constituent organisms and change the pre-existing traits of the partners. A classic example is the mycorrhizal symbiosis between plant roots and fungi, in which the plant gains water and minerals from the far-reaching fungus, while the fungus benefits from the photosynthetic sugars made by the plant. It is currently assumed that almost all organisms are the products of symbiogenesis, and that important evolutionary changes have been gained laterally or horizontally.¹⁴ From that perspective, the Canadian biologist Jan Sapp made the remark “that we are beginning

12 Nathalie Oulhen, Barbara J. Schulz, and Tyler J. Carrier, “English translation of Heinrich Anton de Bary’s 1878 speech, ‘Die Erscheinung der Symbiose’ (‘De la symbiose’),” *Symbiosis* 69, no. 3 (2016): 133, DOI: 10.1007/s13199-016-0409-8.

13 Margulis, “Serial Endosymbiotic Theory,” 172.

14 Angela E. Douglas, “The Significance of Symbiosis,” in *The Symbiotic Habit* (Princeton: Princeton University Press, 2010), 1.

to understand that nothing in evolution makes sense except in the light of symbiosis".¹⁵ The question is whether that could also apply to the human-technology relationship. Interesting insights are currently developing that contribute to a better understanding of the human technology entanglement. In the next sections I explain the perspectives from which the question can be answered.

1. Placing Ourselves Outside Ourselves

In contrast to animals, humans make and use tools in order to live autonomously in the lifeworld they themselves have shaped. This view is rather apodictic or essentialistic because there are also animals other than humans who have that specific ability; however, this did not lead to the transformation of their lifeworld as is seen in the evolutionary development of the human. Indeed, there is a *forme fruste* of exteriorisation or excentric positionality in the great primates that have close evolutionary connections with the human, like the chimpanzee and the bonobo; however, their life form has not become artificial or prosthetic, and they still live as animals.

This difference in development has not gone unnoticed in the anthropological and philosophical literature. As noted, Plessner introduced the concept of positionality, with which he wanted to explain that this indication is not the same as position. Positionality is the way an organism dynamically deals with its surroundings. It does not occupy a position, but claims a position and can only be by becoming; process is the mode of its being.¹⁶ Humans have thus, from that perspective, acquired an excentric positionality whereas animals have a centric positionality. Leroi-Gourhan expressed this distinction between the human and the animal in a similar way:

The whole of our evolution has been oriented toward placing outside ourselves what in the rest of the animal world is achieved inside by species adaptation. The most striking material fact is certainly the 'freeing' of tools, but the fundamental fact is really the freeing of the word and our unique ability to transfer our memory to a social organism outside ourselves.¹⁷

15 Jan Sapp, "The Symbiotic Self," *Evolutionary Biology* 43, (2016): 601. Doi 10.1007/s11692-016-9378-3. In this paper the author paraphrases a 1973 comment from the evolutionary biologist Theodosius Dobzhansky. See Theodosius Dobzhansky, "Nothing in Biology Makes Sense Except in the Light of Evolution," *The American Biology Teacher* 35, no. 3 (1973): 125, <https://doi.org/10.2307/4444260>.

16 Plessner, *Levels of Organic Life*, 123.

17 André Leroi-Gourhan. *Gesture and Speech*, trans. Anna Bostock Berger (Cambridge MA: The MIT Press, 1993), 235.

This remark suggests that Leroi-Gourhan, like Plessner, also thought the human life form as being outside itself, while both thinkers also emphasise social interconnectedness. Inspired by this way of thinking, Stiegler worked out a philosophy that tries to explain what has taken place in the human ancestor during its evolution that enabled this animal to place his technical and social activities outside himself, by asking what was inside that made it possible to move his material and social existence outside. For this explanation, Stiegler used an aporia that was mentioned in the Meno of Plato: if you are looking for something you have to know what you are looking for, and if you do not know you will not find it. And if you find it, how sure are you that it is precisely that you were looking for? In other words: how could the human ancestor as an animal come up with the idea of using a stone as a tool if he was not looking for it?¹⁸

This aporetic way of thinking means there has to be an inside that gives the possibility to have a mental representation of the outside, in the sense that it is clear beforehand what should be searched for. Stiegler explains that this would mean that the ancestor—as an animal, or as an original man as portrayed by Rousseau—was able to have a transcendental representation based on an original knowledge of an object that did not exist at the time, for example a tool for cracking a nut. This idea of representation has its roots in the philosophy of Plato, and was eventually followed up by Kant, who articulated the question of transcendental knowledge.¹⁹ In order to avoid that aporetic problem, Stiegler, in short, finds the solution in the concept that the inside and the outside have invented each other in the interaction between the human and the object. The “who” found out the “what” and the other way around. He describes this interaction using Jaques Derrida’s concept of *différance*, that neither the “who” nor the “what” is, but their co-possibility, the movement in their mutual coming to be, their coming into convention.²⁰ The “who” is nothing without the “what,” and vice versa. *Différance* is below and beyond the “who” and the “what”; it poses them together, a composition engendering the illusion of an opposition. But it is not an opposition, because the human invents himself in technics and technics invents itself in the human. This pairing is a process wherein life in an organising manner negotiates with non-life, but in a way that this organisation functions

18 Stiegler, *Technics and Time 1*, 97.

19 Stiegler, *Technics and Time 1*, 99.

20 Stiegler derives the word or concept *différance* from Jacques Derrida, who uses it as a method to put words in perspective or to deconstruct them. By using an ‘a’ instead of an ‘e’ he refers to differing, both as spacing/temporising and as the movement that structures every dissociation. As such, it refers to the origin of differences and the differences between differences, the *play* of differences. See Jacques Derrida, “Difference,” in *Margins of Philosophy*, trans. Alan Bass (Brighton: The Harvester Press Ltd, 1982). Stiegler put *différance* in a slightly different perspective because in the described process time plays a role, for the biology as well for the artefact, both for the ‘who’ and the ‘what’. In fact, there is a functional doubling of *différance*.

under its own rules.²¹

Stiegler is well aware that this process also implies the introduction of the hypothesis of a “technological consciousness” and a certain form of anticipation. In other words, in the interactive and negotiating process, the human becomes gradually reflective about his existence, for example, seeing the artifacts left behind by his ancestors as an exteriorised memory. The way the human is cognitively in the world changes over time through manipulative interactions with stones and the products made from them. The consequence is that the history of tool use is also the history of humanity, starting with the flaked stone tool. The description of the start of human history is today read in manipulated stones. Stiegler also asks what the appearance of these flaked artifacts triggered, and what plasticity of the human cerebral cortex corresponds with this obtained stone; which proto-stage of the mirror is thus installed? His answer is that the proto-mirage is the paradoxical and aporetic beginning of exteriorisation. It was a long process, during which the human gradually emerged like a statue out of a block of marble. The paradox is to have to speak of an exteriorisation without a preceding interior—the interior is constituted in exteriorisation.²²

What are the epistemic implications of the long process of exteriorisation and interiorisation, which basically show that the pursuit of evolution did not occur through life alone? As discussed above, Stiegler considered the history of the flaked pebble to be the history of humanity, a condition that he named with a new word: epiphylogenesis.²³ This concept literally means that there is an additional external material aspect that influenced the natural course of evolution and led to the human. This addition is not genetic in nature, but is obtained through the manipulative interaction of the mineral flint stone. Somehow, this additive process led to a reflective memory: the processed flint was the first mirror held up to the human. At this point, hominisation became a process of exteriorisation, and human evolutionary development became an ongoing entanglement of the human and *tekhne*.²⁴

It is important to note that Stiegler describes the brain as a part of the physical body, a biological factor that is able to react plastically to changing external situations. Human brains have a larger volume than those of other great primates. In mutually inventing each other, the tangible and abiotic material surroundings changed the body, physically as well as mentally, with changes to the brain and other anatomical structures such as the hands and

21 Bernard Stiegler, “Leroi-Gourhan: l’organique organisé,” *Les cahiers de médiologie* 2, no. 6, (1998): 190.

22 Stiegler, *Technics and Time* 1, 141.

23 Stiegler, *Technics and Time* 1, 135, 142.

24 Stiegler, *Technics and Time* 1, 93–94.

the female pelvis. From a contemporary perspective, there was a physical interiorisation leading to (phenotypical) biological changes in the body that adapted to the changing life circumstances under the influence of making artifacts. To say it more clearly, the addition of the external material aspects was not just an addition to the phylogenetic evolutionary development; rather, it also induced at the same time changes in the dual aspect of the human ancestor's body, a concept which Plessner specifies as the entangled biological and lived body.²⁵ That dual aspect of which, unlike animals, the human is aware, that during the long period he emerged as a statue out of marble, physically and cognitively changed into the modern human. Technology has gradually become a condition for being human, to which his body has genotypically and phenotypically adapted. The interaction of the "who" and the "what" is a continuous process that is still ongoing, and is in fact a process of co-evolution. A forgotten side effect is that the human can now only think through a technological frame of mind, a characteristic he is not aware of, and that according to Stiegler implies that philosophy has denied and repressed its own question, too—that is, the question of technology.²⁶

Stiegler emphasises that what has happened should not be understood as a rupture with nature but rather as a new organisation of life; life organising the inorganic and organising itself therein by that very fact. Exteriorisation is the pursuit of life by means other than life.²⁷ The emphasis of this rupture is by Plessner placed slightly differently. He does not consider the human natural artificiality based on the centralized (animal) form of positionality as a new organisation of life.²⁸ What has fundamentally changed is that the human as a being is aware of the distance to himself, and has become conscious of the centrality of his existence: he is himself, he knows of himself, he notices himself, what makes him an *I*.²⁹ This means that the excentric life form itself, with all the consequences, should be considered a new organisation of life that manifests itself in the making of culture. From these viewpoints, nature has taken a turn, reorganising the human ancestor's animal life form in a human evolutionary (phylogenetic) line. According to Stiegler, the eventual consequence has been the rise of the modern human that made a technological culture in order to maintain himself autonomously with this new condition. Through and with that turn, there originated a third genre of "being: 'inorganic organised being'" or man-made technical objects as an intermediate between inorganic beings of the physical sciences and the organised beings of biology.³⁰ These nonorganic organizations of matter have their own dynamic when compared with that of either physical or biological beings,

25 Plessner, *Levels of Organic Life*, 273.

26 Stiegler, *Philosopher par accident*, 15, 22.

27 Stiegler, *Technics and Time 1*, 17, 163.

28 Plessner, *Levels of Organic Life*, 272.

29 Plessner, *Levels of Organic Life*, 269–270, author's emphasis.

30 Stiegler, *Technics and Time 1*, 17.

a dynamic, which cannot be reduced to the “aggregate” or “product” of other beings.

In other words, abiotic beings have developed with their own dynamics. These outside beings were, during a protracted symbiosis, interiorized horizontally or laterally into the human *in statu nascendi*. This long-lasting symbiosis is to be considered as a form of endosymbiogenesis which also made abiotic beings gradually part of human biology. Margulis defines endosymbiosis as a topological condition, being a kind of symbiosis where one partner lives inside of the other. Symbiogenesis refers to the appearance of new tissues, new organs, physiologies, or other new features.³¹ As for the novelties, the analogy with endosymbiogenesis begins to impose itself as the meeting of two beings, one biotic and the other abiotic, in a paradoxical entangled life form, creating a new organization of life.³² This co-evolutionary coupling is a long-lasting process in which life is negotiating with the non-living being, made possible through the biological ability to internalise that form of interaction.

2. Symbiosis Concept Inside and Outside Philosophy

In the philosophical literature, but also outside that field, the idea of connecting symbiosis with technology is uncommon but not unknown. In this section, I introduce some thinkers who have contributed to the discussion on symbiosis in relation to non-biological views. Not all ideas are useful, but some of them broaden the horizon. From that latter perspective, the comments of Simondon are of interest; he proposed that all life forms are not only symbiotic relationships with other organisms but also with technical objects. His ideas about symbiosis are probably based on his knowledge about the biological concept, which he uses extensively in one of his earlier works.³³ Therein, he remarks that the human is bearer of tools or instruments according to a concrete apprenticeship, a sort of instinctive symbiosis with the technical objects that are employed in a determinate milieu according to intuition and an implicit, almost innate, knowledge. The human technological frame of mind mentioned above is by him understood as a technical subconsciousness, which cannot be verbalised in clear terms by reflective activity; for example, it is found in farmers

31 Lynn Margulis, “Evolution, from a Gaian perspective,” presentation on the occasion of acceptance of an honorary doctorate at the Autonomous University of Barcelona, June 6, 2007. <https://www.uab.cat/Document/199/201/LlibreLynnMargulis.pdf>.

32 The concept endosymbiogenesis is, as far as I know, not used by Margulis. It is used more widely and I derived it from an article of Nathalie Gontier dealing with reticulate evolution. See Nathalie Gontier, “Testing the ‘(Neo-) Darwinian’ Principles against Reticulate Evolution: How Variation, Adaptation, Heredity and Fitness, Constraints and Affordances, Speciation, and Extinction Surpass Organisms and Species, *Information* 11, (2020): 352, DOI:10.3390/info11070352.

33 See Gilbert Simondon, *L’Individu et sa genèse physico-biologique* (Grenoble: Jérôme Millon, 1995). This edition is a reprint of the first part of his doctoral thesis, which was published in 1964.

or shepherds who directly grasp the value of seeds, the exposure of a plot, or the best place to plant a tree or to set up a pasture. Those men take part in the living nature of the things they know, and their knowing is one of profound direct participation that necessitates an original symbiosis, including a kind of fraternity with a valued and qualified aspect of the world.³⁴

Such a notion of the technical subconsciousness as it is mentioned by Simondon has similarities with the metaphor Stiegler uses when he notices that a fish can never see that the water in which it is swimming is wet.³⁵ As already noted, after exteriorisation, the human forgets what was interiorised in the beginning. The human is unable to remember what happened, and therefore naturalises his knowledge.³⁶ The same is no less true for his life form, which is basically prosthetic or artificial but is at the same time social. According to present-day insights, the development of tools is made possible in groups by the integration of aspects of technical and social cognition. Causal network cognition is a panhuman trait, despite possible variation in individual cognition.³⁷ The philosophical idea that all life forms are symbiotic can also be applied to the interindividual relationships between people. Simondon points out that the technical object becomes the medium and symbol of this relationship; a mental and a practical universe of technicity establishes itself, in which human beings communicate through what they invent. He adds that this is separate from the social working community and from individual relationships. Due to the developments of information and communication technology, this relationship has only deepened now six decades later, with the human and his developed technology more intensely brought together.

The aforementioned article by Lynn Margulis points to the relationship with machines too in the explanation of the Gaia hypothesis, as developed by James Lovelock in collaboration with her. Margulis' guiding principle is that living and non-living matter, self and environment are inextricably interconnected. She believes that, although we are, as humans, biologically separate, we cannot live without machines like plants cannot live without animals that pollinate and disperse them. It would be possible in the future that the human-fostered technology that she designates as the most recent form of "living organization" will be integrated into still more adept ecosystems.³⁸ Margulis has as a biologist always given technology a place in her thinking about symbiosis and symbiogenesis, based on the idea that life as a whole and not just human life naturally

34 Simondon, *On the Mode of Existence*, xvi, 107.

35 Stiegler, *Technics and Time 1*, 109.

36 Stiegler, *Philosopher par accident*, 2004, 15.

37 See Marlize Lombard and Peter Gärdenfors, "Causal Cognition and Theory of Mind in Evolutionary Cognitive Archaeology, *Biological Theory* 18, (2021), <https://doi.org/10.1007/s13752-020-00372-5>.

