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POSTPHENOMENOLOGY AND HUMAN CONSTITUTIVE TECHNICITY

How Advances in AI Challenge Our Self-Understanding

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Abstract

In this paper, I aim to assess whether postphenomenology's ontological framework is suitable for making sense of the most recent technoscientific developments, with special reference to the case of AI-based technologies. First, I will argue that we may feel diminished by those technologies seemingly replicating our higher-order cognitive processes only insofar as we regard technology as playing no role in the constitution of our core features. Second, I will highlight the epistemological tension underlying the account of this dynamic submitted by postphenomenology. On the one hand, postphenomenology's general framework prompts us to conceive of humans and technologies as mutually constituting one another. On the other hand, the postphenomenological analyses of particular human-technology relations, which Peter-Paul Verbeek calls cyborg relations and hybrid intentionality, seem to postulate the existence of something exclusively human that technology would only subsequently mediate. Third, I will conclude by proposing that postphenomenology could incorporate into its ontology insights coming from other approaches to the study of technology, which I label as human constitutive technicity in the wake of Peter Sloterdijk's and Bernard Stiegler's philosophies. By doing so, I believe postphenomenology could better account for how developments in AI prompt and possibly even force us to revise our self-representation. From this viewpoint, I will advocate for a constitutive role of technology in shaping the human lifeform not only in the phenomenological-existential sense of articulating our relation to the world but also in the onto-anthropological sense of influencing our evolution.

1 INTRODUCTION

Nowadays, advances in the design, employment and regulation of the most recent technologies seem to challenge our self-representation—i.e., what we think it means to be humans—by intruding into the most intimate dimensions of our existence and thereby perturbing its operational and conceptual margins. One could think of highly automated machinery replacing biological workforce, nanobiotechnology implanting artificial components into our bodies or industrial pollution leading to global environmental degradation, just to name a few examples. Quite self-evidently, the management, development and research concerning artificial intelligence (AI) can be legitimately considered one of the most striking instances of this trend.

If technoscientific development perturbs our self-understanding, the philosophy of technology is one of the most eminent research programmes aimed at elucidating this phenomenon. In this paper, I set out to enrich the scholarship in this field of study by scrutinizing the ontological and epistemological premises upon which such a hypothesis rests. First, I will investigate in which sense our conception of what it means to be humans is challenged by contemporary technoscientific development, with special reference to the case of AI. Specifically, I will argue that we may feel diminished by the introduction of technologies seemingly replicating what is traditionally considered uniquely human features because we regard our lifeform as originary separate from, superior to and independent of technology.

Second, I will assess whether the ontological tenets of postphenomenology, one of the most prominent contemporary approaches to the study of technology, are suitable for making sense of this dynamic. I will submit that, on the one hand, postphenomenology's theoretical framework prompts us to conceive of humans and technologies as mutually constituting one another. On the other hand, however, the postphenomenological analyses of particular human-technology relations, labelled as cyborg relations and hybrid intentionality, contradict this general stance by postulating the existence of something exclusively human that technology would only subsequently mediate.

Third, I will conclude by submitting that postphenomenology could incorporate into its ontology insights from other, possibly minoritarian philosophies of technology, such as those elaborated by German philosopher Peter Sloterdijk and French philosopher Bernard Stiegler respectively, in order to better account for how advances in AI foster and possibly even force us to revise our understanding of what it means to be humans nowadays. Starting from this perspective, I will advocate for a constitutive role of technology in moulding the human lifeform not only in the phenomenological-existential sense of articulating our relation to the world but also in the onto-anthropological sense of shaping our evolutionary trajectory. Thus, this paper deals not so much with how postphenomenology may help us better understand AI as with how advances in AI may aid us in rendering explicit and problematizing the ontological premises of the postphenomenological endeavour.

2 TECHNOSCIENTIFIC OFFENCES

Usually, new knowledge is regarded as improving our lives. Novel insights into the mechanisms underlying the structure of reality, information regarding how to influence it and vantages on how we should make sense of our condition are mostly deemed to help us better navigate existence and its difficulties, providing us with the means to orient ourselves more aptly in the world. However, historical progress in the articulation of knowledge may sometimes also have the opposite effect and shatter the established understanding of existence, disrupt the meaning we confer on the world and unhinge our perception of safety and belonging.

This two-faced character of knowledge has been famously theorized by German philosopher Friedrich Wilhelm Nietzsche in writings such as "On Truth and Lies in a Nonmoral Sense" (1979),

where he submits that the sole function of cognition is to pursue life and that there is nothing transcending or exceeding this vital drive. Humans craft systems of illusions to confer meaning on their lives and stand the otherwise destructive senselessness of existence. We forget that these constructions are illusory because they become predominant in our sociocultural milieu and are collectively considered incontrovertible truths. However, Nietzsche argues, human cognition may also revert against itself and unveil the illusory character of knowledge. If this is the case, it is not beneficial to life—contrary to when it is crafting reassuring illusions—but is rather detrimental to our own existence, insofar as it exposes us to the groundlessness of our knowledge about the world and to the meaninglessness of life.

For instance, what Nietzsche defined as the "Death of God" in his book *The Joyful Science* (2023, pp. 128–130), i.e., the secularization of European societies starting from the Enlightenment and the consequent forsaking of the Christian worldview, on the one hand, was supposed to free people from obscurantist prejudices and thereby enhance scientific rationality as a new way to investigate and act upon nature. On the other hand, however, it also rendered us more insecure about the meaning we should confer on our existence and more helpless relative to how we should justify and account for suffering and inequalities in the world. Sloterdijk (2007) interprets these Nietzschean reflections as theorizing the "immune" and "autoimmune" functions of cognition respectively. According to Sloterdijk (1989, pp. 33–49), after the autoimmune debunking of established truths and precisely thanks to the operational insights brought about by this new knowledge revising the former notions, the restoration of a system of shared beliefs concerning our place in the world must occur, for existence to be borne. New knowledge, therefore, needs to be more sophisticated and elaborate in order to be up to the former autoimmunization. This knowledge, however, may also undergo autoimmune deconstruction, consequently calling for the establishment of further orders of meaning and so on.

One could argue that, in this regard, what holds true for knowledge in general is even more so concerning scientific knowledge in particular. In his famed paper "A Difficulty in the Path of Psycho-Analysis", neurologist and founder of psychoanalysis Sigmund Freud (1955) develops the concept of narcissistic offence, i.e., how scientific progress may undermine our self-esteem, persuading us that being humans is not as advantageous and fortunate as previously believed. According to Freud's narrative, first, the Copernican Revolution displaced the Earth, our homeland, from the centre of the universe. Darwinism then relocated the human lifeform within the animal kingdom and ruled out the supernatural and exceptional origin of our lineage. Lastly, psychoanalysis itself, by foregrounding the unconscious character of our basal cognitive processes, denied self-aware autonomy to the subject (see Weinert, 2008).

