Phenomenology and the Philosophy of Technology

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7. Artificial Intelligence and the Need to Redefine Human Traits

Galit Wellner

Introduction

The basic claim of postphenomenology is that technologies mediate the world for us and in doing so they transform our experience of the world (Ihde, 1979, 1990). This is what makes postphenomenology 'post' in comparison to classical phenomenology. In this chapter, my goal is to show how technologies in general, and Artificial Intelligence (AI) in particular, not only transform our experience of the world but also require us to rethink and redefine basic human capacities such as imagination (Wellner, 2018, 2021) or attention (Wellner, 2022). Instead of arguing that technologies have become so powerful that they can replace humans, as often claimed in the media, I suggest that we redefine our human capacities in light of the interactions we have with technologies such as AI. Postphenomenology has already done this with the notion of embodiment, which takes into account the technologies that surround us and reveals how we produce with them a new body schema (Ihde, 1990). The role of phenomenology in this theoretical development is crucial, as it offers a methodology and theory that focuses on the human lived experience. The postphenomenological challenge is to update the understanding of the lived experience in light of our new technologies.

This chapter will briefly explore the experiences of technology-mediated imagining and attending, as two examples of human capacities that are substantially impacted by digital technologies. The chapter will further show the ways in which technologies mediate

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even our understanding of imagination and attention. To begin with, a general overview of postphenomenology is provided, with a special emphasis on its origins in phenomenology. The next part deals with imagination as the first case study. It reviews imagination from the classical phenomenological viewpoint on the embodied experience as developed by Maurice Merleau-Ponty and adopted by Don Ihde. Then it proceeds to examine the impact of AI technologies on the classical understanding leading to the reformulation of imagination as 'post human imagination' (Wellner, 2018). The second case study focuses on attention and follows a similar path, from classical phenomenology to the challenges of AI resulting in the notion of 'multi attentions' (Wellner, 2022). In the conclusion, some commonalities between the two case studies will be discussed.

From Phenomenology to Postphenomenology

If phenomenology is the study of our experience in and of the world, *post*phenomenology examines the experience with an additional element—technology. Ihde (1979, 1990) represents this addition through an elegant formula built in several steps. First, classical phenomenology is illustrated as:

I—world

Next, technology is added, thereby producing the basic postphenomenological formula:

I—technology—world

This basic formula undergoes several permutations to depict the various ways in which technologies mediate the world for us. Ihde's original set of permutations is based on a playful addition of brackets and arrows. The brackets, in the spirit of Husserl, denote two alternative positions: (1) that something withdraws to the background, and (2) that two objects are united and operate as if they are one unit. The arrow signifies intentionality and thus in Ihde's formulation always points from the experiencing I towards the technology and the world.

Ihde (1979, 1990) suggests four postphenomenological relations. The first is embodiment relations, and it follows the logic of phenomenology

that emphasizes the central role of the body in our experience of the world. Being the first in the set of relations, embodiment relations reflect the importance of the body in phenomenological analyses. In fact, Ihde embraces Merleau-Ponty's concept of embodiment and adds to the concept a technological element. He highlights Merleau-Ponty's examples of the blind man's stick (1962, p. 143) and the Parisian Lady's feather hat and explores the changes these artefacts-technologies introduce to the body schema of the blind man and the Parisian lady. The permutation for embodiment relations is:

(I—technology) → world

In this permutation, the I and the technology act as one unit in the world. The body schema changes with the presence of the 'technology' element, as for example in the case of a feathered hat. The Parisian Lady moves in the world as if she is taller.

Second is hermeneutic relations that refer to the ways in which meaning is generated through technology. Here the permutation 'reverse mirrors' embodiment relations so that now the brackets connect the technology and the world elements:

I → (technology—world)

The world is read and interpreted through the mediation of the technology element, and both are conceived as one entity. This process often involves some reading and interpretation, and hence the name 'hermeneutic'. When one watches the news, may it be on television or on social networking applications, the experience consists of the news item (reporting what happens in the 'world') and the media ('technology' in the form of an app, television, or a printed newspaper) operating as one entity.

Third there are alterity relations in which the technology is referred to as a quasi-other. This happens when children play vividly with dolls and when adults interact with an ATM or a cellphone. In these cases, a dialogue is maintained with the 'technology', even when it is clear that there is no one (physically) behind it. The permutation for alterity relations uses the brackets differently, indicating that the world withdraws to the background:

I → technology (—world)

Fourth are background relations, where the technology withdraws to the background and operates there unnoticed. These relations can be identified for technologies such as our clothes, eyeglasses, electricity, and Internet connection, all functioning in the background. As long as they operate as expected, we do not notice them. The postphenomenological formula is a kind of a reverse pattern to that of alterity relations, with the difference that here it is the technology that is bracketed:

I → (technology—) world

Since Ihde formulated these four postphenomenological relations, additional permutations have been developed to reflect contemporary situations. Peter-Paul Verbeek (2008) suggested three new relations involving technologies that have become an integral part of the body (e.g., pacemakers), or that extend reality into something that does not exist in the world and yet is accessible through the technology. In my own work, I have shown how Augmented Reality (AR) and Artificial Intelligence (AI) lead us into dramatically different permutations (Wellner, 2020a, 2021c, 2020b). These will be described in the sections describing posthuman imagination and multi-attentions.