38 Margulis, "Evolution, from a Gaian perspective," 19.

incorporates its inanimate (i.e. abiotic) environment as it evolves. From that perspective, technology is part of the human survival strategy, and has extended our ability to sense and manipulate the environment that supports us. The fabrication by living beings of useful objects and materials outside their bodies is far more ancient than its tenure with modern humanity. Machines are to be considered as natural products of evolution, and are coevolving with us even as you read. In other words, the machine is in man, and as such our second nature and that of all our ancestors.³⁹ Inspired by Stiegler, Derek Woods goes so far as to call symbiosis a kind of prosthesis or technological process. For example, the lichen as a symbiosis of a fungus and an alga is considered by him as a nonhuman technology by which one autopoietic life form externalizes functions into another.⁴⁰

Influenced by Margulis, an additional interesting approach is put forward by the Portuguese evolutionary biologist and philosopher Nathalie Gontier, who presents the concept of reticulate evolution, which is evolution by means of symbiosis, symbiogenesis, lateral gene transfer, infective heredity, and hybridisation. She pays special attention to the role of symbiogenesis bringing forth interactions between the human, animals, plants, and machines. Her starting point is that a more pluralistic account of evolution is needed, and that reticulate evolution may play a role in that discussion. In that view, she is supported by the idea that network-like evolution is not only confined to biological evolution, but also abundantly occurs within sociocultural evolution, an idea that fits in the Extended Evolutionary Synthesis. She introduces the word symbiont as a unit of reticulate evolution, which in biology refers to the host as well as to the partner, or to the material, cognitive, cultural, or technological artifacts that form the basis of reticulate cognitive or sociocultural interaction.⁴¹ From that perspective, the human and his artifacts may be considered (materialized) symbionts that have over time synergistically brought forth more specialised cognitive behaviour and sociocultural repertoires. What she wants to make clear is that reticulate evolution finds place at community levels where synergistic, organizational traits delineate the units that evolve at such levels. She stresses that this new light on evolution may have consequences for the anthropological sciences.

Outside of philosophy, the symbiotic merging of the human and technology was first proposed in the 1960s by the computer specialist and psychologist Joseph Licklider. At that time, a relationship between the human and the electronic computer was expected to

39 Dorion Sagan and Lynn Margulis, "Welcome to the Machine," in *Dazzle Gradually: Reflections on the Nature of Nature*, eds Lynn Margulis and Dorion Sagan (White River Junction, VT: Chelsea Green Publishing, 2007), 78.

40 Derek Woods, "Prosthetic Symbiosis," *CR: The New Centennial Review* 22, no. 1 (Spring 2022): 160. <https://www.muse.jhu.edu/article/874474>.

41 Nathalie Gontier and Anton S. Sukhoverkhov, "Reticulate Evolution Underlies Synergistic Trait Formation in Human Communities," *Evolutionary Anthropology* 32 (2023): 29, DOI:10.1002/evan.21962.

emerge, which would allow actions to be performed more effectively than by the human alone. He interpreted this symbiosis as a viable, productive, and thriving partnership, in a time when computers were almost only used for calculations. He stressed that this human-computer symbiosis should be distinguished from the idea that tools and machines are mechanical extensions of the human that result in his replacement by automation, with those who remain generally helping the machine rather than being helped. By contrast, computing machines will do the routinisable work required to prepare the way for insights and decisions in technical and scientific thinking. He hoped that human brains and computers would become very tightly coupled, and that the new partnership would think in ways that no brain has had yet ever thought.⁴² In the light of current developments, Licklider is right that in these latter situations the coupling has characteristics of a symbiotic relationship: human brain and computer functions complement each other, and the interactions have taken a place in the reticulate network outlined by Nathalie Gontier, for which the modern application of information and communication technologies are good examples.

Éric Brangier and Sonia Hammes-Adel , who as ergonomists made a practical analysis of the concept, spoke of technosymbiosis as a cohabitation of humans and technology, in which they transfer what is programmable in themselves to technology, while at the same time the technologies become symbiotic agents that transform human beings. In their vision, technology is considered as a human extension in that it stretches human skills, aptitudes, capacities, and properties. Changes in technology enable humans to bring about changes in their own activities. This co-action leads to co-dependence, as humans rely on their technosymbiont and are confident in their capacity to use this symbiont and to interact with it. From a technosymbiotic perspective, humans experience a sense of mastery that indicates that they understand what technology means and how it can be used to improve their degree of efficiency and quality of life.⁴³ With their explanation of the human-technology symbiosis, these authors want to emphasise the intimate and interactive character of the relationship of the human and technology. They also point to the possibility of feedback with technology that influences its acceptance and the establishment of a durable partnership.

Recently Andrea Folkers and Sven Opitz described an example of this partnership with the concept of “symbiotic engineering,” meaning techniques that manipulate symbiotic

42 Joseph C.R. Licklider, “Man-Computer Symbiosis,” *IRE Transactions on Human Factors in Electronics* 1 (1960): 4, <http://groups.csail.mit.edu/medg/people/psz/Licklider.html>.

43  ric Brangier and Sonia Hammes-Adel , “Beyond the Technology Acceptance Model: Elements to Validate the Human-Technology Symbiosis Model,” in *Ergonomics and Health Aspects of Work with Computers*, ed. M.M. Robertson (Heidelberg: Springer-Verlag, 2011), 20, DOI:10.1007/978-3-642-21716-6_2.

relationships to repair or optimise life processes and ecosystems.⁴⁴ An illustration may be the reduction of the atmospheric methane that contributes to climate warming, and is partially produced by symbiotic microorganisms in the stomachs of ruminants. Modification of these methane producing gastric microorganisms could eventually lead to a worldwide reduced methane emission in the atmosphere. From this perspective the continuing process of the human-technology symbiogenesis could be used to influence other symbiotic relationships as a form of biopolitics. The authors are emphasising the symbiotic entanglement of species and suggest to correct human activities with a technological influence on a biological system.

In some ways, the co-action and co-dependence of humans and technology can be found in the ideas of Kevin Kelly, who suggested that the human is the reproductive organ of technology. He considers the human relationship with technology to be symbiotic, too. It is the human that replicates the objects made by him and spreads ideas.⁴⁵ That may be true, but it is also true the other way around. It is reminiscent of the comment made by Richard Dawkins, that a chicken is the egg's way of making another egg.⁴⁶ Like the chicken is biologically ready to make an egg, the prosthetic human is programmed through evolution to make objects that are useful for him. In fact, this is in line with the situation that applies for technology and that Stiegler articulated with the comment that the human invents himself in technics and technics invents itself in the human; the human enables technology to replicate technology. Extrapolating the above mentioned idea of Wood, technology can even be thought of as an autopoietic life form that in mutual interest externalizes functions into the human, and the other way around. Maintaining an underlying social life form supports the creation and use of technology. From these points of view, the human-technology relationship is considered a mutualistic form of a protracted symbiosis and therefore a never-ending process of symbiogenesis.

What this short literature overview shows is that for almost all these authors, the described relationship of the human and technology is thought as symbiotic, although some of them use this concept mainly as a heuristic metaphor. That means that in their approach they miss an element that goes beyond the fundamental character of this symbiotic life form that has its roots in nature, and about which Simondon notes in the epigraph to this article; that they in fact misunderstand the machine because they don't know the nature and the essence of it. Except for Margulis, only Gontier and Woods place the concepts symbiosis and symbiogenesis in an evolutionary perspective, and thereby pave the way for an attractive approach to clarify the origin of the human technology relationship. Especially

44 Andrea Folkers and Sven Opitz, "Low-carbon Cows: From Microbial Metabolism to the Symbiotic Planet," *Social Studies of Science* 52, no. 3 (2022): 331, Doi: 10.1177/03063127221077987.

45 Kevin Kelly, *What Technology Wants* (London: Penguin Books, 2011), 296.

46 Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 2006), 354.

Gontier accentuates that the sociocultural evolution requires us to recognize the plural nature of evolution, and that from that point of view horizontal reticulate transmission has been of great importance in for example the development of language. She expresses it clearly by noting that symbiotic interactions also impact our cognitive niches.⁴⁷ She is right in that respect but she does not make, however, a connection with the symbiogenic origin of the human prosthetic or natural artificial condition that makes up his cultural life form and that cannot be separated from the development of language. Influenced by Leroi-Gourhan, Stiegler already noted that language and technics are amalgamated in the process of exteriorisation (giving rise to to techno-logical memory).⁴⁸

The philosophical-anthropological way of thinking of these two authors is supported by contemporary scientific evidence for the hypothesis of tool-language co-evolution, meaning that there are strong indications of a relationship between, tool making, language, and cognition.⁴⁹ The development of technics and language are interrelated which implies a social interconnectedness between the human ancestors that in the end made the symbiogenesis with artefacts possible. As mentioned before, the production of artefacts was accompanied by the bringing out (exteriorisation) of thinking and language, i.e., a social life form. The interactions with tools supported by the use of language opened the way to human cultures. Stiegler thinks that he can afford to say that in that development technics is the pursuit of life by means other than life, creating a new stage of the history of life that invented the human.⁵⁰ After all, the origin of the human natural artificial or prosthetic life form is to consider a good example of an essential outcome of a reticulate, interactional, or symbiogenic evolution as the concept has been elaborated by Gontier. It is clear that thinking the symbiosis of human and technology only as a heuristic does too little justice to the real meaning of this relationship. In the next section I will discuss the effects of interaction with stones that eventually led to the making of tools.

3. Constitution of the Human Body

In the second section, I briefly discussed the plasticity of the dual aspect of the human body influenced by a changing exteriority. The material exterior, the “what,” starting with the flint that as an exosymbiont was further developed into technology by the human

47 Anton V. Sukhoverkhov and Nathalie Gontier, “Non-genetic Inheritance: Evolution above the Organismal Level,” *BioSystems* 200, (February 2021): 2, DOI: 10.1016/j.biosystems.2020.104325.

48 Stiegler, *Technics and Time* 1, 177.

49 Dietrich Stout, Thierry Chaminade, Jan Apel, Ali Shaftel, and A. Aldo Faisal, “The Measurement, Evolution, and Neural Representation of Action Grammars of Human Behavior,” *Scientific Reports* 11 (2021): 6, <https://doi.org/10.1038/s41598-021-92992-5>.

50 Stiegler, “Leroi-Gourhan: l’ingorganique organisé,” 190.

ancestor, has gradually internalised itself as a form of endosymbiogenesis throughout a lengthy evolutionary process, in which the whole body participated in an enactive way. The human mind and body form a reciprocal relationship with the artifacts as “inorganic organized beings”, adapting to the changing life form that emerged through the use of those artifacts. This is exactly what Stiegler stresses about the etymological presence of the verb “to come” in the con-venance of the simultaneous arrival of the interiority and the exteriority. He emphasises that a “prosthesis” does not complement or replace something because there is nothing lost, rather it is added. Written as pros-thesis, it brings in an element of time, a perspective: “The prosthesis is not a mere extension of the body, it is constitution of this body *qua* ‘human.’”⁵¹ In other words, the development of the body was realised through the long interaction between exteriority and interiority. I will put this interaction—which can actually be referred to as endosymbiogenesis—into a naturalistic perspective that has emerged the last decade or so, and that helps to overcome the dualist representational logic and to be as such an alternative for cognitive models that are popular in archeology.⁵² The philosophical solution that Stiegler suggests for the origin of the prosthetic human can only find its confirmation in naturalising the process that happened in the past.

Earlier, I remarked that the human invented himself in technics and technics invented itself in the human, and that this process induced biological and mental changes in the dual aspect of the human body, the entangled physical and lived body. This specific dual aspect of the body as it is defined by Plessner is, as mentioned, not confined to the human, but also applies to animals that are, in contrast to humans, not aware of that situation. That awareness should be interpreted as a property based on the human excentric positionality, or *mutatis mutandis* on Stiegler’s concept of exteriorisation as it was articulated by Leroi-Gourhan. The dual aspect implies that the human is simultaneously living within his lived body but also exists virtually outside that lived body, a situation that Plessner indicates as a true split in nature. The human lives at both sides of the split as a psychophysically neutral unit of these two spheres, but also represents the split itself. Using the term dual aspect in this sense, Plessner turned against the dualism of body and mind that was prevalent at the time. He considered the human reflective ability not from a phenomenological subject perspective, but from a virtual distance of the self from where the human is involved in himself and his lifeworld. The idea is that the individual—the living thing—is a body, is inside its body (as inner life or psyche), and is outside its body from a point of view from which it is both.⁵³ That human characteristic of virtually living outside himself (excentrically) in his body is a property of the biological body. That is the

51 Stiegler, *Technics and Time 1*, 152–152.

52 Thomas Wynn, Karenleigh A. Overmann, Lambros Malafouris, “4E Cognition in the Lower Paleolithic, *Adaptive Behavior* 2, no. 2 (2021): 101, DOI: 10.1177/1059712320967184.

53 Plessner, *Levels of Organic Life*, 271–273.

core of excentric positionality, and in fact also that of being exteriorised as introduced by Leroi-Gourhan. It is impossible to obtain empirical knowledge of how the process of exteriorisation could have happened; however, ideas that provide some clarity have emerged in recent years, which I will discuss briefly.

The cognitive scientist Edwin Hutchins proposed the premise that thinking is the interaction of the brain and body with the world. These interactions are the thinking processes themselves. In other words, thinking is not something that happens in the brain.⁵⁴ Practically, this means that an internal representation of a target such as a flint stone cannot be seen without the involvement of the body in relation to the environment. Cognition is more than a neural process. This way of thinking was earlier worked out by the pragmatist John Dewey, but also by Plessner. Consciousness is a process of undergoing in which the successful activities of the organism react to the environment to bring about modifications favourable to their own future.⁵⁵ In a similar way, Plessner remarks that consciousness is not in us, but we are rather “in” consciousness, that is, we relate to our surroundings as motile, lived bodies.⁵⁶

In contrast to what was assumed by archaeologists some decades ago, Thomas Wynn and his colleagues consider prehistoric stone tools not as windows to the prehistoric mind, but as components of thinking itself.⁵⁷ These authors recently proposed a solution for the problem stated above, how the “who” invented the “what,” focussing their attention on 4E cognition. They derive this perspective from the Material Engagement Theory of Lambros Malafouris as a theoretical framework in cognitive archaeology, in which cognition is viewed as influenced by being in a body.⁵⁸ By eschewing a dualistic cognitivist hominin homunculus, 4E cognition focusses on the tools themselves. In this approach, it is acknowledged that the brain’s function is influenced by being in a body that is located in a particular environment, which may even only be an object. On one hand, an object to be manipulated is considered an extension of the arm and hand (extended,

54 Edwin Hutchins, “The role of Cultural Practices in the Emergence of Modern Human Intelligence,” *Philosophical Transactions of the Royal Society B*, 363, no. 1499 (2008): 2011, DOI:10.1098/rstb.2008.0003.

55 John Dewey, “The Need for a Recovery of Philosophy,” in *The Middle Works of John Dewey, 1899–1924*, eds. Jo Ann Boydston and Larry Hickman (Charlottesville, VA: InteLex Corporation, 2003), 7–8.

56 Plessner, *Levels of Organic Life*, 62.

57 Wynn, Overmann, and Malafouris, “4E Cognition in the Lower Paleolithic,” 101. 4E cognition stands for cognition as embodied, embedded, enactive and extended. Cognition is here interpreted as a dynamic interaction of the brain, the body, and the material and social environments.

58 The basis of the Material Engagement Theory, human cognition is viewed as a dynamically interactive system that, in addition to brains, includes bodies and material forms. See Karenleigh A. Overmann and Thomas Wynn, “Materiality and Human Cognition,” *Journal of Archaeological Method and Theory* 26 (2019): 458, <https://doi.org/10.1007/s10816-018-9378-y>.

embodied, enactive), while on the other, the purpose of the object to be manipulated is generally located in an environment (embedded). In other words, the brain cannot be seen separately from its bodily and environmental context, an idea that was also elaborated by Francisco Varela and colleagues more than 30 years ago, meaning that cognition in its most encompassing sense consists of the enactment or bringing forth of a world by a viable history of structural coupling. This reflects one of the possible evolutionary pathways. We are always constrained by the path we have laid down, but there is no ultimate ground to describe the steps that we take.⁵⁹

I noted that this way of thinking was articulated by Dewey, who remarked that “... it is only by processes of [the] active manipulation of things in order to realise his purpose that he discovers what the properties of things are.”⁶⁰ This is a description of a situation after several hundreds of thousands of years of human development. How could the pragmatic basis of this idea be placed in a developmental evolutionary perspective? Wynn understands the activities of the stone knapping hominin from an ergonomic point of view (gestures, edges, masses, angles, and surfaces), while placing the manipulating activities in the Gibsonian concept of affordances, in that an affordance of the environment is what it offers the animal or provides for it.⁶¹ In lithic technology, these affordances are the opportunities and constraints detected by the knapper in the material at his disposal, i.e., the flint stone. The revealing of these affordances should not be seen as the result of an one-off confrontation but as the outcome of long-term manipulating with stones. In this context affordances should be considered visual and haptic/motor features of objects on the landscape that are perceptually detected and structured by an agent’s biological capacities and capabilities.⁶² Manipulating stones or other objects gives an agent bodily awareness of the character of that objects and gives parts of its body the possibility for acting with them as an affording action with its target-object.⁶³ In regard to the just mentioned quote of Dewey, is it imaginable how the successive generations of human ancestors gradually learned to manipulate flint stones effectively, with the ultimate consequence that the human and the tool have become each other’s complement.⁶⁴

59 Francisco J. Varela, Evan Thompson, Eleanor Rosch, “Evolutionary Path Making and Natural Drift,” in *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge MA: MIT Press paperback edition, 1993), 214.