Moreover, scientific progress, especially starting from European modernity, is inseparable from technological development. We only become capable of articulating new, more refined theories about how the world works and how we can influence its functioning concomitantly with the invention and operationalization of new instruments suitable for testing, measuring and modifying reality. For instance, Dutch-American philosopher Bas van Fraassen (2008, pp. 93–113), by taking microscopes as an example, regards scientific instruments as "engines of creation" of new phenomena, rather than as mere extensions of our sensorium. He thereby foregrounds how technologies actively construct scientific facts, which should not be considered autonomous entities independent of human practices devoted to their manifestation.

Similarly, Canadian philosopher Ian Hacking (1983, pp. 220–232) submits that the philosophy of science has traditionally one-sidedly drawn its attention to the study of scientific theories, conceived of as abstract and formalized representations of reality. However, Hacking argues, in order to understand the genesis of scientific facts, one should rather focus on experiments, i.e., how the researchers' material practices enable the production of those phenomena which may be subsequently regarded as objects for a theory. His emphasis on experimenting entails an appreciation of how instruments contribute to constituting scientific phenomena, regarded as

peculiar kinds of entities which only exist within and thanks to the technical apparatuses which bring them into existence. Convergently, French philosopher Bruno Latour and sociologist Steve Woolgar (1986), by drawing on Latour's anthropological fieldwork at the neuroendocrinology laboratory of the Salk Institute for Biological Studies, emphasize that science should be studied "in the making". They maintain that we should focus on how scientific statements are constructed by communities of researchers within the laboratory setting, rather than describing external, "natural" entities which scientists would innocently discover and bring to the fore of public attention. Specifically, according to Latour and Woolgar (1986, pp. 63–69), the material apparatus of the laboratory, such as microplate readers, analytical balances, thermal cyclers etc., should be regarded as sets of "inscription devices" culminating in the production of scientific papers.

In the last decades, these insights from the philosophy of science and Science and Technology Studies (STS) have been incorporated into the philosophy of technology, which increasingly focuses on the constitutive role played by instruments in defining scientific practice (e.g., Ihde, 1991, 1998). Exemplarily, US philosopher of technology Don Ihde (1983), founder of postphenomenology, advocates for the "historical-ontological priority" of technology over science. Not only is technology older than science and technologies obtain in every human community also before and independently of the Scientific Revolution in sixteenth- and seventeenth-century Europe, but technology is also what makes scientific practice possible in the first place. According to Ihde, specific technologies, such as mechanical clocks or magnifying lenses, have prepared and enabled the worldview and *modus operandi* appropriate to modern science, based on empirical, reproducible tests, measurements and quantifications. As highlighted by postphenomenologist Bas de Boer (2021, pp. 183–192) relative to neuroscience, scientific instruments contribute to constituting the peculiar relation to the world proper of scientific practice, where phenomena are regarded as objectifiable, idealizable entities suitable for mathematical modelling. Hence, according to the postphenomenological perspective, "the reality studied by scientists is constituted by the technological instruments they use" (Verbeek, 2005, p. 141).

Thus, new attacks on human narcissism can be added to Freud's list and they increasingly display a technological rather than merely theoretical character, as contended by German philosopher and physicist Gerhard Vollmer (1992), whose series culminates with wounding by AI. Vollmer argues that we feel lessened by computers, insofar as they replicate what was formerly considered uniquely human features, such as speech, emotionality or cognition, and even perform these operations seemingly better than humans themselves. Similarly, Italian philosopher of technology Luciano Floridi (2014, pp. 87–100) regards AI as a fourth technoscientific revolution, following Copernicus's, Darwin's and Freud's rearticulations of our self-understanding. According to Floridi, rationales for human exceptionality in the late twentieth century are no longer dependent on astronomical, biological or psychological factors, but rather mainly refer to our intelligence. Humans consider themselves the most or only intelligent organisms, the only ones able to think or the ones who think better than the others. This perspective is challenged by the development of increasingly sophisticated and efficient information and communication technologies (ICTs), apparently capable of outsmarting humans in a vast array of cognitive tasks (see, e.g., Kissinger *et al.*, 2021)—as spectacularly exemplified by computers competing with and often severely defeating chess Grandmasters or by AI creating artworks comparable in beauty with and virtually indistinguishable from those made by human artists.

Higher-order cognitive processes, therefore, cease to be both what defines us as humans—insofar as computers also display creative, elaborate and complex cognitive behaviours—and what renders us better than the other entities populating our world—insofar as computers seem to exert these operations faster, more efficiently and on a larger scale than us. One could

cite former editor-in-chief of *Wired* magazine Chris Anderson's paper "The End of Theory" (2008) as a paradigmatic instance of the far-reaching implications for our self-representation brought about by current developments in AI. Anderson provocatively claims that the traditional way of doing science—as a human-centred activity where scientists advance testable hypotheses in order to prove the theoretical models they have envisaged—is becoming obsolete due to the capability of contemporary AI to harvest, analyse and statistically correlate huge amounts of data.

Analogously, one could think of the open letter issued by the Future of Life Institute and signed by several Big Tech affiliates, which calls for a general pause in AI experimentation in order to contain the risk of "develop[ing] nonhuman minds that might eventually outnumber, outsmart, obsolete and replace us"[1]. From this viewpoint, it is easy to see how the wounding of human narcissism provoked by AI foreshadows the obsolescence of the human lifeform as a whole because our last allegedly unique feature is identified with our capability to process information, which is precisely what computers seem to do increasingly better than and independently of us. As observed by Dutch philosopher of technology Vincent Blok, indeed, "only if intelligence *as such* is described narrowly in terms of data processing algorithms, human intelligence can one day be outperformed by artificial intelligence" (Blok, 2023, p. 27).

3 CYBORG RELATIONS AND HYBRID INTENTIONALITY

In his essay "Wounded by Machines", Sloterdijk (2016b) submits that the attacks on human self-esteem carried out by the technoscientific developments described by Freud and Vollner consist in equating core features of the human lifeform to machinic processes and, therefore, culminate in equating the human lifeform as a whole to (nothing more than) a machine: "it seems as if the equation of the human being and the machine underlay all instances of wounding human narcissism" (Sloterdijk, 2016b, p. 227). For instance, Darwinism depicts human descent as the outcome of automated recombination of mechanically integrated characteristics, psychoanalysis represents the subject as being operated by the quasi-mechanical transformation of biopsychical forces into conscious signs and AI reduces cognition to the algorithmically managed, statistical correlation of data.