60 John Dewey, *Reconstruction in Philosophy* (New York: Henry Holt and Company, 1920), 115.

61 James J. Gibson, *The Ecological Approach to Visual Perception* (New York: Psychology Press, Taylor and Francis Group, 2015), 119. Gibson was an American psychologist who developed the field of ecological psychology.

62 Thomas Wynn, “Ergonomic Clusters and Displaced Affordances in Early Lithic Technology,” *Adaptive Behavior* 29, no. 2 (2021): 188, DOI: 10.1177/1059712320932333.

63 Hong Y. Wong, “On the Necessity of Bodily Awareness for Bodily Action,” *Psyche* 15, no. 1, (2009): 31–48, DOI:10.1093/pq/pqv007.

64 James J. Gibson, *The Ecological Approach to Visual Perception*, 119. The central idea of Gibson’s

In other words, manipulating not only gives the agent information about the flint stone as an affordance but also about what the body experiences during that interaction with the stone mediated by the senses and what it is able to do with his parts. Internal representations emerge from using objects for specific purposes and recognising the properties that make them usable and do not precede the meaning of the use. In our ancestors, the long history of interactions with stones finally led to a situation of thinking about tools rather than thinking with tools, referred to as meta-affordance with the focus on means and not on ends. Eventually the hand-axe became meta-cognition in material form that performed the function of memory and task affordance in real time and space.⁶⁵ This characterisation of reflection on making and using tools fits with the emerging of an excentric way (virtual distance) of thinking. The consequence has been that the “who” became gradually able to apply the detected characteristic of the “what” in his lifeworld and with that the quality-associated cognitive skills. The developmental or negotiating process of the coming together of the human and his tools may be considered as the two inventing each other. That long-lasting evolutionary process of coming together can be interpreted as a form of endosymbiogenesis that eventually led to the natural artificial or prosthetic human, in which technology is cognitively interiorised or embodied in the dual aspect of the human body. Adaptation of the cognitive capacities of both bodily aspects (physical and lived body) of the human to the manipulated affordances has made this possible. Malafouris and Gosden summarise this process clearly: “The term human becoming signifies that humanity is not a genetic set-up or an evolutionary stage, but an accomplishment, a dynamic coevolutionary entanglement of people, materials, and things. Human becoming is never finished; it is always ongoing.”⁶⁶

With the outcome of this symbiogenesis, nature has indeed taken a turn. In that very developmental process, the human has gradually internalised the quality *tekhnè* on his own, not to be considered as a compensation of an original lack, as it is expressed by Stiegler, but as “making use” of a disposition such as symbiogenesis that nature offered him in relation to the abiotic things around him at the right time and place. Through the process of internalising, these abiotic things have been given the opportunity to become a whole with a biological system in the capacity of a natural artificial or a prosthetic being, the human. Just as, in nature, symbiotic relationships of biotic systems are necessary to ensure the existence of the partners. We find this exemplified indeed in the human

concept of affordances is the complementarity of an animal and the environment; both are inseparable from each other. That idea has similarities to the philosophies of Plessner and Dewey related to that.

65 Thomas Wynn, “Ergonomic Clusters and Displaced Affordances in Early Lithic Technology, *Adaptive Behavior* 29, no. 2 (2021): 187, DOI: 10.1177/1059712320932333.

66 Lambros Malafouris and Chris Gosden, “Mind, Time and Material Engagement”, in *The Oxford Handbook of History and Material Culture*, ed. Ivan Gaskell and Sarah Anne Carter (Oxford: Oxford University Press 2018), 2.

where symbiogenesis of a biotic and an abiotic system has led to interdependence of both systems.

Therefore, the question that should be asked is what the nature of this symbiotic relationship really is. It is becoming more and more clear that, despite all blessings, the dependence on each other is not only for mutual benefit, and that in some areas the relationship runs up against its limits. Being natural artificial or prosthetic is not value-neutral, and there are aspects of it that are detrimental for the humans themselves as well as for their lifeworld. The human life form, as the outcome of endosymbiogenesis with technics, and the resulting technological evolution have eventually also resulted in ecological problems such as global warming, climate change, and loss of biodiversity that ultimately may be threatening for all life forms. In her work *The Symbiotic Planet*, Margulis herself asked not without reason whether we have the intelligence and discipline to resist our tendency to grow without limits.⁶⁷

Due to their excentric positionality which, as explained, is to a large extent based on the meta-cognition of long-lasting tool use, humans have started to realize that they are part of a symbiotic complexity as a basic property of living systems, indeed, and are not living outside of it. They have always been part of a process they were unaware of, and that now confronts them with the consequences of their life form. They are, however, the only organisms on the planet that can reflect on this situation, and therefore also know that they are ultimately morally responsible for the negative effects on the biosphere that they created themselves. From that perspective, Erik Hom and Alexandra Penn rightly notice that the Anthropocene forces us to re-examine our relationships with the “natural world” and also that the human agency and responsibility should empower us to take a more active role.⁶⁸ This implies that the human creativity that has been accompanied by the development of his prosthetic life form will have to provide the solution to turn the tide, with in mind that our planet is a symbiotic planet, and that the human relationship with technology is ontologically symbiotic too, as explained in this article. The consequence will be that humans’ activities should basically be in accordance with the symbiotic biosphere they live in and are a part of.

67 Lynn Margulis, *The Symbiotic Planet: A New Look on Evolution* (London: Phoenix 2001), 160.

68 Erik F.Y Hom and Alexandra S. Penn, “Symbiosis and the Anthropocene,” *Symbiosis* 84, (2021): 258, <https://doi.org/10.1007/s13199-021-00794-0>.

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The Imperative of Co-existence: On Technique in Georges Bataille's Social Theory

Tomás Ramos Mejía

Abstract

In this article I examine the problem of technique in Georges Bataille's social ontology by means of a counterpoint with Bernard Stiegler's philosophy. I will defend the following theses: 1) although Bataille, at first sight, seems to pose an opposition between the technical and the social, for him, as for Stiegler, both are co-constituted in the bodily projection. This movement of externalisation is the continuation of life not by biological but by technical means, and the production of social existence by the useless dissipation of energy-matter; 2) both Bataille and Stiegler conceive society as an affective-cognitive circuit illustrated in a spiral movement composed of spirals, i.e. psychic individuals and artificial organs. I affirm therefore that Bataillean social ontology can be considered a key antecedent of Bernard Stiegler's philosophy of technique.

Keywords: Stiegler, Bataille, Technique, Expenditure, Vortex.

Introduction

Georges Bataille had great importance in contemporary philosophy and humanities in general and his texts have given rise to countless studies on different aspects of his intellectual trajectory. In this article I attempt to address a little-studied dimension of his work, perhaps because it was not directly addressed by the author and, above all, because it becomes visible and legible from later developments. I am referring to the question of technique and, within this, to the French tradition, whose reconstruction and consolidation are recent developments. Although there are relevant authors in this field of study, some of them essential, it is only in the last few decades that institutions have been created and interest has arisen in reconstructing the history of the philosophy of technique in France.¹ In this paper I aim to contribute to the history by examining the notion of technique in the social theory proposed by Georges Bataille.² Considering that Bataille does not address the question of technique explicitly and systematically, I will attempt to make that contribution by developing a counterpoint between his conceptualisation of the social and Bernard Stiegler's philosophy of technique in order to show how certain ideas of Bataille anticipate a number of Stiegler's concepts.

I will defend the following theses: 1) although Bataille, at first sight, poses an opposition between the technical and the social, for him, as for Stiegler, both are co-constituted in the bodily projection as the key gesture for technique and the social. This movement of externalisation is the continuation of life not by biological but by technical means, composing the domain of the useful, and the production of social existence by the useless dissipation of matter-energy, that make up the expenditure realm, by which subjects experience co-existence³; 2) the Bataillean perspective on the social bears important similarities to the Stieglerian concept of neganthropy and its figuration in the

1 See Sacha Loeve, Xavier Guchet, and Bernadette Bensaude Vincent, "Is There a French Philosophy of Technology? General Introduction," in *French Philosophy of Technology*, ed. Sacha Loeve, Xavier Guchet and Bernadette Bensaude Vincent (Springer, 2018).

2 There are important texts on Georges Bataille's social theory; mention should be made to the following works: Benjamin Noys, *Georges Bataille* (London: Pluto Press, 2000); Patrick ffrench, *After Bataille: Sacrifice, Exposure, Community* (London: Routledge, 2007); Cédric Mong-Hy, "Le monde et Bataille: Études textuelles, contextuelles et prospectives" (Ph.D. Thesis, Université de la Reunion, 2016); Nidesh Lawtoo, "Bataille and the Birth of the Subject", *Angelaki* 16, no. 2 (2011); Tiina Arppe, *Affectivity and the Social Bond Transcendence, Economy and Violence in French Social Theory* (London: Routledge, 2014); William Pawlett, *Georges Bataille: The Sacred and Society* (London: Routledge, 2015); and Sandro Pellarin, "Il Soggetto al limite: Georges Bataille e le scienze sociali" (Doctoral thesis, Università degli Studi di Padova, 2017). In these texts, the question of technique is either not addressed or remains of secondary importance.

3 Let us make it clear from the outset that we find in Bataille indications rather than a systematic conceptual elaboration of this co-constitution, as we find it in Stiegler.

idiotext inasmuch as both conceive society as an affective-cognitive circuit illustrated in a spiral movement composed of spirals, i.e. psychic individuals and artificial organs. Thus, Bataillean social ontology can be seen as a relevant predecessor of the Stieglerian philosophy of technique.

The Co-constitution of Technique and the Social

Stiegler develops a theory on technique inscribed in a tradition whose origin is, according to specialists, in Ernst Kapp and continues in France both with Alfred Espinas and, later, André Leroi-Gourhan. The latter is a key reference in Stiegler's work, for which technique is an anthropological feature and hominisation factor that consists in the projection of motor actions and mental contents through the organisation of inorganic matter, promoting the continuation of life by means other than life.⁴ Stiegler calls this projection *exosomatisation*, a process that unfolds through *grammatisation*, that is, by the discretization and spatialisation of cognitive-affective flows. Exosomatisation leads to the emergence of tertiary retentions. Primary retentions refer to the perception of the present and secondary retentions to the representation of the past time through imagination; tertiary retentions, in turn, are artificial and technical retentions. These three types of retentions are articulated with each other: primary retention involves a selection process whose criteria are in secondary retentions, and the dynamic between primary and secondary retentions is controlled by tertiary retention.⁵

Although they were not originally conceived for this purpose, stone tools, for example, kept the traces of past gestures and work as "spontaneous support for memory."⁶ As "mental intermediaries [...] technical objects support and revive social sharing"⁷ in the sense of a co-experience that allows inter- and trans-generational transmission. Tertiary retentions, which are by definition collective because they are externalised and spatialised, support the transmission of collective secondary retentions that serve as the basis for collective secondary protentions, the desiring projection towards a common horizon of shared dreams and objectives. In other words, technique and the social are co-constituted because, on the one hand, technical externalisation gives rise to tertiary retentions without which there can be no shared cognitive and affective circuits and, on

4 Bernard Stiegler, *The Neganthropocene*, trans. and ed. Daniel Ross (London: Open Humanities Press, 2018), 42.

5 Bernard Stiegler, *Dans la disruption: Comment ne pas devenir fou* (Paris: Les liens qui libèrent, 2016), 313.

6 Bernard Stiegler, "Anamnesis et Hiponmneses," in *Technicity*, ed. Louis Armand and Arthur Bradley (Prague: Litteraria Pragensia, 2006), 15, <https://arsindustrialis.org/anamnesis-and-hypomnesis>.

7 Stiegler, *The Neganthropocene*, 87.

the other hand, because without these circuits technique cannot be transmitted.

However, the articulation between the technical and the social is traversed by a structural tension resulting from the pharmacological character of the technique. For Stiegler, technical objects carry an ambiguity according to which they are, at the same time, a cure and a poison. Thus, writing, for example, is "a *pharmakon* that both aids and harms memory (that is, the ability to think for oneself)."⁸ In other words, writing allows the preservation and deployment of new possibilities for memory while removing them from subjects. Not just writing, but all technical objects increase human possibilities and, simultaneously, weaken him/her since it drains his/her capabilities into objects. The toxic dimension of the technique erodes the social sharing because it interrupts the possibility of inter- and transgenerational transmission and interiorization of knowledge concretised in organological organs without which there are no common cognitive and affective circuits.

That is why the technique requires socio-therapeutics that prescribes mutual obligations, embodied in magic, religion, and politics. These prescriptions regulate the two organisational functions that ensure social cohesion: education and economy. The economy brings cohesion through the exchange of organological organs and education by the transmission of accumulated experience which guarantees arrangements organological organs with psycho-somatic bodies. Thus, the articulation between bodies and artificial organs through social organs constitutes what Stiegler calls *corp social*.⁹

As Howells explains, for Stiegler human existence is defined by the absence of intrinsic qualities, by a structural lack. This "défaut d'origine" drives humanity to seek fulfilment in its relations with the external world, including with other subjects.¹⁰ Stiegler uses Winnicott's concept of transitional¹¹ object to explain the insertion of subjects in the social space: it "is only through the mediation of the transitional object that the psychic individual can be inscribed and formed in and through the symbolic."¹² These objects create an *avant-coup* interiority that is always failed and open; this "primordial default of interiority" is the condition of possibility for the insertion in a transitional space, the

8 Daniel Ross, "Introduction," in *The Neganthropocene* (London: Open Humanities Press, 2018), 20.

9 Stiegler, *The Neganthropocene*, 34, 133, 207–208.

10 Christina Howells, "'Le Défaut d'origine': The Prosthetic Constitution of Love and Desire," in *Stiegler and Technics*, ed. Christina Howells and Gerald Moore (Edinburgh: Edinburgh University Press: 2013): 145–146.

11 These are objects of attachment for babies between four and twelve months. They are transitional because, according to Winnicott, they are in the transition between the immediate relationship with the mother and object-relationships, i.e. the full recognition of a reality external to the subject. See Jean Laplanche and Jean-Bertrand Pontalis, *The Language of Psychoanalysis*, trans. Donald Nicholson-Smith (London: Karnac Books, 1988): 464–465.

12 Stiegler, *The Neganthropocene*, 70.

space of “co-individuation,”¹³ which is the space of human experience as co-existence. According to Stiegler, this constitutive exteriority that is the transitional object:

constitutes the infantile stage of the *pharmacology of spirit*, the matrix through which transitional space is formed in transductive relation to the ‘good mother’, that is, the provider of care. This relation of care constituted by the transitional object, that is, by the first *pharmakon*, forms the basis of what becomes, as transitional space, an intermediate area of experience where objects of culture, of the arts, of religion and of science are formed.¹⁴

The transitional object is the primordial materialisation of the affective instance exercised by those in charge of child’s care in an organological organ. By means of attachment to this object, the psycho-somatic individuals are inscribed in the cognitive and affective circuits which constitute the social, that Stiegler also calls “spirals.”¹⁵

For Stiegler, transitional object experience involves a movement of ecstatic projection, insofar as the experience of the social always includes being outside oneself: “Transitional adoption [...] is an experience of desire, that is, of a ‘proper’ and a self (or ego) which always already projects *itself* outside itself, beyond the self and into that which is never absolutely one’s own because it is, precisely, one’s other.”¹⁶ The ecstatic dimension of transitional adoption implies the danger of disindividuation, present in the experience of the social in general, which is an ex-sistence always mediated by the organological organs. However, transitional adoption also has a curative dimension: it enables an appropriation that provides certain autonomy “that is not what opposes heteronomy, but that which adopts it as a necessary default (*un défaut qu’il faut*).”¹⁷ This “relational autonomy [...] is what composes with heteronomy; it is what plays creatively with transitional space.”¹⁸ As transitional objects, technical objects articulate autonomy and ecstatic projection, and demand care for the transitional space, which is none other than the space of the social.¹⁹ As Daniel Ross explains, the third phase of Stiegler’s philosophical trajectory, after the technical and the pharmacological, consists in the insertion of the *pharmakon* logic in the

13 Bernard Stiegler, “Pharmacology of Spirit: And That Which Makes Life Worth Living,” in *Theory After Theory*, ed. Jane Elliot and Derek Attridge (London and New York: Routledge, 2011), 297.

14 Stiegler, “Pharmacology of Spirit,” 296–297.

15 Stiegler, *The Neganthropocene*, 257.

16 Stiegler, *The Neganthropocene*, 305.

17 Stiegler, *The Neganthropocene*, 297.

18 Stiegler, *The Neganthropocene*, 302.

19 For a detailed study of Stiegler’s use of Winnicott’s transitional object, see Tania Espinoza, “The Technical Object of Psychoanalysis,” in *Stiegler and Technics*, 151–164.

framework of the relations between entropy and anti-entropy.²⁰ Entropy is the universal law according to which all physical system are subject to a constant and irreversible process of loss or dissipation of matter-energy, which means that they tend towards their indifferenciation. In this framework, the question of life is that of the capacity of certain physical systems to postpone entropy, that is, to postpone what for living beings is death. During the 20th century, Schrödinger coined the concept of anti-entropy or negentropy to characterise these living beings. Anti-entropy is always local and temporary and is produced by means of an external source of energy, which, on earth, is always ultimately the sun. Stiegler takes these concepts to explain that life is the (re)production of a local specificity through the sustaining of its boundaries by means of what he calls endosomatic organogenesis, increasing always general entropy of the environment.²¹

For Stiegler, human existence is not just negentropic, but also includes a specific form of anti-entropy related with its technical condition, called neganthropy. To elaborate this concept, Stiegler starts from a critique of Lévi-Strauss' *Tristes Tropiques*. As Stiegler explains, towards the end of this book Lévi-Strauss asserts that human societies have an entropic essence that leads to the destruction of ethnic-cultural singularities, opposed to nature negentropic essence. This nihilistic position would result, from the "repression of organology" and the "ignoring of *neganthropological* question."²² Thus, in opposition to Lévi-Strauss's entropology, Stiegler builds the concept of neganthropy, defined as follows:

Organic life is that which defers that entropy described by Clausius on the basis of the works of Sadi Carnot, and in relation to which Schrödinger showed that every form of life is the local formation of a counter-tendency, which he called negative entropy. Exosomatization is the continuation of this process, but in a new sense, producing an *increase of entropy and of what results from it, disorder, but also a new form of negentropy, which I call 'neganthropy', that is, the production of those new forms of locality that are, precisely, exoorganisms.*²³

Exosomatization can lead to production of neganthropy as a "hyperbolic negentropy" accelerating both entropic and anthropic becoming and, at the same time, enabling bifurcations that "differs and defers this becoming."²⁴ In other words, neganthropy delays "the toxicity of the pharmacological condition" in a way that organises and orders locality,

20 See Daniel Ross, "Introduction," in *The Neganthropocene* (London: Open Humanities Press, 2018), 23–24.

21 See Stiegler, *Dans la disruption*, 54 and Stiegler, *The Neganthropocene*, 57, 133, 199.

22 Stiegler, *The Neganthropocene*, 60.

23 Stiegler, *The Neganthropocene*, 127–128.

24 Stiegler, *The Neganthropocene*, 58.

in universal becoming, but against the current.”²⁵ The neganthropic counter-current is often described by Stiegler as “bifurcation,” in the sense of a cut that draws a new difference in becoming, different of the vital difference, that gives rise to “local integrities of open exosomatic units,” supported by “circuit configurations that form through these detours, like turns and spirals.”²⁶ This “dynamic loop” conformed by simple and complex exoorganisms and cognitive-affective circuits attached to them are, nevertheless, always traversed by entropic and anthropic forces, elements of disorder that may be the origin of new orders.

In the framework of Stieglerian neganthropology, equivalent to organisms’ boundaries are the borders produced by the social imperatives that bind social atoms, groups and artificial organs, resulting in organic and organological solidarity. The neganthropological bifurcation is that of a singular psycho-social consistency that allows the experience of the extra-ordinary (magical, mystical, religious, or spiritual experiences) insofar as it goes beyond just subsistence (beyond negentropy).²⁷ In this conceptual context, Stiegler resorts to Bataille’s notion of expenditure, a key concept of his general economy, as a human practice that “*sacralizes and sanctifies a default of being*” opening the possibility to develop

the knowledge and power to create bifurcations within entropy. All noetic bifurcation [...] derives from a cosmic *potlatch* that indeed destroys very large quantities of differences and orders, but it does so by projecting a very great difference on another plane, constituting another ‘order of magnitude’ against the disorder of a *kosmos* in becoming, a *kosmos* that, without this projection of a yet-to-come from the unknown, would be reduced to a universe without singularity.²⁸

In other words, through sacrifice of force-matter, i.e. expenditure that is not intended for the reproduction of life, societies realise and maintain their neganthropy, considered an order of magnitude by which psychic individuals elevate themselves above subsistence. In the next sections we will examine Bataille’s social theory for the purpose of showing in more detail how the notion of expenditure and other of its constituent elements are relevant precedents for Stieglerian neganthropology.

25 Stiegler, *The Neganthropocene*, 31.

26 Stiegler, *The Neganthropocene*, 57.

27 See Stiegler, *Dans la disruption*, 55, 320, 335 and Stiegler, *The Neganthropocene*, 133.

28 Stiegler, *The Neganthropocene*, 60.

Bataille's Energetics

In order to understand Bataille's perspective on life, it is necessary first to synthesise what I consider to be his general ontology. Despite being characterised in various and indirect ways, I consider that Bataille is always pointing to the same idea. In his youth, being is defined as the universal movement of force-matter named *heterogeneous* being not a heterogeneity with respect to something else, given that, as "completely other [*tout autre*],"²⁹ is a "nonlogical difference"³⁰ that is always "incommensurate."³¹ In the mature stage of his career, being is defined as "movement of violence" entailing always "disorder"³² or "chaos."³³ In brief, being for Bataille is *process of absolute differentiation* and, as such, it is not the difference of negentropic or neganthropic bifurcations of which Stiegler speaks insofar as these suppose a border or limit with respect to otherness. Being is, instead, the entropic universal movement, what for Stiegler is becoming.

This undifferentiated difference is distinguished from the specified differentiation of cosmic, biospheric, and human beings, which Bataille could have called *differentiated differences*. There is interpenetration between these two differences because, for Bataille, every differentiated being is open and unfinished. Bataille states, for example, "where knowledge has searched for being it has found it unfinished [*inachevé*]"³⁴ or "a being that isn't cracked isn't possible,"³⁵ and, finally, "everything real fractures and cracks."³⁶ Starting from the ontology of pure difference and under the premise of the unfinishedness of differentiated differences, Bataille gradually developed a theory of the biosphere to which Vladimir Vernadsky is fundamental. Well-known also by Stiegler, in *The Biosphere* the Russian geologist elaborated the concept of biosphere as the Earth's epidermis made up of organisms that compete and appropriate the available energy, whose ultimate source is the sun. Organisms transform solar energy into chemical energy, multiply and spread over the earth's surface. Vernadsky's image of the biosphere is that of the omnipresent and constantly expanding movement of life on the earth's surface³⁷ which seduced Bataille.

29 Georges Bataille, "The Use Value of D. A. F. de Sade," in *Visions of Excess: Selected Writings, 1927-1939*, trans. and ed. Allan Stoekl (Minneapolis: University of Minnesota Press, 1984), 102.

30 Georges Bataille, "The Notion of Expenditure," in *Visions of Excess: Selected Writings, 1927-1939*, trans. and ed. Allan Stoekl (Minneapolis: University of Minnesota Press, 1984), 129.

31 Georges Bataille, "The Psychological Structure of Fascism," in *Visions of Excess. Selected Writings, 1927-1939*, trans. and ed. by Allan Stoekl (Minneapolis: University of Minnesota Press, 1984), 143.

32 Georges Bataille, *Erotism: Death and Sensuality* (New York: City Lights Books: 1986), 47.

33 Bataille, *Erotism*, 119.

34 Georges Bataille, *Guilty* trans. Bruce Boone, (California: The Lapis Press 1988), 23.

35 Bataille, *Guilty*, 23.

36 Bataille, *Guilty*, 27.

37 Vladimir Vernadsky, *The Biosphere*, trans. David B. Langmuir, (New York: Springer, 1998), 44, 59-60, 71.

Relying on Vernadsky, in a short article entitled “Corps célestes,” published in 1940, he asserts: “a star like the Sun [...] projects unceasingly, in the form of light and heat, a part of its substance through space”³⁸ and:

the particles which, in the surface of the Earth, manage [parviennent] to [...] agglomerate to form ever higher powers [...], are devourers of force. Everything that condenses and moves [s’anime] on the ground that supports us is thus affected [frappé] by greed [avidité]. And every composite particle is not only avid for infinitely available solar energy or free terrestrial energy, but is avid for the energy accumulated in other particles.³⁹

The sun, the ultimate source of energy, dispersed over the earth in multiple forms, allows organisms to subsist by delaying the entropic indifferentiation (death) through greedy capture. However, these organisms, like any physical system, are subject to the law of entropy according to which it is impossible to entirely use the captured energy and therefore part of that energy is irreversibly lost:

A potent existence that has reached the highest degree of growth attends to a point of imbalance and spends [dépense] suddenly with prodigality: it explosively loses the excess [surcroît] that it accumulated with effort [avec peine]. The sum of the energy that escapes grasping, if it is far from insignificant [négligeable], is relatively weak, but no longer belongs to the world of the useful; the useful even then becomes subordinated and becomes a slave to the loss.⁴⁰

Similarly, in *The Accursed Share* Bataille states that “solar radiation has the effect of the superabundance of energy on the surface of the globe,”⁴¹ and further on he adds: “I insist on the fact that there is generally no growth but only a luxurious squandering of energy in every form! The history of life on earth is mainly the effect of a wild exuberance; the dominant event is the development of luxury, the production of increasingly burdensome forms of life.”⁴² For Bataille, part of the surplus energy can be used not just for subsistence, but for growth and reproduction, and in that sense it is useful. However, from the outset,

38 Georges Bataille, “Corps célestes,” in *Œuvres complètes, Tome I* (Paris, Gallimard 1970), 518, my translation.

39 Bataille, “Corps célestes,” 518.

40 Bataille, “Corps célestes,” 519.

41 Georges Bataille, *The Accursed Share: An Essay on General Economy* (New York: Zone Books, 1988), 29.

42 Bataille, *The Accursed Share*, 39.

part of it is *absolute excess* giving raise to “a pure and simple loss, *which occurs in any case.*”⁴³ On one side, organisms struggle each other for the temporary capture of matter-energy to negentropically deviate from the movement of becoming and, on the other, the entropic forces pushes them to dilapidate part of it and which will ultimately lead to death.

As can be read, like Stiegler, Bataille conceives life in terms of a relationship between negentropic capture and entropic loss. Also like Stiegler, as we will see, Bataille attempts to conceptualise human inscription within this dynamic, in his case by giving useless expenditure the place of the foundation of human (social) ex-sistence. To demonstrate how he conducts this operation, in the next section I will examine the notion of the *imperative of exclusion*.

The Imperative of Exclusion

This concept is the result of Bataille's singular reading of the Maussian concept of gift from the point of view of psychoanalytic theory. I will begin by describing the Maussian theory of the gift, presented in *The Gift*, published first in *L'année sociologique* in 1924. Based on a large collection of ethnographic evidence, in this text Mauss affirms that societies are constituted on the basis of gifts, defined as the exchange between persons, groups, and societies of goods and services as a result of the articulation of three obligations: give, receive, and return. Societies, their groups, and their subjects are thus tied, intermingled, without total fusion or indifferentiation; indeed, the gift conjugates differentiation, opposition, and cohesive bonding in a way that there is not one without the other. Following Bruno Karsenti, this means that the gift (re)produces social bonds and society as a totality, a composite and therefore complex whole traversed by agonistic and frictional interpenetration of subjects and subgroups.⁴⁴

The gift is the “bedrock”⁴⁵ of the social and a *total social fact*, defined as those “that involve the totality of society and its institutions,”⁴⁶ including religious, juridical, moral, economic, and aesthetic. The gift is a socio-therapeutics in Stiegler's terms: a set of reciprocal obligations, embedded within religious beliefs, magical beliefs, and moral imperatives that create social cohesion through the exchange of exosomatic organs—although Stiegler

43 Bataille, *The Accursed Share*, 31.

44 See Bruno Karsenti, *L'homme total: Sociologie, anthropologie et philosophie chez Marcel Mauss* (Paris: PUF, 2011).

45 Marcel Mauss, *The Gift: The Form and Reason for Exchange in Archaic Societies*, trans. W.D. Halls, (London: Routledge, 2002), 68.

46 Mauss, *The Gift*, 100.

relies here more specifically on Durkheim's *The Division of Social Labour*.⁴⁷

Bataille emphasises two interrelated aspects of the gift in order to elaborate the notion of imperative of exclusion. These, moreover, can be connected with the Stieglerian perspective on technique. Firstly, Mauss claims that the gift pushes us "out of ourselves"⁴⁸ because "to give something is to give a part of oneself."⁴⁹ There is continuity between the soma and the object, and therefore an ecstatic or projective dimension in the gift. Hence the risk of disindividuation not only in the donor, but also in the donee, penetrated by the alterity that subverts him, as Robert Esposito has already shown.⁵⁰

Secondly, Mauss identified a pharmacological dimension in the gift. In a brief 1924 article entitled "Gift, Gift" Mauss explains the double meaning of "poison" and "present" that term *gift* has in Germanic languages as an expression of the structural ambiguity of the gift as social phenomenon.⁵¹ It establishes a bond that is both dangerous and beneficial, where there is hostility and friendship, intimacy, and estrangement. The gift is dangerous because it is potentially destructive and, at the same time, compositional and, therefore, constitutive of the social. There are, then, two elements of technique in the Stieglerian sense that already appear in the Maussian gift that we will see in Bataille: the body projection and the pharmacological ambiguity as a characteristic of social existence.

Bataille was a great admirer of Mauss and was particularly interested in *The Gift* from his youth.⁵² Nevertheless, far from just reproducing Maussian theory, the author interprets the gift from the point of view of the theory of libidinal development, from which he especially borrows the second phase of the three phases that this development includes, called sadistic-anal. According to this theory, elaborated by Freud and Karl Abraham, if the first phase is associated with the oral cavity and sucking and biting activities and the third is related to the genital organs and sexual activity, the second is associate to anal orifice, and is governed by a double tendency towards the conservation/retention, on the one hand, and the destruction and/or loss of objects, on the other.⁵³

47 See Emile Durkheim, *The Division of Social Labour*, trans. W. D. Halls (London: The Macmillan Press, 1994) and Stiegler, *The Neganthropocene*, 207.

48 Mauss. *The Gift*, 69.

49 Mauss, *The Gift*, 10.

50 See Roberto Esposito, "Introduction: Nothing in Common," in *Communitas: The Origin and Destiny of Community*, trans. Timothy Campbell (Stanford: Stanford University Press, 2010)

51 See Marcel Mauss, "Gift, Gift," in *Œuvres III: Cohésion sociale et divisions de la sociologie* (Paris: Minit, 1969[1924b]): 46-51.

52 See Michel Surya, *Georges Bataille: An Intellectual Biography*, trans. Krzysztof Fijalkowski and Michael Richardson (London: Verso, 2002), 167-170.

53 Laplanche and Pontalis, *The Language of Psychoanalysis*, 35.

It is noteworthy that one of the texts in which Freud addresses this concept he states that “Faeces are the child’s first *gift*, the first sacrifice on behalf of his affection, a portion of his own body which he is ready to part with, but only for the sake of someone he loves,”⁵⁴ and later he asserts that faeces are “the first piece of bodily substance the child had to part with.”⁵⁵ As can be read, this lines are compatible with the Maussian gift, especially with the bodily projection aspect. It is worth bearing in mind in this respect that for Mauss, sacrifices are defined as a gift to the gods.⁵⁶ Moreover, it must be emphasised that excrement, as this first gift, must be requested by the person in charge of the care of a child or baby, which means that, as in the gift, there is a heteronomous source for this action.