In my view, Sloterdijk's argument suggests that we feel diminished by these operational and conceptual revolutions because we have traditionally represented ourselves as initially separate from, independent of and superior to technology. These technoscientific developments can be perceived as wounding human narcissism—i.e., devaluing the esteem we have of ourselves—only because they are interpreted through an ontological framework which regards technology as playing no role in the constitution of our core features. Regarding AI, this perspective is complemented by a symmetrical approach, which conceives of technology as not contributing to constituting our cognition to any extent, in order to argue, this time, that computers will never be able to equate and replicate it (e.g., Cicurel & Nicolelis, 2015; Landgrebe & Smith, 2022; Pasquinelli, 2023). From this viewpoint, artefacts are considered mere means to human ends or expressions of human sociocultural activity, which resembles the instrumental-anthropological conception of technology famously criticized by German philosopher Martin Heidegger (1977) in his essay "The Question Concerning Technology".

Postphenomenology seems to hold a substantially different view of how we should understand the relationship between humans and technologies. The postphenomenological endeavour is one of the most prominent research programmes in the contemporary philosophy of technology (Brey, 2010; Franssen *et al.*, 2016; Kroes & Meijers, 2000). Following the so-called

[1] See https://futureoflife.org/wp-content/uploads/2023/05/FLI_Pause-Giant-AI-Experiments_An-Open-Letter.pdf, last accessed 22 October 2024.

empirical turn in this field of study (Achterhuis, 2001), postphenomenology, on the one hand, sets out to amend the instrumental-anthropological downplaying of technology exerted by traditional phenomenology. On the other hand, it aims to reappraise the analysis of concrete technologies neglected by most twentieth-century philosophies of technology (Kiran, 2015; Mykhailov & Liberati, 2023; Verbeek, 2015). Hence, postphenomenology does not aim to outline a broad and general anthropology of technology, as is the case with the classical, twentieth-century philosophy of technology developed by authors such as Jacques Ellul (1964), Karl Jaspers (1951) and Lewis Mumford (1934). This approach, deemed overly deterministic, abstract and pessimistic, is replaced by postphenomenology with a phenomenologically inspired analysis of how individual technologies articulate our everyday experience in their common practice.

Ihde (1990) states that humans always exist together with technologies and there is no human community which does not produce, employ and transmit artefacts, however rudimentarily and minimally it may do so. According to Ihde, the "naive objectivist account" (Ihde, 1990, p. 97) should be dismissed in the analysis of technology. Artefacts should not be regarded only or primarily as already constituted objects bearing properties which could be studied by already constituted observers, but should rather be conceived of as what constitutes the very correlation between subject and object—which Ihde calls intentionality—by mediating the human relation to the world. Ihde's original contribution to the study of technology prompts us to focus on human-technology relations, that is, to appreciate that the human relation to the world is always shaped by the employment of some specific technology, which constrains it without fully determining it.

In his seminal book *Technology and the Lifeworld*, Ihde (1990, pp. 72–123) singles out four different forms of human-technology relations. First is embodiment relations, where technologies mediate and transform our sensorium and, by doing so, retreat in the background of our experience and become perceptually quasi-transparent. This is the case, for instance, when our sight is magnified by the use of a telescope. Second is hermeneutic relations, where we perceive technologies as semantically informing us about some feature of the world, e.g., when we check a thermometer to know the temperature in a room. Third is alterity relations, where technologies become the focus of our attention in a way similar to how we relate to other humans, while the rest of the world shifts in the background. This situation occurs, for instance, when we anthropomorphically deal with a stuffed animal or a doll. Fourth is background relations, where technologies modify our environment while remaining perceptually unnoticed. One could cite, in this regard, a ventilation system that keeps air circulating in a space without needing our direct intervention in order to do so.

By appropriating Ihde's insights, Dutch philosopher of technology Peter-Paul Verbeek articulates his original contribution to postphenomenology. In his book *What Things Do*, Verbeek (2005, pp. 111–113) radicalizes Ihde's perspective by claiming that technologies both produce and connect the subjective (human) pole and the objective (nonhuman) pole of reality, framing the spectrum of their interrelations. As argued by de Boer, "humans do not just relate to the world through technologies, but how the world is disclosed is also the function of their relationship with a specific technology" (de Boer, 2021, p. 30): therein lies the difference between Ihde's and Verbeek's respective stances. We can appreciate how Ihde's conceptualization of the constitutive interrelation between humans and technologies refers to an empirical and methodological plane, insofar as, historically, humans only exist together with technologies and the human relation to the world can only be understood by considering how it is always mediated by some technology. Verbeek's approach, in turn, shifts the focus of analysis to the ontological and epistemological plane, insofar as what is "human" and what is "world" only exist within the mediation of technologies and can only be conceived of starting from such mediation.

Hence, at first sight, one could think that postphenomenology regards technology as constituting our core features. The claim that the machinic replication of our cognition performed by AI would amount to a degradation of our self-understanding, therefore, would not hold if considered through the postphenomenological framework. From this perspective, there would be no human cognition at all without the mediation of technology. AI, instead of "replicating" our cognitive features, would contribute to articulating them as much as, for instance, transmitting and reactivating symbolic knowledge through writing constitutes scientific rationality in the account of the origin of geometry elaborated by the Austrian philosopher and founder of phenomenology Edmund Husserl (1970; see Derrida, 1978).

However, if we shift the focus of our attention from these general claims about human-technology relations to how the human relation to some concrete, individual technologies is understood in the postphenomenological literature, this interpretation needs to become more nuanced. In his book *Moralizing Technology*, Verbeek (2011, pp. 139–152) expands on the four forms of human-technology relations initially described by Ihde. He submits that the introduction of new technologies in our societies calls for the conceptualization of new forms of human-technology relations by postphenomenology. Specifically, I will now focus on what Verbeek labels as cyborg relations. While embodiment relations represent the combination of human and technological intentionality, cyborg relations, Verbeek (2008) argues, are a modification of embodiment relations, where a distinction between human and technological intentionality can no longer be drawn. They thereby constitute a new kind of entity, which Verbeek calls hybrid intentionality.

Verbeek submits that this phenomenon is exemplified by our relation to technologies such as psychopharmacological drugs (e.g., antidepressants, mood stabilizers), biotechnologies (e.g., pacemakers, artificial heart valves) or neural implants (e.g., neurostimulators, cochlear implants). With reference to the topic of this paper, we should appreciate how all these technologies increasingly rely on artificial intelligence for their development and implementation, such as machine learning and generative AI (e.g., Dümpelmann, 2019; Fellous *et al.*, 2019; Lin *et al.*, 2021; Sheu *et al.*, 2023; Waltzman & Kelsall, 2020). Verbeek interprets the emergence of cyborg relations as the outcome of contemporary technoscientific development, which enables the concrete incorporation of technologies into our biology leading to physical alterations in our body and, consequently, cognition:

> Technological development has reached a stage in which technology has started to interfere explicitly with the nature of human beings. Intentionality used to be one of these concepts which belonged to the realm of the exclusively human, but by now it has become clear that it needs to be extended to the realm of technology—and to the realm of human-technology amalgam (Verbeek, 2008, p. 394).