This Freudian text was translated and published in 1928 in the *Revue Française de Psychanalyse*.⁵⁷ We have not been able to determine whether Bataille specifically read this text, but it is very likely because it is proven that during the early 1930s he borrowed from the Bibliothèque Nationale de France issues of the journal from 1927 and 1929.⁵⁸ However, even if he had not read this text, this concept appears frequently in the mentioned issues.⁵⁹ Before going to Bataille’s texts, it is pertinent to mention one last reference, generally not taken into account by specialists. I am referring to the anthropologist Konrad Theodor Preuss, who in “Der Ursprung der Religion and der Kunst” relates magical practices to the bodily orifices and to the substance they excrete, which are part of what he calls cohabitation [*Kohabitation*]. Preuss states that “the view has always prevailed that magical power and magical substances emanate from the orifices/openings of the body, e.g., breath from the nose, sounds and saliva from the mouth, excrement from the anus, urine and sexual excretions from the genital orifices.”⁶⁰ Bataille mentions Preuss in a lecture at the College of Sociology,⁶¹ in this sense, Hollier suggests that this seems to refer to his text⁶²,

54 Sigmund Freud, “On Transformations of Instinct as Exemplified in Anal Erotism,” in *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, Vol. 17, trans. James Strachey (London: The Hogarth Press, 1955[1917]): 81, <https://gallica.bnf.fr/accueil/fr/content/accueil-fr?mode=desktop>.

55 Freud, “On Transformations of Instinct,” 133.

56 See Mauss, *The Gift*, 12–16.

57 See Sigmund Freud, “Sur les transformations des pulsions particulièrement dans l’érotisme anal,” *Revue Française de Psychanalyse* 2, no. 4 (1928).

58 Georges Bataille, *Œuvres Complètes, Tome XII* (Paris: Gallimard, 1988), 578, 585, 588.

59 See Marie Bonaparte, “Le Cas de Madame Lefebvre,” *Revue Française de Psychanalyse* 1, no. 1 (1927): 16; Sigmund Freud, “La prédisposition à la névrose obsessionnelle,” *Revue Française de Psychanalyse* 3, no. 3 (1929), and Géza Roheim, “La Psychologie raciale et les Origines du capitalisme chez les primitifs,” *Revue Française de Psychanalyse* 1, no. 3 (1929),.

60 Theodor Konrad Preuss, “Der Ursprung der Religion and der Kunst,” *Globus. Illustrierte Zeitschrift für Länder und Völkerkunde*, no. 86–87 (1904–1905), 322.

61 See Georges Bataille, “Attraction and Repulsion II: Social Structure,” in *The College of Sociology (1937–39)*, ed. Denis Hollier and trans. Betsy Wing, (Minneapolis: University of Minnesota Press, 1982), 122.

62 Bataille, “Attraction and Repulsion II: Social Structure,” 413.

about which Mauss, in turn, wrote a laudatory review, published in *L'année sociologique*.⁶³ Hollier's suggestion makes sense since Bataille gives great importance to human body excretions in the elaboration of his social theory. Indeed, the author conceives human body as an open surface, traversed by becoming: "human life cannot in any way be limited to the closed systems" since its existence is composed of an "immense travail of recklessness, discharge and upheaval" in such a way that "it only begins with the deficit of these systems."⁶⁴ From my point of view, Bataillean social theory is condensed in this passage. Within the ontological unfinishedness is lodged the useless—for the purposes of biological subsistence—excess in relation to which human social ex-sistence is founded as the imperative of exclusion.

In psychogenetic terms there is "necessity of exclusion"⁶⁵ in the first instance of body remnants, substances excreted through the body's holes, such as menstrual blood and excrement. The psychoanalytic theory of libidinal development is here the key: in "L'abjection et les formes misérables," a draft published posthumously, Bataille states that "the imperative act of exclusion is assimilated to anal eroticism."⁶⁶ In this sense, he emphasises the heteronomous aspect of this imperative, something that in Freud is just mentioned, when Bataille states that "the act of exclusion is not directly assumed: it is communicated to the child by the mother with the help of expressive grimaces and exclamations (the possibility of this communication is based on the principle of contagion)."⁶⁷ For Bataille, this ecstatic projection of useless excess is not the immediate effect of intra-corporal energies, an idea to which Freudian metapsychology frequently resorts (and usually offers as an ultimate explanation for psychic phenomena): what is manifested as "the necessity of excluding"⁶⁸ is, as Lawtoo explains, an affect infected by other subjects through pre-discursive gestures that unleashes a mimetic reaction.⁶⁹ From my point of view, the contagion of the imperative of expulsion is the transmission of knowledge, entailing the incorporation of the technique of exteriorisation; even if it is not a highly complex action, it requires the discretisation of body movements.

Moreover, for Bataille, the "imperative act of exclusion of abject things [...] constitutes the foundation of collective existence."⁷⁰ Like the gift to Mauss, ecstatic projection is not

63 Marcel Mauss, "VIII. LE RITUE," in Émile Durkheim, *L'année sociologique*, IX (1904–1905) (Paris: Félix Alcan, 1906), 239.

64 Bataille, "The Notion of Expenditure," 128.

65 Bataille, "The Use Value of D.A.F. de Sade," 100.

66 Georges Bataille, "L'abjection et les formes misérables," in *Œuvres Complètes*, Tome II (Paris: Galimard, 1970), 220, my translation.

67 Bataille, "L'abjection et les formes misérables," 220.

68 Bataille, "L'abjection et les formes misérables," 221.

69 See Lawtoo, "Bataille and the Birth of the Subject," 74.

70 Bataille, "L'abjection et les formes misérables," 221.

only a relevant aspect of social life, *but the basis of social beings*, that is, of the experience of co-ecstasy. Thus, Bataille seems to be describing what for him is the psychosomatic insertion into the social ex-sistence through the contagion of the fundamental social gesture: body projection. However, the imperative of exclusion is not limited to body-useless remnants: it includes the immediate dissipation of bodily matter-energy in general, the destruction of wealth as well as the production of useless objects—which, in turn, may be subject to destruction. This is the domain of human activity that Bataille defines as *expenditure*, opposed to utilitarian activity whose aim is the production through “supplementary apparatuses” of means to conserve and reproduce biological existence: “From the first, man has the faculty of utilizing part of the available energy for the growth (not biological but technical) of his energy wealth” which allows him “to extend [...] the elementary movement of growth that life realizes within the limits of the possible.”⁷¹ Like Stiegler, Bataille sees technique as an anthropological feature by which the human being is projected outwards with technical objects and, this, prolongs the continuation and reproduction of life by non-biological means.

However, this extension is limited by the structural presence of an excess. Expenditure includes the unproductive use of this excess in “luxury, mourning, war, cults, the construction of sumptuary monuments, games, spectacles, arts, perverse sexual activity (i.e., deflected from genital finality),”⁷² but also in gifts that “must be considered as a loss and thus as a partial destruction” which “in unconscious forms, such as those described by psychoanalysis, it symbolises excretion, which itself is linked to death, in conformity with the fundamental connection between anal eroticism and sadism.”⁷³ For Bataille, this active dissipation matter-energy in useless forms “externalizes intimacy” entailing the “setting in place of social existence”—which is, at the same time, the emergence of self-consciousness.⁷⁴ In other words, expenditure creates the domain of the social as a co-ecstatic experience transmitted through the contagion of the sadistic-anal drive, of which the gift is one of its fundamental expressions.

We have seen that, as for Stiegler, for Bataille the psychic individual is not a closed sphere, but an open surface which, in his early years, through a constitutive exteriority, projects itself towards an exterior—an exterior that finally is always also interior—and in this way his/she is inserted in the social. But while for Stiegler this constitutive exteriority is the transitional object, for Bataille it is the gestures of other subjects that infect the individual with the projective action. I consider that Bataillean sociology is compatible

71 Bataille, *The Accursed Share*, 36.

72 Bataille. “The Notion of Expenditure,” 118.

73 Bataille. “The Notion of Expenditure,” 122.

74 Bataille, *The Accursed Share*, 190.

and articulable with the Stieglerian concept of technique, to which it adds the imperative of exclusion as not only constitutive of the social but, in the same movement, of technique. The imperative of exclusion shows the co-constitution of the technical and the social at the psycho-genetic level because it describes the elementary gesture of projection into the transitional space as a common zone of ecstasy.⁷⁵ Thus, through practices that go beyond the level of subsistence, the subject accesses what Stiegler calls *consistence*, which is the social as *ex-sistence*.

On Social Vortexes

In the same way as technique for Stiegler, expenditure is structurally crossed by the danger of disinindividuation and social disintegration. At this point, the question arises as to how the dissipation of substance, whether it be bodily matter or wealth can produce and maintain social cohesion. To find an answer to this question, we have to move to the College of Sociology, the group founded by Bataille together with Roger Caillois and Michel Leiris.⁷⁶

Over the course of the lectures given in the College, Bataille for the first time explicitly sets out to develop a social ontology.⁷⁷ According to this ontology, the foundation of social beings is expenditure as long as it is not only an imperative, but also an object of interdiction, taboo. For Bataille, useless expenditure is a practice of sacralisation, of production objects resulting from those spent forces, which “puts at stake the community’s as well as its participants’ integrity.”⁷⁸ Therefore, the interdiction “established by these spent forces establishes a sort of balance by opposing an obstacle to continued expending.”⁷⁹ This interplay of expenditure imperative and interdiction gives rise to what Bataille calls the “sacred nucleus” around which the subjects orbit, governed by a *communifying movement* [*mouvement communie*] or overall movement [*mouvement d’ensemble*].⁸⁰ Social cohesion emerges from this overall movement around this nucleus, that is external to individuals,

75 This does not mean, however, that the Batailleian imperative of exclusion is equivalent to the concept of technique elaborated by Stiegler, a complex concept whose fundamental aspects we tried to summarise in the first part of this paper. This means, instead, that both authors meet on this fundamental of body projection as a key aspect of human existence.

76 For a brief history of this group, see Surya, *Georges Bataille*, 251–259.

77 See Georges Bataille and Roger Caillois, “Sacred Sociology and the Relationships between ‘Society’, ‘Organism’ and ‘Being,’” in *The College of Sociology (1937–39)*, ed. by Denis Hollier (Minneapolis: University of Minnesota Press, 1982), 74.

78 Bataille, “Attraction and Repulsion II: Social Structure,” 124.

79 Bataille, “Attraction and Repulsion II: Social Structure,” 123.

80 Georges Bataille and Roger Caillois, “Sacred Sociology and the Relationships between ‘Society’, ‘Organism’ and ‘Being,’” 74–84.

and which mediates the relationships between them (unlike animals, according to Bataille, which maintain immediate interattraction), tied by shared affects of repulsion and attraction to the sacred nucleus.⁸¹

The practices of sacralisation take place at the heart of the sacred nucleus as the source of the overall movement. Those practices are always acts of transgression:

We cannot live without breaking the barriers we must give to our need to expend [...] Our entire existence [...] is produced, hence, in a sort of swirling turbulence [*remous tumultueux*] where death and the most explosive tension of life are simultaneously at play. This stir [*remous*] is essentially what is produced in the centre of each individualised whole that it forms.⁸²

For Bataille, as for Stiegler, there is no society without the ecstatic projection which, at the same time, can always lead to an entropic and anthropic movement of destructive violence. However, there is also no social existence without the interdiction by which expenditure maintains individual integrity and produces the whirlwind movement that binds individuals together.

To make this idea intelligible, Bataille resorts to the vortex metaphor that gradually appears since the late 1930s. In the drafts of what will later be *The Accursed Share*, which were gathered under the name "La limite de l'utile," he uses the term whirlwind [*tourbillon*] to describe social and individual beings. He claims that "social being [...] is not an indivisible moral entity," but "a poorly delimited field of an always unfinished and never closed concentration," and if "there is a unity in presence [...] this obeys vortexes, circuits that stabilise and tend to close."⁸³ We also read: "I can consider this life that belongs to me as a stable whirlwind: this whirlwind continually collides with others who resemble it and modify its movement as it modifies the movement of others."⁸⁴ Finally, In *Inner Experience* Bataille states: "your life is not limited to that ungraspable inner streaming; it streams to the outside as well and opens itself incessantly to what flows out or surges forth towards it. The lasting vortex which constitutes you runs up against similar vortexes with which it forms a vast figure, animated by a measured agitation."⁸⁵ The image of the individualised

81 Bataille and Caillois, "Sacred Sociology," 106.

82 Bataille, "Attraction and Repulsion II," 123–124.

83 Georges Bataille, "La limite de l'utile," in *Œuvres complètes, Tome VII* (Paris: Gallimard, 1976), 265, own translation.

84 Bataille, "La limite de l'utile," 270.

85 Georges Bataille, *Inner Experience*, trans. Leslie Anne Boldt (Albany: State University of New York Press, 1988), 94.

vortex movement that forms the social allows Bataille to make intelligible how the flow of expenditure forms a circuit when hitting the interdiction barrier, forming the social as a dynamic totality, opened to otherness including other societies, biosphere, and cosmos.⁸⁶ It's noteworthy the similarity between Bataillean metaphors and Stieglerian notion of *idiotext*. The idiotext describes the set of localised nested spirals formed by the process of co-production of psychic and collective individuation that constitute the neganthropic form of life.⁸⁷ Towards the end of *Dans la disruption*, Stiegler describes his experience of reading and writing during his stay in prison, from which emerged protensions that drove his philosophical path. The following passage from that narrative bears a remarkable resemblance to Bataille's description of the vortiginous character of the individual and social being:

what happened to me, and what was the formation of what I decided to call an *idiotext*, itself always included in other, innumerable, indefinite idiotexts, all caught together in the *movement of an infinite spiral* [...], was the accidental localisation of an irreducible local-ity [*local-ité*] of which noetic *différance* was the procedural and idiomatic test.⁸⁸

As can be read, both Bataille and Stiegler illustrate the social as a vortex movement of vortexes. However, the proximity between the two authors is not limited to the centrality of ecstatic projection and to the use of the similar metaphors to illustrate the dynamics and articulation between the social and the individual. Although he does not put it that way, for Bataille the sacred objects that found the social are technical objects in the sense that they result from projection into inorganic matter. Some of these objects are affirmed as expenditure in their useless destruction, as in the *potlatch*, and others are preserved as useless matter:

Now to live signifies for you not only the flux and the fleeting play of light which are united in you, but the passage of warmth or of light from one being to another, from you to your fellow being or from your fellow being to you (even at the moment when you read in me the contagion of my fever which reaches you): words, books, monuments, symbols, laughter are only so many paths of this contagion, of this passage.⁸⁹

86 There is no systematic development of these ideas in Bataille. To try to operationalise these metaphors in order to make of them a social theory with clear and distinct concepts requires a separate investigation.

87 Stiegler, *The Neganthropocene*, 55 and Daniel Ross, "Too Soon / Too Late: A Pretext for a Recurrence of Bernard Stiegler," *Media Theory* 7, no. 2 (2023): 23.

88 See Stiegler, *Dans la disruption*, 442–443, My translation and emphasis.

89 Bataille, *Guilty*, 94.

This social whole includes exosomatic organs in Stiegler's terms—books, monuments, symbols—through which psychic individuals are infected with coexistence. Even though Bataille does not relate expenditure with technique, he perceives the relevance of tertiary retentions, which are their result, in the reproduction of the social circuits. More precisely, Bataille conceives these objects to be the product of unproductive expenditure in the sense that their purpose is not the reproduction of biological life, but the production of a vortiginous social ex-sistence. In this sense, when Stiegler states that in “Bataille's general economy [...] the surplus, instead of being subject to the calculus of reinvestment, is sacrificed, and not purely destroyed”⁹⁰ refers to the production of a useless object that embodies the “more” of the sum of the parts and thus composes a vortiginous social body. I affirm, therefore, that the Bataillean concept of society anticipates to a great extent the Stieglerian concept of neganthropy.

Conclusion

In this study, I have tried to show that Bataillean social theory anticipates several concepts of Bernard Stiegler's philosophy of technique. First, I consider that there is an important similarity regarding their general energetics since both are based on the assertion of entropic universal movement and life as anti-entropy, localised deferral of entropic non-specification force. In the case of Stiegler, based on Schrödinger, more clearly as the endosomatic organogenesis; in Bataille, relying on Vernadsky, life is explained in terms of the condensation or agglomeration of force-energy whose final source is the sun. Secondly, for both Bataille and Stiegler human existence is founded on bodily projection that founds technique and social as a co-ecstatic experience illustrated as a spiralling bifurcation in cosmic entropic and anthropic becoming. Thirdly, the affective-cognitive flows that produce social cohesion for Bataille as for Stiegler rely on tertiary retentions, that is to say, on artificial organs whose function goes beyond sustaining negentropic consistency in order to affirm neganthropological consistency.

Finally, it is noteworthy to mention that this research does not exhaust the relationship between Bataille and Stiegler. The three points of convergence which, in my view, show that Bataille anticipates important aspects of Stieglerian philosophy may be further developed in future research.

90 Stiegler, *Dans la disruption*, 362

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Book Review: *The Phenomenology of Virtual Technology*

Tiffany Petricini

As virtual reality technologies insert themselves more and more into our lives, coming to terms with the implications of such technologies is imperative. My son received an Oculus headset two Christmas's ago. He was completely immersed—so much so, that as he fell asleep he fell into the virtual reality world, mumbling and moving to the game. In the space where he would normally be drifting off, his brain was clearly on overdrive to process the experience. I was deeply troubled. Clearly, the virtual environment had affected him deeply. Wanting to make sense of this phenomenon, when I learned of Daniel O'Shiel's work, I was immediately drawn.

In *The phenomenology of virtual technology: Perception and imagination in a digital age*, O'Shiel's main premise that starts the book is that virtual technologies are impacting individuals and culture at large. In addition to shaping our reality and what we experience as real, he also argues that virtual technology changes "what is accessible to us, how it is accessible, as well as when and to whom"¹. O'Shiel was curious about the phenomenological underpinnings that could help provide insight into virtual reality. He claims at the beginning of the book that his work "provides a cohesive and systematic phenomenology of virtuality."² He builds this framework and then applies it to different contexts. Ultimately, what O'Shiel has tried to do and accomplished in this book is building a framework to help navigate our understanding of how and why our relationships are affected by virtual technologies.

The work is divided into parts. In the first part of the work, he does a deep dive into numerous different phenomenologists, piecing together like a puzzle the elements of their work that touch upon the foundations of virtual reality. O'Shiel exclaims on his website that he is an environmentalist; as such, I expected the work to draw significantly from Merleau-Ponty due to the strong movement in environmental philosophy that has drawn from his work. Merleau-Ponty is only one small voice in the greater conversation in this work. The first section is more of a chronology of the development and contributions to the main terms and theoretical concepts that vine out from Husserl. Using Husserl's

1 O'Shiel, *The phenomenology of virtual technology: Perception and imagination in a digital age* (London: Bloomsbury, 2022), loc 314.

2 O'Shiel, *The phenomenology of virtual technology*, loc 331.

work and the work of an assistant of Husserl's and phenomenologist in his own right—Eugene Fink—O'Shiel explicates his first major piece of the framework. He differentiates between two different ways that our world is presented to us. We receive the world through perceptions (more like experience of the real and the now) and "presentifications" (which are more like the elements of our experience without physical representations in the now—that is, we imagine their presence). O'Shiel writes that "Our experience of presence comes to the fore in the former; our ability to evoke something absent in the latter."³ In addition to perception and presentification, O'Shiel brings another important term to the table that is crucial to virtual reality experiences—image-consciousness.

Through Fink, O'Shiel argues that presentification and image-consciousness are two different experiences. An example of image-consciousness, he writes from the beginning, is watching a tennis match on television. When we watch television, there are three different elements to the experience that culminates in what we grasp. There is the physical object of the TV, the experience of the image (image object) and the actual scene on television (for example, a tennis match). What O'Shiel tries to uncover is how our consciousness of images fits into these schemes. He ponders whether image-consciousness is a hybrid. Through Fink, he lays the case that image-consciousness requires an actual object while presentification does not.

As part one continues, each chapter introduces a new phenomenologist. For a beginner in the study of phenomenology, this work would be very readable. Likewise, its depth is also well-suited for learned phenomenologists. It does a very good job introducing each of the scholars, explaining how their works and lives were connected, overviewing the major tenets of their work, then showing how their work informs the framework O'Shiel is creating. Incorporating the ideas of Heidegger, Merleau-Ponty, Sartre, Bergson and Deleuze, he is led to question whether imagination and perception, real and unreal, and several other dichotomies that he will then take up later in the book might best be understood as a spectrum. This paves the way for one of the major contributions of his work, that "societal and moral balance and betterment can only be realized through a proper understanding of virtuality and virtual technology."⁴ Due to the nature of our communicative and social experience, all experience is a shared experience. As such, our interactions whether virtual or not deserve reflection.

O'Sheil introduces four main "real virtualities" in the next part of his work: self, world, others and values. He explains that they are real in the sense that they infiltrate all perception and virtual in the sense that they are never fully given or present. The discussion

3 O'Shiel, *The phenomenology of virtual technology*, loc 331.

4 O'Shiel, *The phenomenology of virtual technology*, loc 368.

of these sets the stage for the final part of his work where he uses his framework to understand virtuality and the implications for specific technologies: social media, gaming, and virtual/augmented/mixed reality systems.

My interest was in social media, and it was the section of this part of the work that I spent the most time reading. It was in this part that I struggled to grasp a major claim of his work. Based on the framework he developed, he claims that when it come to the four virtualities, relationships, and interactions on social media engagement cannot be real and that conduct is imaginary in social media spaces. He does exceptionally well examining the dichotomies of terms often pitted against one another in philosophy of technology scholarship. The major dichotomies he examines are true/false, natural/artificial, presence/absence, perceptual/nonperceptual presence and actual/potential. Ultimately, he finds the presented technologies to be virtual. The reason they are virtual, he notes, is because they “allow us to interact with objects, people and worlds that are not actually there”⁵ and also because of their “power and sophistication to represent and impart digital phenomena into our worlds to the extent that this latter come to supplant the real and the perceptual, if not in experience then in terms of function and value.”⁶ He asks us to consider an important question, How far can they supplant the real?

One of the hesitancies I had about this argument is that the use of the language, “real” and “imaginary,” despite his presented awareness of the limitations of thought associated with the dichotomies, is still problematic. A new language is necessary to examine and discuss relationships in our worlds of mixed virtuality. Elsewhere I have noted Deacon’s work that looks at the physical and physiological impacts of “ententional phenomenon.”⁷⁸ Ententional phenomenon are those that are characterized by their absence. Deacon presents his own version of virtual reality by examining the neural activities associated with someone skipping a stone over a body of water, particularly when imagining and experiencing the skipping of the stone. Deacon notes that the actual neural activities are not tangible and instead equates them with words in the sense that, “They are both representations of something not-quite-realized and not-quite actual” and instead calls these “bits of virtual reality” which are “the contents of these representations.”⁹ These unreal bits “are as critical to events that will likely follow as the energy that will be

5 O’Shiel, *The phenomenology of virtual technology*, loc 3913.

6 O’Shiel, *The phenomenology of virtual technology*, loc 3915.

7 Tiffany A. Petricini, “Incomplete Nature: How Mind Emerged from Matter, Terence W. Deacon (2011), *Explorations in Media Ecology* 20, no. 1 (2021): 107–110.

8 Terrance. W Deacon, *Incomplete nature: How mind emerged from matter* (New York: W.W. Norton & Company, 2011).

9 Deacon, *Incomplete nature*, 19.

expanded.¹⁰ His work provides a helpful addition to O’Shiel’s—examining virtualities invokes that which is not existent in our physical world.

In my own work, I have tried to emphasize the actual tangible and physical impacts along the spectrum of technology-mediated relationships.¹¹ There is a harm that can be done in trying to pit online against offline when it comes to our interactions. The reality of our experience is that technology infiltrates all our relationships in infinite ways today. A colleague of mine recently wrote an account of the experience of a virtual reality based game. He wrote:

I do not question which reality is more real. I can always remove the goggles to firmly ground myself back in my bodily subjectivity. The question presented is not whether the virtual game is more real than my material existence, but whether my material existence contains any mechanisms that mask access to reality.¹²

I appreciated this thought because it truly hits at the heart of the matter of all rhetoric of social media and relationships. The concern is not whether they are “real,” or even whether they supplant the real, but instead whether these experiences “mask access to reality.”

When I think back to my son that night and his strange entry into dream world, that is ultimately what laid at the heart my concern. It was important to me that his ability to be able to distinguish between real and not real stay intact and remain transparent, and without yet having a long history from which to study impacts of these technologies on the developing brains, we need to remain mindful of the potentialities. As a parent, and an instructor, part of what O’Shiel’s work has brought to the forefront of my attention is that my guidance is imperative for helping those in my care navigate both the real and the unreal, the potential and the actual, the virtual and the perceptual. The technologies that impact us, for indeed they do—whether virtual or real, whether online or offline, whether perceptions or presentifications—cause tangible effects in our lifeworld—both positive and negative. Ultimately, O’Shiel’s work provides a firm background to think through these effects and how they will shape our future.

10 Deacon, *Incomplete nature*, 19.

11 Tiffany A. Petricini, “Explorations in the noosphere: Hermeneutic presence and hostility in cyberspace,” *Explorations in Media Ecology* 18, no. 1–2 (2019): 57–71; Tiffany A. Petricini, *Friendship and technology: A philosophical approach to computer mediated communication* (Oxford: Taylor & Francis, 2022).

12 Brian Onishi, “The wonder and terror of getting lost in the Room,” *Studia philosophica wratislaviensis*, (Forthcoming).

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Polycephalous Slime: Chemistry & Intelligence in *Parallel Minds*

Scott Schwartz

Laura Tripaldi, *Parallel Minds: Discovering the Intelligence of Materials*. Falmouth, UK: Urbanomic, 2022. 192 pp. \$18.95 (Paperback ISBN: 9781913029937)

Shortly after the introduction of the *Physarum polycephalum* (aka mucilaginous mould, aka polycephalous slime), I began to wonder if Laura Tripaldi's *Parallel Minds* might be a Borgesian crypto-fictional zoology. Given that the book was published by Urbanomic, an imprint known to flirt with "theory fiction," my suspicions were heightened. But the science checks out. Polycephalous slime happily resides within the planet's consensus reality. Rather than a surrealist foray, *Parallel Minds* offers a survey of cutting-edge nano-chemistry and the perceptual universes of a range of materials—living, un-living, and indiscernibly in-between.

Parallel Minds is more than just a worthy addendum to the growing literature in the broad posthumanism \leftrightarrow new materialism matrix. It can certainly be read alongside the works of Karen Barad, Rosi Braidotti, Jane Bennett, Manuel De Landa, Graham Harman, and Donna Haraway, among many others. However, Tripaldi's contribution is unique in her (re)considerations of the relationship between intelligence and materials. The most intriguing and provoking explorations suggest that intelligence is chemical, not computational. That is, while popular conversations about artificial intelligence usually center on machine learning and computechnical developments, Tripaldi suggests intelligence may more likely be synthesized chemically. This suggestion, of course, demands a slight reconsideration of what many have come to normalize as intelligence.

Rather than the anthropocentric veneration of the brain, Tripaldi articulates an intelligence reminiscent of Jacob von Uexkull's or Charles Peirce's semiotics: "Every intelligent material defines and constructs its own world, made up of signals and experiences that may be different from ours."¹ That is, slime and spider webs perceive environmental signals. The spider web is a technology that extends the spider's perceptive universe. Perhaps more fundamentally, it "radically challenges our idea of what a mind is."² Rather than traditional notions of the mind as a mirror that builds representations of the world, Tripaldi illustrates the workings of non-human minds "that function in a

1 Laura Tripaldi, *Parallel Minds* (Falmouth, UK: Urbanomic, 2022), 59.

2 Tripaldi, *Parallel*, 4.

non-representative way, without any need to build a reflective image of themselves and the world, and yet still manage to exhibit intelligent behavior.”³

Some of this intelligent behavior includes the capacity of polycephalous slimes to solve nodal network optimization problems that “require a prohibitive amount of calculation time for ordinary computation.”⁴ This capacity has led to investigations in *Physarum* computing—harnessing the ability of fungal systems to optimally configure themselves within their environment for our computational hardware. This “morphological computation” relies on thinking with form, bodily modification as intelligent response. The polycephalous slime colonizes “its environment with an efficiency comparable to that of human beings, even without a brain.”⁵

While not explicitly attempting to detonate Cartesian mind-body dualism, Tripaldi’s book does contribute to a growing wave of discontent with Descartes’s intractable inheritance. Mind and matter, spirit and body—these may not be as clear cut as the architects of Eurocolonial thought assumed. From the feminism of Elizabeth Grosz to the Black science studies of Denise Ferreira da Silva or the computational philosophy of Luciana Parisi, duality has sustained damaging blows to its ontological primacy. “[I]t is difficult to deny that our body as a whole is an integral and indispensable part of our mind.”⁶

In re-assessing the borders of mind and intelligence, the line between life and non-life also gets fuzzy. While anthropologist Edwin Hutchins (1995) compellingly theorized human tools as a form of distributed cognition,⁷ the spider’s web does seem to further blur the line between life and technology.⁸ The web senses and responds to vibrations. Can the same be said of hammers and phones? Tripaldi points to research in astrobiology that proposes “lyfe” as a more expansive category than life as we know it on Earth—“Rather than a specific phenomenon that occurred only once...life is being interpreted as a broader class of self-organizing processes.”⁹

At times, the book feels like a defense of chemistry against the dominance of physics as the fundamental arbiter of reality. Tripaldi laments that the average person is probably more familiar with Schrödinger’s cat than the chemical polyesters of their socks. Reshuffling the eminence of physics, chemistry, and biology reflects a recent interest in

3 Tripaldi, *Parallel*, 143.

4 Tripaldi, *Parallel*, 39.

5 Tripaldi, *Parallel*, 40.

6 Tripaldi, *Parallel*, 56.

7 Edwin Hutchins, *Cognition in the Wild* (Cambridge, MA: MIT Press, 1995).

8 Tripaldi, *Parallel*, 110.

9 Tripaldi, *Parallel*, 123.

“top-down causation,” most prominently from cosmologist George Ellis.¹⁰ The argument here is simply that the needs of higher-order systems (e.g., an organ like the heart) *cause* alterations to lower-order systems like genes, and ultimately that protein and gene activity controls electron flows.

In challenging key assumptions of the European Enlightenment, Tripaldi’s work raises sociopolitical concerns regarding the relationship between epistemology and politics. As Kathryn Yusoff argues in *A Billion Black Anthropocenes*, the geologizing and mineralization of colonial science was crucial to normalizing exploitation of human and non-human alike.¹¹ Tripaldi demonstrates that a world made of discrete materials in rigid interaction with each other “is a world in which relations of domination can easily be established, because this allows us to deny the subjective experience of the other...locking us in the dead-end closed room of our anthropocentric perspective.”¹²

The book troublingly reifies notions of reality at times. While there’s certainly a growing attachment to realism these days as philosophy and the humanities recover from their postmodern hangover, the recurring phrase, “In reality, ...” implies an authoritative access to reality that speculative realists don’t usually approach. This could just be a translational artifact—the substitution of a phrase like “In fact, ...” could amend this minor qualm.

More significant might be the figurations of nature. There are references to the “relational nature” of innovative materials¹³ and rediscovering our “lost continuity with nature.”¹⁴ Tripaldi suggests, “any appeal to the concept of nature, whether to protect it or to exercise dominion over it, ends up reaffirming the distance that separates us from it.”¹⁵ The sentiment is well-taken, but the idea that there is a separatable nature standing at a distance could be slightly more nuanced. Perhaps the 2015 xenofeminist coda might be a more appropriate finale: “If nature is unjust, change nature!”¹⁶

10 George Ellis, “Top-Down Causation and Emergence: Some Comments on Mechanisms,” *Interface Focus* 2, no. 1 (2011): 126-140.

11 Kathryn Yusoff, *A Billion Black Anthropocenes Or None* (Minneapolis: University of Minnesota Press, 2018).

12 Tripaldi, *Parallel*, 61-2.

13 Tripaldi, *Parallel*, 12.

14 Tripaldi, *Parallel*, 138.

15 Tripaldi, *Parallel*, 152.

16 Laboria Cuboniks, *Xenofeminism: A Politics for Alienation*, 2015, <http://laboriacuboniks.net>.

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Ruyer and his Elements towards a Metaphysics of Information's Origination

Philippe Gagnon

Ruyer, Raymond. *Cybernetics and the Origin of Information*. Translated by Amélie Berger-Soraruff, Andrew Iliadis, Daniel W. Smith, and Ashley Woodward. With an introduction by Ashley Woodward. Lanham and London: Rowman & Littlefield, 2024. xxvii-214 pages.