Verbeek maintains that, although we interrelate with technologies continuously and multifariously, there is something "exclusively human" that technologies do not influence, let alone constitute. However, so goes his argument, some of the most recent technologies break even with this last boundary of pristine human "nature" and finally render us fully "cyborgs".

I think that Verbeek's conceptualization of cyborg relations and hybrid intentionality is problematic for at least three major reasons. First, it seems inconsistent relative to the theoretical framework internal to postphenomenology. According to Ihde (1990, pp. 112–115), those technologies which cannot be experientially distinguished from their human users—Ihde makes the example of medical drugs, among others—would cease to be technologies altogether for the purpose of his analysis. Verbeek himself states that, contrary to Latour's (1993) symmetrical approach to the study of human and nonhuman entities, the distinction between humans and technologies needs to be methodologically preserved for postphenomenology to articulate its analyses from a subjective viewpoint (Rosenberger & Verbeek, 2015). Verbeek

concedes that the emergence of hybrid intentionality pushes his own conceptualization of human-technology relations to its limits. However, in light of the above, I think that it also risks contradicting postphenomenology's methodological tenets.

Second, I submit that Verbeek's understanding is untenable when considered from a historical-empirical perspective. Indeed, it is not at all clear what would be the unprecedented specificity of these new technologies relative to their capability to constitute "cyborg relations" differently from how older technologies constitute other forms of human-technology relations. Let me focus on Verbeek's own examples. What is the difference between a modern antidepressant and a traditional medicinal infusion, relative to their ability to alter our psychophysical constitution to the point that it is impossible to tell apart the human and the technological components anymore? Or between a modern nanotechnological implant and a denture or a tattoo? Verbeek does not clarify it and limits himself to assert that "in embodiment relations a distinction can still be made between the human and the technological element in the mediated experience, while in cyborg relations this is no longer possible" (Verbeek, 2011, p. 145) because, "instead of organizing an interplay between a human and a nonhuman entity, this association physically alters the human" (Verbeek, 2011, p. 144). Obviously, substantial differences obtain—starting from the employment of AI in the former cases. However, these differences do not seem to account for claiming that only these more recent technologies would "physically alter" the human lifeform, contrary to the older ones.

Third, I think that Verbeek's analyses are problematic because they seem to support the idea that humans and technologies are initially separate and independent, which this paper sets out to criticize. As I will argue below, if technology constitutes our relation to the world, that is, our intentionality, it would make no sense to claim that, because of some new technoscientific development, however unprecedented and disruptive, something that was formerly uncontaminated by technicity has now become technologically mediated. Verbeek's conceptualization of cyborg relations seems to be uncritically endorsed by the postphenomenological literature when it focuses on concrete case studies of individual artefacts, including the analysis of AI-based technologies (e.g., Besmer, 2012; Davis, 2019; Madadi & Rahbarnia, 2023; Martalas, 2023; Rapp, 2023). Thus, I think that it is incumbent upon us to criticize this understanding in order to clarify the ontology underlying the postphenomenological interpretation of our relation to AI. To this end, I will first introduce an alternative conception of the relationship between humans and technologies, which I will refer to as human constitutive technicity (see Havelange *et al.*, 2002). Second, I will enquire into the extent to which this understanding may be compatible with the main tenets of postphenomenology. Third, I will conclude by proposing a functional integration between these two stances.

4 HUMAN CONSTITUTIVE TECHNICITY

Several contemporary approaches to the study of technology articulate, in different forms, the idea of human constitutive technicity (e.g., Gutmann, 2002; Lemmens, 2009; Sini, 2021). Specifically, this theoretical stance was independently albeit convergently developed by German philosopher Peter Sloterdijk and French philosopher Bernard Stiegler. Notably, Verbeek (2008, 2011, pp. 139–152) mentions Stiegler and Sloterdijk in the context of his analyses of cyborg relations, which further prompts me to scrutinize the differences and similarities between their respective approaches. These two major contemporary thinkers are usually not regarded as philosophers of technology proper—as exemplified, for instance, by the entry "philosophy of technology" in the Stanford Encyclopedia of Philosophy[2], where their names do not even appear. However, both Sloterdijk and Stiegler elaborate on a fully-fledged philosophy of

[2] See https://plato.stanford.edu/entries/technology/, last accessed 22 October 2024.

technology, devoting many insightful analyses to philosophically elucidating the relationship between artefacts and human existence (Ferreira de Barros *et al.*, 2023; Pavanini, 2022).

Sloterdijk conceives of the human lifeform as the production of inner spaces of coexistence, which he calls spheres, capable of insulating those who create them from the threats coming from the outside, "immunizing" us from external stressors. These anthropogenetic processes, Sloterdijk argues, are technologically constituted by what he calls anthropotechnics, i.e., the iterative adoption of technical practices in order to mould our biology, ranging from body painting to plastic surgery and from rites of passage to social insurance, for instance (see, e.g., Couture, 2015; Elden, 2012; Heinrichs, 2011; Jongen *et al.*, 2006; Schinkel & Noordegraaf-Eelens, 2011; van Tuinen, 2006). According to Stiegler, the human condition should be understood as the cumulative intertwinement of biological organs, artefacts and social organizations. This perspective, which he calls organological, prompts him to appreciate the role played by technology in human evolution, through the process of what he terms epiphylogenesis, i.e., the supplementation of somatic and genetic memory with exteriorized mnestic supports. Starting from this viewpoint, Stiegler sets out to conceive of technology "pharmacologically", i.e., relative to its capability to both constitute our faculties and deprive us of them, a curative and enhancing as well as toxic and inhibiting power (see, e.g., Abbinnett, 2019; Bradley & Kennedy, 2021; Buseyne *et al.*, 2024; Howells & Moore, 2013; Jugnon, 2022; Turner, 2023).

As argued by Sloterdijk (e.g., 2020, pp. 137–138) and Stiegler (e.g., 2017b, pp. 31–32), human technicity being constitutive means that our lifeform could not exist, emerge or be conceived of without technologies, both individually and collectively, both ontogenetically and phylogenetically. Our cognition, behaviour, metabolism, ecology and morphology are shaped by the usage, production and transmission of artefacts. In this sense, we are biotechnological hybrids from the outset, insofar as our characteristics have evolutionarily emerged through our interrelation with technologies across generations. Technicity is the originary condition of possibility of human biology and not the acquisition of a later, localized stage of technoscientific development.