Readers interested by a philosophy of information must be grateful to these four translators, and to the publisher Rowman & Littlefield, for making available to an English-speaking audience this thought-provoking, and in many ways prescient book by French philosopher Raymond Ruyer, originally published in 1954, in the years when cybernetics as a philosophical programme was initially being investigated and republished with revisions a little more than a decade later.

Ruyer's *Neo-finalism* has been published in English in 2016 by the University of Minnesota Press, featuring a translation by Alyosha Edlebi, and the same publisher that publishes the current work has made available *The Genesis of Living Forms* in 2020, in a translation in English by Jon Roffe and Nicholas B. De Weydenthal.

The book is presented with an introduction, the use of clear and legible fonts, and the diagrams are reused with English insertions where needed. In general, the book is written without mistakes. If one will on occasion find a typo (e.g., *décroche* misspelled on p. 77), the main text has been proof-read to a satisfactory level. Sadly, this is not the case for the endnotes, which are replete with typos, from grammatical errors to misuse or absence of accents. If the book would be re-printed, the translators would do well to revisit, in chapter 1, notes 13, 21 (2 typos), 26 (2 typos), and 29. In chapter 2, notes 1 and 6. In chapter 5, note 4. In chapter 6, note 9. In chapter 7, note 11. In chapter 9, notes 4 and 5. In chapter 10, notes 4, 7, 14, 15, 49, 56, 57, and 64.

The introduction is useful, as it situates the criticism of Ruyer in terms of his option to refuse (if we state it in a summary way) an information without an informer, or a framing consciousness. An attempt is also made to draw implications of Ruyer's presentation for a philosophy of cognition, in our age of "deep learning" machines, pointing out some inevitably dated forms for some arguments, and alluding to the implications of this presentation for a philosophy of embryonic development. The endnotes (183–197) are helpful in guiding the reader through many elements of the history of a philosophy of

cybernetics and information. They contain many editor's notes, adding to Ruyer's initial footnotes, and attempt to bring precision at times to the references since Ruyer's way of referencing was, as is correctly pointed out, somewhat impressionistic.

Ruyer's writing is quintessentially French and contains some expressions of his own that are not straightforwardly translated. For instance, an expression—encountered more often in *Neofinalism*—such as “*survol*” can be made into “flying over,” but when one does, one keeps the impression that misunderstandings could still occur. Should one turn “*sens*” into “sense” or into “meaning”? And then again, is “*liaison*” going to be a “bond” or a “connection”? We must be grateful to the translators for providing us at least some clarifications on their choices.¹

Ruyer was among the first to realize the sort of model inversion that early mechanistic cybernetics conveyed within itself. In his reaction to “Behavior, Purpose, and Teleology,” by Rosenblueth, Wiener and Bigelow, Warren Weaver had also voiced objections to Wiener's project.² We indeed have “the brain is thinking,” from which one sought to get “thought is brain.” Not unlike Whitehead, Ruyer will submit the problem to a process-view and ask what is really going on in cognition. To answer such a question, he will suggest a whole parabola, from the conception of any intelligent activity, all the way to its completion. Concerning the central notion of information, Ruyer deemed it unbelievable that information could be wholly analyzed in reference to spatio-temporal models alone. One has to remember that this was written at a time when the mystifications around that term of “information” were still very much in favor, and it was perhaps less evident that the logarithmic and mathematical definition of what information is, indeed has little to do with human attributions of a form or a finality to anything; information is produced by shuffling, it accompanies the expansion of complexity, but then it also tends to restrict itself to moving bits, or other measures, from one concatenation to another as it conserves a compressed and highly abstractly-defined order.

Ruyer makes information creation a prerogative of a framing consciousness, and, as the subtitle of the present book has it, this only appears when one problematizes the “origin” of information. As the introduction correctly points out, perpetual motion cannot be envisioned anymore in the realm of information machines than it could in thermal energy transforming machines, or in kinematic and mechanical transforming ones.

1 See Raymond Ruyer, *Cybernetics and the Origin of Information*, trans. Amélie Berger-Soraruff, Andrew Iliadis, Daniel W. Smith, and Ashley Woodward, with an introduction by Ashley Woodward (Lanham and London: Rowman & Littlefield, 2024), XXVI–XXVII.

2 See Lily Kay, *Who Wrote the Book of Life? A History of the Genetic Code* (Stanford: Stanford University Press, 2000), 83.

Ruyer deems it evident that there is a new viewpoint stemming from a truly “atomic” and quantal understanding of the problem, and he attempts to show, in the dialogue added to the 1967 edition³, that mechanistic cybernetics treats living organization as accounted for when a purported stochastic assembly mechanism can be called to do the work, and thus in a “molar” way. By taking such an option, the complexity of the structuring of the “*ébauche*” (another slippery concept to translate) is left unaccounted for.⁴

The “axiological cogito” makes it impossible not to assert, but to inscribe meaninglessness in the deployment of action; whoever pursues action has it finalized, such that the pursuit of life destroys any position that would affirm the void of a value-driven realm of finality. This is Ruyer’s answer to any “proof” pointing to a necessity of a “beyond” in explanation, that one finds in *Neofinalism* but which plays fully here as well. The desire to answer a metaphysics of the oceanic sentiment operates at all times in the thought of Ruyer, and it is strongly present in Ruyer’s swan-song book, *L’embryogénèse du monde et le Dieu silencieux*, made available to researchers only in 2013.

Ruyer is drawn to the vision of an agent always and everywhere inserted between a realm of ideal possibilities and their actual realization and implementation, that is, between an actual domain and ideal possibilities.⁵ This in turn contains an epistemological option of a rationalist kind, in that he deems unfruitful to expect from mere otherness and novelty the creation of any enduring structure. Indeed, only by having a pattern to sort things into can we really invent. Theories of emergence, of the coming about through chance encounters, and of unknown and unrecognizable configurations, are treated by him as incoherent.

In a 1958 text, Ruyer summarized nicely what is at the heart of the present book’s message: in a reproduction and performance of cognitive-like tasks, there is an ideal beyond the “ideals” of the regulators. The diagram for the “voluntary act” is analogous to the diagram for the functioning of automatic machines. But we do come, in the case involving human agents, to a form of absolute presentation of all trajectories immediately readable on the visual field. Consciousness is the very fact that all trajectories be presented together in a sort of virtual equipotentiality, such that a “good” one, in relation to what is valued, can be chosen without having been produced from equilibrium. For the criticism of any vision as unified as predicated of machines, one is invited to read *Neofinalism*.⁶

3 See Ruyer, *Cybernetics*, 180–182, the presently-reviewed translated work to which I will keep referring thus.

4 See *Cybernetics*, XXVII.

5 See Raymond Ruyer, *Neofinalism*, trans. Alyosha Edlebi (Minneapolis: University of Minnesota Press, 2016), 121 and Ruyer, *Cybernetics*, 138.

6 See Ruyer, *Neofinalism*, 90–97 for the “autoflight” vision argument.

If all neuronal phenomena obeyed classical physics, a description of the field of consciousness, then its absolute presentation would become "false existence." The isomorphism of nervous phenomena and consciousness is an isomorphism by complementarity, and not one by parallelism.

When we look for machine acquiring independence, we are asking two different questions: (1) can they initiate a quest for knowledge, and aim at acquiring new knowledge? (2) can they help us probe and mine a multiplication of data so enormous that all intuitive inspection is impossible? In the realm of that second question, a lot can be said in favour of automation, but in what the machine can accomplish *qua* machine, one will always have to factor in that its language is specialized, and that it treats symbols that have no intentional value for themselves. The "aboutness" of natural language, more supple, if it makes "errors" or equivocations possible, also by the same token can bring about invalid yet fruitful associations, e.g., from a mostly unhelpful four-term syllogism, one can also get an affirmation of the consequent that is still a heuristic for science.

Standard philosophy of science, in the tradition of logical atomism, has favoured a vision of verification of statements that required for them an empirical correspondent to a term; whenever the mind would come into this picture, it would have to be detected in the same way. Ruyer sought a better positioning, in that for him, mind was experienced in the first person, it always had virtual possibilities presented to it as equivalent. If we were to analyse human action, and the action of an automaton, we would find need to organize the response-seeking and answering through effectors implementing a program; the human action would still keep programs in check, realizing a final integration.

Many tasks of a cognitive nature can be performed by automata, that is not in question, indeed the introduction bears on a programmed device navigating better than we do some typical and routine situations, e.g., being far better than any human agent at avoiding a post placed directly on one's way.⁷ But what cognition there is here, is going to be a selection among given possibles, and not their invention.

The translators have chosen to re-insert the deleted portions of the first edition of the book between bold square brackets. This choice is certainly debatable. It is not convincing to draw an analogy with the two editions of Kant's *Critique*.⁸ Ruyer's whole philosophy is a philosophy of consciousness, but in a qualified sense, where he distinguishes between "primary" and "secondary" consciousness. Indeed, sometimes Ruyer chose to drop some developments about which he probably came to realize that they were unfortunate or

7 Ruyer, *Cybernetics*, 3.

8 Ruyer, *Cybernetics*, XXV.

misguided. For instance, his first redaction had a mention of the information content of the early universe's organization as being devoid of any significance for the future of the universe's organization; I have argued that this has strange and perhaps inconsistent implications within a philosophy that is built around the primacy of a body-sustaining and a somatic rule of primary consciousness, as it seems to have the implication that the world is not able to sustain order without a human imparter, all the while building everything on "fibrous lines" at a fundamental cosmological level; when thus understood, one can only agree—even if the agreement be partial—with the criticism of this human exclusive origination of information, as done by, e.g., François Bonsack in the 1965 Royaumont symposium on information theory and its uses.⁹

The introduction attempts to steer the reader in the direction of a philosophy that could lend further elements to an ongoing reflection on the limits of a world governed by automata and "smart" devices. As one can readily understand, it would have been perhaps too bold to put undue emphasis on a theological dimension structuring the thought of Ruyer. Yet this dimension is very real and informs the whole of this vision since its immediate pre-war inception. Ruyer's own summary of his thought, written for Deledalle and Huismans, leaves no doubt: "Maybe it is the philosophical analysis of automata and the criticism of information theory which can give the most lasting hope of reaching something like a new theology."¹⁰ The semantic reservoir that ultimately fuels the intrinsic meaningfulness of any action, encapsulated in the axiological cogito¹¹ posits a reference to a realm of meaningfulness offered to any existent, and for which Ruyer will refuse to re-posit a divinity "elsewhere" (alluded to in the introduction, see note 27). The first synthetic work of his post-mechanistic philosophy, *Éléments de psycho-biologie*, was reviewed by Stéphane Lupasco who correctly pointed out that it contained a theological reference that was strangely optimistic maybe because it aimed at exorcising the post-war existentialist flirting with death. Then, we find the equally programmatic sayings during the captivity era on the aesthetic appeal of studying the world even *within* the sciences,¹² and again, in Ruyer's mature works, after his retirement, such as *Dieu des religions*, *Dieu de la science* (1970), we still see him constantly arching back to this human participation in an *imago Dei* quality by one's very engineering of this world that one must first obey in order to understand, which in this book clusters around Francis Bacon's axiom "*natura non*

9 See Philippe Gagnon, *La réalité du champ axiologique: Cybernétique et pensée de l'information chez Raymond Ruyer* (Louvain-la-Neuve: Éd. Chromatika, 2018), 241–248.

10 Raymond Ruyer, "Raymond Ruyer par lui-même," *Revue philosophique* 80, no. 1 (2007), 10–11.

11 See Ruyer, *Neofinalism*, 1–7.

12 "The metaphysician, for one, considers nature has having a face, as a portrait author would look onto his model, paying attention to the conveyance of its expression and not only to a sum of details." Ruyer, "L'esprit philosophique," 16 (a reprint of a 1941 lecture).

nisi parendo vincitur".¹³ The implications are to be seen as a *leitmotiv* even in the present work, that Ruyer will seek to ground firmly later (but only three years after the second edition of the present work): "The automaton functions in a brutal exteriority, which is but an 'extract' of the authentic exterior world of the engineer. This human technical world is necessarily framed—whatever philosophers say who pretend to distrust the pure domination of technique, by the world—in the religious sense of the word—which it is of the essence of man to conceive, and by which conception the religious man identifies himself to God."¹⁴ Such a theological assumption is not derived from the teachings of any particular religion, it is a claim that a metaphysics of information and its origination is all that one would need in order to frame a divine piloting function for the cosmos as a theatre of action's deployment; as the back cover summary of the 1970 book has it: "One can always offer a definition of God that is such that it makes the believer in God look ridiculous. But one can also, following the themes of contemporary science—in cybernetics, in information theory, in microphysics, in cosmology—define a X, a Principle, a Unity of the world, a Support or a framer of all beings, a 'Tao beyond all names.'"

A judgment on the whole contribution of Ruyer in this monograph is not easy to come by. In a recent article, that is indeed referenced in the present translation, Alix Veilhan suggested that when discussing cybernetics Ruyer was not in dialogue with Wiener, Shannon, or the other early theorists of information, as much as he was interested in his own project's development.¹⁵ There is potential for such a steering in one's own direction on the part of Ruyer; for instance, this reviewer remembers his astonishment when he discovered that the system developed in *La gnose de Princeton* in 1974, where Ruyer claims that he is distilling the thought of a group of neo-gnostic astrophysicists from the United States was in fact his way of by-passing the Parisian intelligentsia's exclusion of ideas such as his own to get himself readers. But this line of reasoning might not be entirely appropriate here. It seems that some of the endnotes of this English translation have the potential of establishing many of the real points of convergence of some of Ruyer's arguments and unanswered as of now questions concerning the metaphysics of information.

13 See Ruyer, *Cybernetics*, 136.

14 Raymond Ruyer, *Dieu des religions, Dieu de la science* (Paris: Flammarion, 1970) 115–116, and see Ruyer, *Cybernetics*, 49.

15 See Ruyer, *Cybernetics*, 184 and Alix Veilhan, "Raymond Ruyer et la cybernétique," *Philosophie* 149, no. 2 (2021), 55–57.

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Screens as Relational Thresholds in Human Experience

Book Review of *Toward an Anthropology of Screens: Showing and Hiding, Exposing and Protecting* by Mauro Carbone and Graziano Lingua

Andrea Zoppis

Toward an Anthropology of Screens provides a deep anthropological and philosophical, as well as ethical and political reflection on our experience of screens, intended as interfaces mediating our relationships with the environment. More specifically, Mauro Carbone and Graziano Lingua aim to illustrate the crucial role that screens have played—and continue to play—in shaping human experience of the world. As we shall see in this review, this study on screens provides us with some effective conceptual tools for critically rethinking humanity in its constitutive processes.

Here, far from being able to exhaust the vastness and richness of the book, I will present those passages that I found particularly relevant to today's human and philosophical condition. I will first contextualise this operation by referring to the introduction, in which the authors outline the framework of their project. Then, I will delve into the five chapters composing the book. Finally, I will offer some personal reflections on the relevance of this work.

From the outset, the centrality of screens to human experience is emphasized. In this respect, the COVID-19 pandemic, which drastically forced human beings to retreat from in-person relationships, is seen as an important turning point. The authors describe the pandemic as a true *phenomenological epoché* that allowed human beings to socially experience unprecedented potentials and uses of screens. Indeed, the pandemic is regarded as an epochal occasion to deepen our understanding of screens and their impact on our lifeworld, making it possible to “relearn to see [them].”¹ Nevertheless, following the authors' arguments, to properly seize this epochal occasion, it is first necessary to understand how screens have always had the function of activating or preventing relationships, positioning themselves as founders of mediated experiences. In short, “rather than being mere surfaces, screens have always functioned as interfaces,”² which is why they should be conceived as “real operational thresholds,”³ allowing different orders

1 Mauro Carbone and Graziano Lingua, *Toward an Anthropology of Screens: Showing and Hiding, Exposing and Protecting* (Cham: Palgrave Macmillan, 2023), 13.

2 Carbone and Lingua, *Toward an Anthropology of Screens*, 4.

3 Carbone and Lingua, *Toward an Anthropology of Screens*, 65; cf. Graziano Lingua, “Che cosa c'è di nuovo nell'immagine digitale?” *Vite digitali. Essere umani nella società del XXI secolo*, ed. Alessandro De Cesaris, (2020).

of our being in the world to communicate with each other.

From this perspective, it is therefore crucial to note that this feature is not intended by the authors to be exclusive to our digital devices. Rather, the *screen functions* of showing and hiding, protecting and exposing must be conceived from what they referred to as the *proto-screen*, meaning the human body itself. The body is the first medium with which human beings are endowed in their experience of the world, already potentially possessing those functions that will characterise the different historical variations of screens. In this respect, the text aims to conceive screens from their embodied roots, that is, conceiving them as an externalisation of the body's *screenic functions* in the form of prosthetic concretisations of corporeal potentials, opening new techno-aesthetic possibilities for humanity. This mainly implies grasping screens from the sensible texture of perception, thus inaugurating "a pragmatics of screen experiences"⁴ structured according to a relational ontology. In this regard, they are rightly defined as *quasi-subjects*—a term proposed by the phenomenologist Mikel Dufrenne⁵—meaning that, almost-independently from human subjects, they have the power to *express a world*.

Moving into the main body of the text, the reflection on screens starts according to its proper ontological scope, focusing on the notion of *arche-screen*. This notion forms the backbone of the second chapter, indicating the structuring principle of perceptual experience. In this respect, the notion of arche-screen refers to "a theme that never ceases to form and transform itself *with* and *through* its prehistorical and historical variations."⁶ Building on this, the arche-screen is thus conceived as the *trans-historical and variable principle* of our experience, endowed with an epochal, metastable and differential power to distribute the visible and the invisible, as well as that of exposing and protecting human beings to the environment.

Therefore, particularly instructive in conceiving the structure of the arche-screen is the description of its functioning in shaping images in perceptual experience. In this regard, the authors consider Plato's allegory of the cave, providing an intriguing new interpretation. Deepening some reflections developed in Carbone's previous work *Philosophy-Screens*,⁷ the platonic cave is described, following the notion of arche-screen, as a visual apparatus

4 Carbone and Lingua, *Toward an Anthropology of Screens*, 11.

5 Mikel Dufrenne, *Phenomenology of Aesthetic Experience*, trans. Edward Casey, Albert A. Anderson, Willis Domingo and Leon Jacobson (Evanston: Northwestern University Press, 1973).

6 Carbone and Lingua, *Toward an Anthropology of Screens*, 18.

7 See Mauro Carbone, "Delimiting to Exceed: The Theme of the "Arche-Screen" Founding Itself with Its Variations," in *Philosophy-Screens: From Cinema to the Digital Revolution*, trans. Marta Nijhuis (New York: SUNY Press, 2019).

characterised by two screens: a *positive* one, which accommodates the shadows projected on it, and a *negative* one, namely the shapes that interpose between the light source and the positive screen. The positive one is then described as a *quasi-world* or an *infra-world*, on which the spectators can fertilise their desires, wanting “to see themselves among the images on the cave walls.”⁸ Hence, the notion of arche-screen becomes the conceptual tool to describe a foundational perceptual and situated dimension of experience that refers as much to visual and embodied characteristics as to empathically connoted modes of participation in the environment, enabling the elaboration of an effective theory of desire.

With this theoretical framework established, the third chapter turns to a genealogical analysis of the historical variations of the arche-screen. Following a path that leads from the veil as the separator of the sacred dimension from the profane world in Jewish traditions to Alberti’s window and the solar microscope as modern viewing devices, the authors illustrate some peculiar screenic functions, effectively showing how screens are to be understood as *operational thresholds*.

In this perspective, the Jewish veil, separating the sacred and transcendent zone in the temple from the profane world of humans, is described as a peculiar historical concretization of the arche-screen. Sacredness and profanity for human experience are co-articulated by the boundaries drawn by the veil that interposes to the subjects’ gaze. In this regard, the veil isolates portions of space and thus makes them sacred. Therefore, the authors describe the Jewish veil according to its peculiar seductive features to explicate how *to screen* some parts of reality can mean sacralising them, that is, establishing privileged places that have the power to orient human experiences.

Another important historical variation of the arche-screen to highlight is Alberti’s window, as theorized in his treatise *De Pictura*.⁹ The authors recognise in this visual apparatus the foundational elements of the first scopic regime of modernity. Through the window device, a new historical way of relating to the world is established: “The intersecting grid, surrounded by the frame, geometrifies reality, makes it calculable, and strips it of all magical and spiritual forces.”¹⁰ Alberti’s visual device thus mediates between the artist’s gaze and the perceived world, producing through its geometrizing function a supposed “real space.” Hence, this geometrical space progressively imposes itself as the only real one, retroactively geometrizing and crystallising the very gaze of the observer: “*Through the medium of intersection, in fact, not only is the world exposed as “representation” to the gaze of the observers, but the observers themselves are constituted as such and as such*

8 Carbone and Lingua, *Toward an Anthropology of Screens*, 36.

9 Leon Battista Alberti, *On Painting*, trans. Rocco Sinisgalli (Cambridge: Cambridge University Press, 2011).

10 Carbone and Lingua, *Toward an Anthropology of Screens*, 55.

are exposed to the world.”¹¹ In this respect, Alberti’s window is seen as a variation of the arche-screen decisive in establishing the modern regime of knowledge centred on the mathematisation and rationalisation of nature, providing modernity with the conceptual and visual tools to experience control and mastery over reality.

The genealogical analysis conducted in this chapter, irreducible to the two examples that I brought up, thus becomes the occasion of acknowledging some key attributes that have shaped screens’ evolution, with an emphasis on those that remain relevant in their contemporary forms. In this regard, Carbone and Lingua significantly posit that screens embody a *truth-value*, whether scientific or religious, according to a seduction strategy hinged on their screenic functions.

Consequently, in the following chapter what is at stake is the debate concerning the relationship between images and words in the age of digital screens. To examine this issue, the authors present a telling investigation concerning the interrelation of these two elements in Christian culture under the rule of Gregory the Great:

In short, images are like a book for those with no special cultural skills, and in them the word finds a screen on which to ‘project’ and give concrete form to its contents. On the other hand, however, the image needs the spoken or written word, for only in this way can it emerge from the indeterminacy to which its polysemic nature condemns it.¹²

Thus, through this historical analysis, images and words, rather than being understood as opposing and irreconcilable modes of expression, are conceived in their co-implication, as epochally co-structuring regimes of visibility and speakability, instituting representations of reality and society. For the authors, especially considering the increasing capacity of digital screens to coordinate the relationship between them, it is therefore necessary to overcome the cultural war between images and words to fully understand their *screenic* co-implication and their effects on the constitution of the representation of reality. Then, following this same path and deepening this analysis toward the structuring of our contemporary reality, the authors raise the crucial question concerning the *dual nature* of digital objects. Referring effectively to the study of Frieder Nake,¹³ screens are mainly characterised both in terms of their *surface*—the way they appear to users—and their *subface*—their underlying algorithmic structure. In this respect, while the subface

11 Carbone and Lingua, *Toward an Anthropology of Screens*, 56.

12 Carbone and Lingua, *Toward an Anthropology of Screens*, 87.

13 See Frieder Nake, “Surface, Interface, Subface: Three Cases of Interaction and One Concept,” in *Paradoxes of Interactivity: Perspectives for Media Theory, Human-Computer Interaction and Artistic Investigations*, ed. Uwe Seifert, Jin Hyun Kim, and Anthony Moore (Transcript Verlag, 2008).

of digital images is their actual algorithm, their surface “allows us to interact with the machine without necessarily knowing the written code,”¹⁴ helping to generate “the illusion that digital environments are capable of producing disintermediation on the social and political fronts.”¹⁵ This essentially implies a primacy of what screens make visible over their proper technical structure, fuelling a naive sense of immediacy and transparency.

The elements discussed in this chapter thus lead the authors to properly consider the question of ideology as it is structured in our current society.

In this sense, built on the myth of transparency and the proliferation of digital devices, the authors denounce what they call the *Ideology of Transparency 2.0*, an ideology fostering an illusory sense of social disintermediation and consequently driving a growing obsession with visibility. Indeed, according to this conception, what is socially visible is immediately equated with truth, while what is hidden is assumed to be falsehoods and lies. In this regard, the analysis of Dave Eggers’s novel *The Circle* that the authors developed is emblematic, as it exemplifies the potential motto of the Ideology of Transparency 2.0: “Secrets are lies.”¹⁶

Carbone and Lingua criticise this ideology particularly being the ground of certain contemporary political projects of e-democracy, which emphasize transparency, visibility, and disintermediation as fundamental political values. In their perspective, if such political projects are meant to create a system of complete participation and full awareness on the part of voters and citizens, conversely, they risk “reducing participation to a passive form of spectatorship that erodes the propositional capacity and active role of citizens.”¹⁷ Indeed, as the authors powerfully remind us, the digital devices that sustain and ground Transparency 2.0 are intrinsically programmed according to choices that direct their use. From this perspective, citizens/users are seen as more or less consciously participating in the structuring of a *reticular Panopticon*—as conceptualised by Byung-Chul Han¹⁸—which, given the progressive multiplication of digital devices, offers an increasingly vast array of opportunities for controlling, monitoring, and surveilling everyday human and non-human life.

The structural and endemic pervasiveness of digital devices is then further explored in

14 Carbone and Lingua, *Toward an Anthropology of Screens*, 97.

15 Carbone and Lingua, *Toward an Anthropology of Screens*, 98.

16 Carbone and Lingua, *Toward an Anthropology of Screens*, 112; Dave Eggers, *The Circle* (London: Penguin, 2014), 303.

17 Carbone and Lingua, *Toward an Anthropology of Screens*, 116.

18 Byung-Chul Han, *The Transparency Society*, trans. Erik Butler (Stanford: Stanford University Press, 2015), 46.

the sixth chapter, starting with the elaboration of the notion of *quasi-prosthesis*—implying a fundamental rethinking of corporeality concerning new digital technologies—followed by the analysis of the notion of *dividual*—fundamentally paving the way for an ethical reconsideration of our relationships within the technological system in its complexity.

For the authors, the notion of quasi-protheses indicates how “certain organs of our body (the retinas or the skin, for instance) [are used] as additional components of technological (more precisely digital) artifacts.”¹⁹ Hence, this notion shows how some parts of the human body are progressively becoming an integral part of the functioning of digital technologies (such as *Google Glasses*, which are equipped with a projector that uses the retina as a screen upon which to direct its beam). In this regard, the term “quasi” is significantly employed to describe a condition in which the modern subject-object philosophical dichotomy is essentially challenged by digital technologies. Indeed, the “quasi” explicates the intrinsic entanglement of these two poles: the passivity of the object is inherently interwoven with the activity of the subject and vice versa, being ambiguous to identify an absolute origin of agentivity.²⁰ This chiasmatic intertwining between subjects and objects explicated by the term “quasi” plays a pivotal role in the philosophical reflection concerning technical objects, providing the conceptual means to introduce what the authors define as our *dividual condition*.

The notion of *dividual* is then discussed in the context of our increasingly pervasive technological and screenic experience of the world and the consequent partitioning of our perception and our personal and social identity. In this perspective, the modern notion of individual is denounced as not being able to account for the experiences that are provoked and fostered by today’s technologies. Following this argument, the notion of *dividual* is first presented by referring to Deleuze’s article *Postscript on the Societies of Control*, namely, according to a negative connotation of this term, aimed at denouncing that capitalism of control that exploits the partitioning of individualities for economic and political purposes.²¹ Subsequently, to explore the full scope of the notion, the authors present an instead positive interpretation of *dividuality*, as exemplary put forth by Michaela

19 Carbone and Lingua, *Toward an Anthropology of Screens*, 137.

20 In this respect, a reference to the Merleau-Pontian assertion that philosophy must address the “passivity of our activity” can be noticed. Maurice Merleau-Ponty, *The Visible and the Invisible*, trans. Alphonso Lingis (Evanston: Northwestern University Press, 1968), 221. It is worth mentioning that this line of reflection constitutes a significant theme in Carbone’s philosophical work; see Mauro Carbone, *An Unprecedented Deformation: Marcel Proust and the Sensible Ideas*, trans. Niall Keane (New York: Suny Press, 2018), 17; Mauro Carbone, *The Flesh of Images. Merleau-Ponty between Painting and Cinema*, trans. Marta Nijhuis (New York: Suny Press, 2015), 39.

21 Gilles Deleuze, “Postscript on the Societies of Control,” trans. Martin Joughin. *October* 59 (1992), 5.

Ott,²² which could effectively help us better deal with our existential contemporary condition. Indeed, this notion offers an opportunity to rethink *relations* as the ground of our interactions with others, the world, and ourselves, helping us move beyond the substantialist ontology inherent in the modern ideology of individuality. Considering our *dividual condition* is thus the opportunity to explicate a relational ontological ground concealed by modernity to rethink the metastable roots of our very individualities, providing a fruitful basis for developing more effective countermeasures to the dominant socio-technical system. Therefore, this operation enables us to find *lines of flight* from the dominant system, helping structure what the authors indicate as “a phenomenology of the emerging experiences of dividual relationality.”²³

In conclusion, through its chapters, this book leads us to reconsider screens as *apparatuses of action*, unmasking their ideological and socio-political function. They are “capable of globally orienting our social interactions and radically reconfiguring our relationship with the spaces, near and far, to which we relate.”²⁴ Moreover, as we have seen at the beginning, they are conceived as externalisations of primordial bodily functions, which is why, thanks to this book, the debate on digital screens turns out to be radically refocused on the bodily relationship we have with them. As the authors exemplarily point out concerning the debate on screen time: “The idea of responsible screen use cannot, therefore, be exhausted in setting a dedicated time for it but rather refers back to the quality of the lifestyles with which we relate to screens.”²⁵ Therefore, it is in this same direction that, proposing a *pragmatics of screen experience*, the authors critically state: “We need to focus not so much on the *objects* as on the *functions* that come into play in our screen experiences,”²⁶ namely, on the relationship we have with and through them.

In this regard, the book suggests a pragmatic understanding of screens, based on a dividual, and therefore relational and phenomenological ontology. In my view, this essentially means conceiving screenic functions as being embodied into their sensible, expressive and material structures, thus paradoxically preventing any *merely functionalist* understanding of their complete mode of being. Indeed, a purely functionalist approach—tending to reduce screens to their current and socially normative functions—may not be prepared to embrace other historical variations of the arche-screen and its functions. In this respect, it is worth repeating that considering screens following the authors theoretical operation means conceiving them as *quasi-subjects*, namely, according to their

22 Michaela Ott, “Dividual Subjectivations in the Society of Control,” *Coils of the Serpent* 5 (2017): 165.

23 Carbone and Lingua, *Toward an Anthropology of Screens*, 156.

24 Carbone and Lingua, *Toward an Anthropology of Screens*, 162.

25 Carbone and Lingua, *Toward an Anthropology of Screens*, 165.

26 Carbone and Lingua, *Toward an Anthropology of Screens*, 165.

implicit functionalities and irreducible expressiveness with respect to human experience.

Toward an Anthropology of Screens, as well as being an enjoyable and rich read, makes a significant contribution to an ontological rehabilitation of our embodied experience of screens. Considering them in their functions, the authors fruitfully and critically present their instituting and relational role in human life. This means, on one hand, to individuate and denounce their negative effects on society and human beings and, on the other, to recognize their beneficial implications for identifying and managing otherwise unsolvable problems (especially concerning the progressive complexification of our contemporary societies). In Stiegler's terms, they are thus seen as *pharmaka*—both poison and cure for the individual and collective issues of modernity—becoming the very spaces in which emancipation from the psycho-social power they embody becomes possible.

Finally, far from pre-emptively adopting a technophobic or techno-enthusiastic stance, the authors embrace Gilbert Simondon's philosophical posture, advocating for the urgent reintegration of screens into human culture and social life. In this sense, this powerful book incites and accompanies the readers in a profound reflection on digital technologies we surround and endow ourselves with, helping us both to understand who we are becoming through and among them, and to orient the search for a never-conclusive definition of what reality is. Therefore, the reflection the authors provide encourages us to recognize the intimate technological and screenic interconnections between ourselves and the world, helping us to shed light on the sensible and technical dimensions in which both we and our screens are primitively rooted.

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