Crucially, the idea of human constitutive technicity elaborated by Sloterdijk and Stiegler is structurally accompanied by their focus on our biological evolution (Blad, 2010; Moore, 2017). If we are technological organisms, it means that technology constitutes us as these organisms, i.e., renders us humans. And if we assume, concordantly with biology's state of the art, that humans, as much as all other organisms, find their origin in an evolutionary process, abiding by the Darwinian dynamics of natural selection, this assumption means that technology renders us humans also and most importantly in an evolutionary sense, i.e., technology plays a major role in the evolutionary process which gradually renders some prehuman animal what we now define as humans. Hence, Sloterdijk and Stiegler enquire into how the genesis of the human lifeform has occurred thanks to our evolving relation to technologies and technology has enabled us to become the kind of organisms that we are now. This idea is operationalized by Stiegler's concept of artificial selection:

> With the process of exteriorization, the "selection pressure" concentrates on humankind's capabilities to manufacture or practise the artificial organs which concretize this exteriorization and, in this context, one can no longer speak of "natural selection" in the strict sense of the term: it is about an artificial selection where art, i.e., technology, and arts and crafts in the broad sense become the first question (Stiegler, 2008, p. 22, my translation)[3].

[3] "Avec le processus d'extériorisation, la 'pression de sélection' se concentre sur les capacités du genre humain à fabriquer ou à pratiquer les organes artificiels qui concrétisent cette extériorisation et, en cela, on ne peut

By employing, producing and transmitting artefacts, together with their rules of usage and norms of adoption, our ancestors progressively artificialize their environment. The latter will present novel selection pressures to those who inherit it, thereby selecting for those genetic variants which prove more suitable for dealing with technologies. For instance, since one needs to learn how to use a technology throughout their ontogeny, enhanced developmental plasticity is favoured and hardwired, univocal adaptations to specific circumstances become less relevant for survival. Technology, therefore, exerts selection alongside the natural environment, as Stiegler (1998, 2009, 2010) argues starting from his book series *Technics and Time*. Visual impairment, for instance, represents a major hindrance to survival if left unattended, but can also be easily amended by wearing eyeglasses. However, while minor shortsightedness does not represent a disability in a nonliterate society, at the present stage of technoscientific development it renders wearing eyeglasses a necessary condition for everyday life.

Furthermore, the emergence of artificial selection implies that the process of genetic inheritance is supplemented with the process of technological inheritance: Stiegler understands technologies as exteriorized mnestic supports. As exemplified by monuments or paintings, artefacts retain and preserve the experience of those who made them, which can thereby accumulate and be passed on to the next generation. From this perspective, we acquire our defining features not only by inheriting our parents' combined genotypes but also by seizing the artefacts of our community. Sloterdijk articulates an analogous idea through his concept of self-domestication:

> Successive generations that follow a trend toward domestication are not governed by the normal evolutionary pressure of a purely natural environment. They benefit from a special climate that has been created half naturally and half culturally, in which it is not necessarily those who are optimally adapted for external nature who survive but rather the specimens that do well in internal conditions (Sloterdijk, 2018, p. 26).

As domesticates are not able to survive in a "natural" environment, i.e., the environment where their ancestor species would live, we are not able to survive in an environment which has not been technologically engineered, contrary to our Primate progenitors million years ago. This is the case because technologies enable us to cope with environmental stressors by mediating the relationship with our surroundings, as submitted by Sloterdijk (2016a) starting from his essay "The Domestication of Being". For instance, the harshness of weathers and cold are attenuated by manufacturing clothes and shelters. Or attacks from enemies and predators are kept away by the management of fireplaces and the throwing of projectiles, to which the encounter with aggressors is delegated. However, in contrast to domesticates, humans also create, maintain and reproduce the artificial environment which selects, in turn, for those characteristics which better fit in with its living conditions.

I belive this dynamic can be aptly exemplified by the production of chipped flints during the Lower Palaeolithic. According to Australian philosopher Kim Sterelny (2012), there are several cognitive, morphological and sociocultural preconditions for the lithic industry to emerge. None of them would necessarily lead to its emergence on its own, nor would they be univocally linked to a lifeway based on it. Occurring together, however, these preconditions let this opportunity manifest itself—initially fragmentally and occasionally, then systemically and pervasively. And once it becomes entrenched within the group's ecology, it will in turn constitute a precondition for future innovations. Knapping stones may well have debilitating costs in terms of injured fingers and defective tools, for instance, but a widespread habit of stone knapping will favour those individuals who prove more effective at carrying it out, consequently benefiting from enhanced chances to reproduce and pass on their genes. Thus, lithic technology shifts from

plus parler stricto sensu de 'sélection naturelle' : il s'agit d'une sélection artificielle où l'art, c'est-à-dire la technique, et les arts et les métiers au sens large deviennent la première question".

being the emergent and accidental outcome of formerly unrelated preconditions to a fundamental component of hominin populations' lifeway, selecting, in turn, for those traits which prove more suitable for supporting and enhancing it, thereby increasing its pervasiveness and consequently selective influence and so on. Notably, this philosophical account of human evolution as driven by technology seems to find increasing support in evolutionary anthropology (e.g., Ambrose, 2001; Antón & Kuzawa, 2017; Laland *et al.*, 2001; Leach, 2003; Malafouris, 2019; Street *et al.*, 2017; Taylor, 2010; Tennie *et al.*, 2009).

5 TECHNOLOGIES WITHOUT HUMANS

Starting from this cursory and surely not exhaustive outline of Sloterdijk's and Stiegler's understanding of the evolutionary dimension of human technicity, we can contrast their stance with that of postphenomenology. I believe the first major difference between the two approaches is methodological. Postphenomenology adopts an existential-phenomenological perspective in its study of technology, which is analysed as constituting the human relation to the world in the here and now of our living experience. Philosophers such as Sloterdijk and Stiegler adopt an onto-anthropological viewpoint, which sets out to enquire into how we have become those organisms whose relation to the world only occurs via technological mediations. Consequently, postphenomenology mostly focuses on advanced industrial technologies, while Sloterdijk and Stiegler also engage with primitive artefacts, such as palaeolithic chipped flints or cave paintings, and their analyses refer to longer timespans. I think that these two stances are different but not necessarily incompatible. While postphenomenology highlights how technologies constitute the human relation to the world, Sloterdijk and Stiegler emphasize how humans and technologies mutually constitute one another. Thus, while postphenomenologists investigate how our relation to the world changes according to the technologies we employ each time, authors such as Sloterdijk and Stiegler analyse how humans evolve through their relation to technologies, including in a biological-genetic sense.

The difference here seems to lie more in the focus of enquiry than in the ontological claims undergirding it. For instance, starting from the postphenomenological perspective, an artefact such as a book would be understood as what mediates the human relation to the world by providing its readers with a new vantage on reality, which Ihde would call a hermeneutic relation. Our relation to the world is mediated by the use we make of that book, so that our experience is structured by the characteristics of that particular artefact. Supporters of human constitutive technicity would not deny this claim. However, they would add that, across generations, we have evolved into a community heavily relying on literacy for its survival and accordingly changed our neural networks thanks to the selective advantages provided by the use of those books our community has, in turn, produced. More generally, while postphenomenology would study, e.g., how microwaves have changed our dietary habits and relation to food, an enquiry centred on the paradigm of human constitutive technicity would investigate how shifting to a cooking food diet has evolutionarily modified our digestive system and consequently rearranged our biology and social structure.

As argued above, when Verbeek claims that with the introduction of technologies such as antidepressants or pacemakers, something which was formerly exclusively human now becomes mediated by technology and that these technoscientific developments elicit an unprecedented merging of human and technological components, he seems to postulate that humans have always been as they are now and that only technologies evolve, providing these allegedly immutable organisms with novel configurations of their relation to the world. However, one could retort that Verbeek feels entitled to claim so because he exclusively focuses on "the specifically modern, 'science-based' technological devices of the sort that began to emerge in the last century" (Verbeek, 2005, p. 3) and, therefore, is not concerned with the evolutionary dimension of our technicity.

These observations lead us to what I regard as the second major difference between the two approaches, which is conceptual and concerns what is meant by technology. I think that Sloterdijk and Stiegler understand technology as a transmitter of memory and an agent of selection, while postphenomenology conceives of technology as a mediator of experience. However, as those acquainted with postphenomenological studies will well know, one cannot find any definition of technology in the relevant literature (see, e.g., Ritter, 2021). I believe this condition is not due to a lack of theoretical accuracy by postphenomenologists but rather naturally flows from one of the major epistemic aims of this approach, that is, its conceptualization of the nonneutral, multistable character of technology. Indeed, one of postphenomenology's main goals is to overcome two symmetric pitfalls in the traditional philosophy of technology, famously denounced by the political theorist Langdon Winner (1980) as the social construction of technology thesis and technological determinism respectively. According to the social construction of technology thesis, artefacts would be "neutral", i.e., they would have no intrinsic political value and their impact on society would depend solely on the use that is made of them. According to technological determinism, technologies would follow an autonomous developmental pattern that influences society but is by no means influenced by it in return.

This aim is aptly conveyed by postphenomenology's pivotal concept of multistability, i.e., "the idea that any technology can be put to multiple purposes and can be meaningful in different ways to different users" (Rosenberger & Verbeek, 2015, p. 25). For instance, a bed can be used to sleep or make love, depending on the occasion. Analogously, a pencil can serve as a writing tool or as a bookmark. While the concept of multistability initially comes from Ihde's (1986) analyses of perception, without specific reference to artefacts, it is subsequently employed to define the very (non)essence of technology: "a technological object, whatever else it is, *becomes* what it 'is' through its uses" (Ihde, 1990, p. 90). Everything can be a technology and objects become technologies by being utilized by humans. While different artefacts can be used for the same purpose, the same artefact can serve different aims. And when a technology from a given society is re-employed in another, it somehow becomes a different technology because its sociocultural context contributes to rendering it a technology in general as well as that technology in particular. According to Ihde (1990, pp. 144–151), through the notion of multistability postphenomenology aims to conceptualize how artefacts significantly shape our experience and mould our relation to the world, without, however, deterministically piloting our behaviour through and through. While a technology can exert different functions, it cannot exert every possible function and the functions it can exert are constrained by environmental, individual and historical factors. From this perspective, technologies are always context-dependent and materially situated. Hence, they cannot be aprioristically defined, but rather find their multistable essence(s) each time in their different modes of employment (Wellner, 2020; Whyte, 2015; Wiltse, 2020).

Nevertheless, even a quick look at postphenomenological studies should let us realize that, although postphenomenologists usually only focus on modern technologies, their understanding of technology is far broader and also encompasses older, more primitive tools. Let me just cite the traditional example of the hammer, an artefact dear to philosophers of technology at least since Heidegger's (2010, pp. 53–88) groundbreaking phenomenology of tool use in his book *Being and Time* and frequently referred to by postphenomenologists (e.g., de Boer, 2021, pp. 23–27; Ihde, 1990, pp. 31–34; Verbeek, 2005, pp. 83–88). Obviously, hammers cannot be considered industrial advanced technologies: the origin of these artefacts harks back to human prehistory. Most importantly, hammers may well be even older than humans themselves, at least in an embryonic form, made out of stone and without handles, as testified by the fossil findings dated around 3.3 million years ago in West Turkana, Kenya (Harmand *et al.*, 2015). Notably, these findings also represent the earliest secure evidence of stone tool

manufacture by Hominins, which predates the genesis of *Homo* around 2.8 million years ago (Villmoare *et al.*, 2015), thereby implying that technology is actually older than humans.

As mentioned above, in order to advocate for the all-pervasiveness of technology relative to the human lifeform, Ihde submits that even the most primitive communities display some form of technology. These analyses lead him to claim that humans always exist together with technologies and that humans without technologies may only be hypothetically represented. Thus, I think that Ihde's idea of "humans without technology" may help us better assess whether postphenomenology denies the onto-anthropological thesis of human constitutive technicity outlined above or rather accepts it but does not elaborate on it at length because of its methodological focus on modern technology.

6 HUMANS WITHOUT TECHNOLOGIES

As Ihde (1990) argues in *Technology and the Lifeworld*, technology pervades every human community historically and geographically:

> Could humans live *without* technologies? Clearly, in any empirical or historical sense, they in fact do not. There are no known peoples, now or in historic or even prehistoric times, who have not possessed technologies in some minimal sense, yet we might still want to say that they could live so as an imaginative limit-possibility. […] We should from the beginning, however, be aware of the imaginative and even quasi-mythic quality of such an exercise (Ihde, 1990, p. 11).

Humans without technologies, Ihde claims, may only be conceived of as a thought experiment, a liminal and fantastic intellectual operation. Hence, even if humans without technologies do not actually exist, one could still somehow think of them:

> It might be possible for humans to live non-technologically as a kind of abstract possibility—but only on the condition that the environment be that of a garden, isolated, protected, and stable. […] But there is no such empirical-historical human form of life because, long before our remembering, humans moved from all gardens to inherit the Earth (Ihde, 1990, p. 13).

It is unclear and perhaps quite puzzling why Ihde decides to conceive of pre-technological human life starting from the mythical setting of a Garden of Eden rather than from the scientific setting of the African Pliocene, for instance. Anyway, his aim is to exert a sort of eidetic variation in the phenomenological style around the human lifeform, representing it without technology.

I think that this attempt is problematic for at least two major reasons. First, when Ihde (1990, pp. 11–20) speaks about the humans inhabiting this fantastic, pre-technological "garden", he describes them as featuring some traits, such as language use or kinship structures, whose independence from technology is debatable to say the least (see, e.g., Suddendorf, 2013, pp. 157–183). Furthermore, according to Ihde (1990, pp. 157–161), pre-technological humans would eat, for instance, fish and nuts—but how would they catch the fish? And how would they crack the nuts open? Ihde does not clarify it. Thus, I submit that Ihde's description of the pre-technological world, contrary to what it sets out to achieve, inadvertently features at least some (indirect) instances of technology, thereby invalidating his own thought experiment.

Second, I contend that the epistemic premises on which Ihde's thought experiment is based are incorrect. The aim of eidetic variation, as famously theorized by Husserl (1977, pp. 53–65), is to highlight the constant and invariant traits of a phenomenon. Hence, if we imagine humans without technologies, their essential features should remain the same as if we imagine humans with technologies—as imagining faces with, e.g., blue, black or brown irises should enable us to detect some of the basal qualities of the human eye. However, as argued above, humans would

look and behave very differently without the moulding effects exerted by technologies over their evolution. Not only our hands or jaw, for instance, would assume a significantly different shape if abstraction were made from their evolutionary interrelation with technologies (see, e.g., Leroi-Gourhan, 2018, pp. 61–116), but the very survival of these imaginary humans would be compromised for several reasons, all pointing to the fact that we cannot live without technologies—not even in a quasi-paradisiac environment devoid of predators, harsh weathers, illnesses etc., as the one described by Ihde. For instance, as cogently argued by anthropologist Richard Wrangham (2009, pp. 15–36), humans could not survive on a diet exclusively based on raw, that is, unprocessed food, contrary to what is implied by Ihde's thought experiment. Thus, from my perspective, not only are the humans without technologies imagined by Ihde not really imagined without technologies, but humans without technologies would be unimaginable in the phenomenological sense, i.e., eliminating technologies from our representation of humans through the means of eidetic variation would alter the invariant traits of our lifeform to the point that what we would imagine could no longer be considered "humans". In this sense, humans without technology, on top of not obtaining empirically, are also a contradictory concept as a mere hypothesis.

Ihde regards this imaginary pre-technological world as devoid of direct environmental stressors such as major thermal excursions, external aggressors or famines. From his perspective, therefore, the absence of technology would only obtain alongside the absence of major threats to our survival. From Sloterdijk's and Stiegler's viewpoint, instead, it is precisely technology that enabled our ancestors to live in an environment "immunized" by the direct confrontation with these sorts of threats. Hence, an environment where natural selection is dampened down only occurs thanks to the artificialization of this environment by technological means. While Ihde conceives of this scenario (i.e., no technology and no environmental stressors) as fantastic and hypothetical, Sloterdijk and Stiegler regard the symmetrical situation (i.e., environmental stressors neutralized by technology) as a (pre)historical, scientifically informed condition of possibility of human evolution.

Let me now sum up the main results of the analyses carried out above and thematically connect them with the central topic of this paper, i.e., how our relation to AI-based technologies should be interpreted. Postphenomenology does not seem to endorse the idea of human constitutive technicity. Although we cannot find an explicit refusal of this approach in the postphenomenological literature, the reading of Verbeek's concept of cyborg relations and Ihde's idea of "humans without technologies" I have submitted above should make evident that these authors adopt a conception of the relationship between humans and artefacts which does not regard technology as constituting our core features. I believe this is the case because postphenomenology does not pose, let alone answer, the question of the evolutionary origin of our relation to technology—contrary to Sloterdijk and Stiegler, for instance.

Nonetheless, I think that some hints at a possible convergence with the theory of human constitutive technicity can be found in some recent postphenomenological studies. This is the case, for instance, with the dialogue between postphenomenology and Material Engagement Theory (MET; see Malafouris, 2013), where the idea of the co-constitution of humans and technologies is outlined from an evolutionary perspective (Ihde & Malafouris, 2019). Moreover, understanding the multistability of artefacts as environmental affordances, as de Boer (2023) does in his paper "Interpreting Multistability", may lead us to conceive of technology as not only a mediator of experience, as is traditionally the case with postphenomenological literature, but also as a transmitter of memory and an agent of selection, as Sloterdijk and Stiegler do. Indeed, conceiving of technologies as what constitutes our environment (memory) and articulates our possibilities of interaction with it (selection) paves the way for an evolutionary understanding of our relation to technology, insofar as the environment amounts to the constraints articulating our existence as well as being what we nongenetically inherit from our ancestors.

7 WE HAVE ALWAYS BEEN CYBORGS

In light of the analyses carried out above, how should we make sense of Verbeek's concept of cyborg relations? When Verbeek (2008, 2011, pp. 139–152) develops his argument, he refers to US philosopher Donna Haraway's (1991) well-known paper "A Cyborg Manifesto", where the figure of the cyborg is introduced in order to conceptualize our contemporary condition from a minoritarian, resistant and emancipatory perspective. According to Haraway, thinking of ourselves as cyborgs enables us to dissolve the binary oppositions characterizing western metaphysics in general and capitalist modernity in particular, together with the axiological imbalance structurally accompanying them (e.g., nature versus culture, woman versus man, primitive versus civilized etc.). Verbeek takes this stance as exemplary of the ontological shift in our "nature" performed by contemporary technologies such as antidepressants or neurostimulators.

However, contrary to Verbeek's interpretation, I think that Haraway does not claim that we have actually become cyborgs, i.e., new types of organisms, but rather that a conceptual shift in our self-representation is underway. While this reconceptualization of the human lifeform is indeed promoted by the blurring of the traditional metaphysical distinctions operated by contemporary technoscientific development, this shift is happening on a cognitive and political plane and not in the sense that these devices would actually transform our humanity into something completely different. Stating that we should think of ourselves as cyborgs does not mean that we are all actual cyborgs or that we have become biotechnological hybrids starting from something "purely" biological. Rather, it signifies that the contemporary condition enables us to elaborate an emancipatory politics starting from a revision of our self-understanding aiming to integrate into the core of our humanity what was formerly excluded as inessential or irrelevant. Italian philosopher Roberto Esposito (2012, 2015) displays an analogous understanding:

> In the dichotomous model that has long opposed the world of things to the world of persons, during the era of its decline, a crack appears to be showing. The more our technological objects, with the know-how that has made them serviceable, embody a sort of subjective life, the less we can squash them into an exclusively servile function. At the same time, through the use of biotechnologies, people who at one time appeared as individual monads may now house inside themselves elements that come from other bodies and even inorganic materials. The human body has thus become the flow channel and the operator […] of a relation that is less and less reducible to a binary logic (Esposito, 2015, pp. 3–4).

The perturbing performances of some of the most recent technologies prompt us to reconsider the traditional opposition between (subjective) mind and (objective) matter. Retrospectively, we have always been cyborgs, in the sense of organisms constitutively relating to technology in order to survive and flourish, but we are only starting to realize it nowadays. Concordantly, Sloterdijk claims that "with the idea of really existing memories and self-organizing systems the metaphysical distinction between nature and culture becomes untenable, because both sides of the difference only present regional states of information and its processing" (Sloterdijk, 2016a, p. 138). Contemporary technoscientific development indeed modifies us by rearranging our psychophysical structure. However, it does not transform the human lifeform into some new biological species—since we are already thoroughly dependent on technology for the constitution of our core features—but rather leads us to revise the traditional interpretive frameworks articulating our understanding of what it means to be humans.

According to Sloterdijk (2016a, pp. 133–146), technology has traditionally been understood in overly simplistic and reductionist terms and based on relatively rudimentary machines, which he terms allotechnics. However, some of the most recent technologies exhibit a quasi-organic

complexity which should prompt us to appreciate that having our core features replicated by contemporary machines does not amount to a degradation of human dignity, but rather points more towards ideas of collaboration, symbiosis and cooperation with technology. Specifically, as Stiegler (2014a) contends regarding AI, the latter should not be conceived of based on an "analogical" model where technology is supposed to emulate organic functions but rather according to an "organological" perspective which focuses on the coevolution and functional integration of biological and technological faculties (Alombert, 2022). Notably, this viewpoint is also consistent with the ideas purported by the pioneers of AI in the 1950s–1970s, as cogently shown by US philosopher and historian David Bates (2023).

Let me now conclude these analyses by returning to the initial argument, which claims that AI-based technologies would shatter the esteem we have of ourselves because they replicate and even outperform us in what was formerly believed to be uniquely human faculties. I have submitted that these technoscientific developments can be interpreted as attacks on our narcissism only if we conceive of our lifeform as initially separate from, independent of and superior to technology. As the research carried out by philosophers of technology such as Sloterdijk and Stiegler shows, this is not the case, because our lifeform has evolutionarily emerged thanks to its increasingly pervasive relation to technology, which is, therefore, precisely what constitutes our core features, including our higher-order cognitive processes.

Hence, it is erroneous to submit, as Verbeek (2008, 2011, pp. 139–152) does with his concept of cyborg relations, that contemporary technologies such as neural implants or psychopharmacological drugs perform an unprecedented merging of human and technological components, thereby constituting a novel form of intentionality. However, by claiming so, I do not wish to deny the importance and the specificity of the most recent technoscientific developments. As exemplified by Haraway's (1991) concept of cyborg, these operational and epistemological revolutions, by rendering explicitly appreciable what was formerly unthematized—that is, the technological constitution of the human lifeform—enable us to revise the ontology according to which we interpret what it means to be humans. Moreover, this approach does not aim to underestimate the ethical and political issues raised by AI (see, e.g., Coeckelbergh, 2022), such as the risk of mass unemployment entailed by the large-scale replacement of human tasks by computers and robots (Stiegler, 2017a) or the increasing control over the population elicited by all-pervasive user profiling (Zuboff, 2018), just to name a few examples.

I believe postphenomenology could incorporate these insights into its theoretical framework by focusing more on the evolutionary dimension of the human relation to technology and understanding technology not only as a mediator of experience in the phenomenological-existential sense but also as a transmitter of memory and an agent of selection in the onto-anthropological sense, thereby endorsing the idea of human constitutive technicity. Importantly, such approach to the study of AI-based technology does not support the idea that, since technology is constitutive of the human lifeform, any technoscientific development should be uncritically welcomed and pursued. Rather, we should evaluate whether and how a technology should be introduced into our societies on a case-specific, context-dependent basis. Contributing to Technology Assessment (TA) is indeed one of the most fruitful assets of the postphenomenological approach (e.g., de Boer *et al.*, 2018; Kudina & de Boer, 2021; Morrison, 2020; Mykhailov, 2023; Wellner & Mykhailov, 2023). I think that it could be rendered even more consistent by appreciating how technology shapes human evolution.

8 CONCLUSION

In this paper, I have investigated how narratives concerning the development and implementation of AI-based technologies influence our self-understanding, i.e., what we think it

means to be humans. I have claimed that we may feel diminished by technologies that seemingly replicate what we typically consider key human features, such as higher-order cognitive processes, only insofar as we regard ourselves as initially separate from, superior to and independent of technology. I have proposed an alternative narrative, based on the theory of human constitutive technicity outlined starting from Sloterdijk's and Stiegler's insights, which submits that the human lifeform could only evolve, survive and thrive thanks to its itself evolving relation to all sorts of artefacts across generations. From this perspective, our intelligence and other core features are the emerging outcome of our relationship with technologies, which actually render us what we are.

Thus, the human lifeform should be conceived of as the emerging intertwinement of biological, social and technological dynamics—what Stiegler (e.g., 2014b, pp. 1–6) calls an organological approach. I have assessed the extend to which the main tenets of postphenomenology may endorse this research programme by scrutinizing Verbeek's concepts of cyborg relations and hybrid intentionality and Ihde's idea of "humans without technology". I have concluded by submitting that the postphenomenological endeavour does not acknowledge the constitutive character of technology for our lifeform but could incorporate this approach into its epistemic core by more thematically considering the evolutionary dimension of our relation to technology.

I think that operating this methodological shift in our conception of the human lifeform is incumbent upon us in order to make proper sense of contemporary technoscientific development. According to Belgian philosopher of technology Mark Coeckelbergh (2023), we have a "narrative responsibility" vis-à-vis AI-based technologies, i.e., we should critically analyse and describe how AI contributes to structuring our sense-making practices. And as emphasized by New Zealander philosopher of technology David Wills, "making the case for an originary biotechnology would be an urgent imperative, prerequisite to a reconfiguration of the current terms of debate over the integrity of the human that so often has us paralyzed with anxiety at the prospect of our increasingly bioengineered future" (Wills, 2008, p. 6). Hence, I believe adopting the theory of human constitutive technicity has major relevance for ongoing discussions about the ethics and policy-making of emerging technologies.

Data Access Statement

No new data were generated or analysed during this study.

Contributor Statement

The author confirms the sole responsibility for the conception of the study, presented results and manuscript preparation.

Use of AI

No content generated by AI technologies has been presented as the author's own work.

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