Imagination, Perception, and Embodiment

A lesser-known part of Ihde's work is that which was written before he developed postphenomenology. Whereas his publications referred to many aspects of phenomenology, an almost neglected part is that which deals with imagination. In his 1973 book *Sense and Significance*, he develops some of the ideas that led him in *Technics and Praxis* (Ihde, 1979) to lay the foundations to postphenomenology. But as per 1973, he is still bound to classical phenomenology. He praises phenomenology as 'a revolution in man's understanding of himself and his world' (Ihde, 1973, p. 162).

In this early work, Ihde regards imagining as 'an "active synthesis" [that] *exceeds* perceptual modes of experience' (Ihde, 1973, p. 51). He warns that 'imaginative activity in general is more difficult to deal with because it has something to do with the very way in which we are present to ourselves' (p. 52). This presence poses a challenge to the identification of embodiment as bodily presence. The solution

was to focus on perception (Langsdorf, 2020, p. 130). Merleau-Ponty pursues this path in *The Primacy of Perception* (1962) and Ihde follows him, terming it 'hermeneutic phenomenology' (1973, pp. 123–127). Such a phenomenology places key importance on the 'bodily present' perception (Ihde, 1973, p. 124). It is a 'version of perceptualism' (Ihde, 1973, p. 125).

In fact, Ihde adopts Merleau-Ponty's interpretation of the Husserlian late phenomenology, with a special emphasis on the notion of lifeworld. Regarding imagination as a form of bodily perception, Merleau-Ponty focuses on the 'real' world as perceived, that is 'rich in its contents' and not just 'bracketed world' (Ihde 1973, p. 125). In this landscape, the lived body becomes prominent, because through it the world is perceived (Ihde, 1973, p. 126). These understandings of Merleau-Ponty inspired Ihde's early hypotheses and led him to study the world as something populated by mostly biological and geological entities. Six years later, in *Technics and Praxis* (1979), technological entities were added to the mix. The shift to technology enabled him not to be bound to questions of language as he was in his 1973 book.

After 1979, technology dominated most of Ihde's work. Imagination was an exception and his analyses on this topic were not closely tied to technology. In *Experimental Phenomenology* (1986), for example, he demonstrates the role of bodily perception in imagination by examining how multiple perspectives on the Necker Cube (and its permutations) can form the basis of phenomenological variational theory. He shows that the same drawing can be imagined as various 'things'—a stage, a hallway, a gem, or a headless robot, to name a few. Some of these imagined possibilities 'appear' when the point of view (POV) is 'from above', others when it is 'in front'; some are extracted from a three three-dimensional perspective, others emerge from a flat two-dimensional view; and so on. All these variations are based on 'the subject as an active perceiver' (Ihde, 1986, p. 89). Being active means seeking new POVs. Ihde presents these examples to develop the notion of multistability, according to which there can be more than a single meaning to a phenomenon, especially when it comes to technologies. What is interesting to me in the context of imagination is the production of novel variations (such as the insect or the headless robot) that do not exist 'in the world' based on different POVs.

Later analyses of imagination were done in a more technological context. In 2015, Ihde introduces two technology-oriented concepts, one termed 'instrumentally enhanced perception' and the other 'instrumentally translational perception' (Ihde, 2015, p. x). The first represents an experience mediated by technologies that could not have been perceived without the technological mediation, such as 'seeing' radiation of remote stars with radio astronomy technologies and thereby exceeding the optical range of human sight. It involves the body and is related to the postphenomenological notion of embodiment relations. The other concept, the 'instrumentally translational perception', relates to the hermeneutic aspects of the experience. Ihde's example is the ability to sense the Earth's magnetic lines that can be found in animals. The equivalent human experience is mediated by the technology of the compass that requires reading, and hence the terms hermeneutic and translational. The two bodily perceptions described in Ihde's 2015 writings produce knowledge in imaginative ways. They operate in a different way than the seeing of the Necker Cube as described in 1986. They do not involve alternative POVs. Rather, they provide layers over reality through technological mediation (Wellner, 2021b). Ihde shows how bodily perceptions are technologically-saturated. However, there is no explicit reference to imagination.

Between the 1986 and 2015 studies, we can identify a certain decline in the primacy of perception. In *Bodies in Technology* (2002) Ihde returns to imagination as a phenomenological technic and explains what it's like to imagine that one is flying in the air. He distinguishes between 'a quasi-primacy to the here-body' and 'the quasi-otherness of the disembodied perspective' in which virtuality arises for the image-body (p. 5). In other words, 'this is the RL body in contrast to the more inactive and marginal VR bodies that make the shift to the quasi-disembodied perspectives possible' (p. 6).

This shift from perception to the 'VR body' has probably inspired Ingrid Richardson's focus on the body. She studies mobile media usage as a manifestation of embodiment relations (Richardson, 2020, p. 162), especially when experiencing tele-presence (p. 163). She identifies three bodily aspects: firstly, 'the physical macro-movement of the pedestrian body which can be traced geospatially through the gamer's GPS navigation' (Richardson, 2020, p. 166); secondly, 'the micro-movements

and motor coordination required of the mobile player' (Richardson, 2020, p. 166) which are still visible to the phenomenologist-observer; and thirdly 'the virtual movement and exchange of objects and creatures "into" the gamers' mobile devices and their passage through the hybrid game-space' (Richardson, 2020, p. 166), visible only to the experiencing 'I' and requiring some form of imagination. When Richardson studies the experiencing body she is actually drifting away from the primacy of perception.

Today, I ask: should the phenomenological hypothesis regarding the primacy of perception be revisited in a world populated by virtual chatbots and augmented reality eyeglasses? What happens when we gain knowledge of the world less through our perceptions and more through the mediation of AI-based search engines and social networking apps? And what are the consequences for the phenomenological concepts of body and perception when our experiences of the world are heavily based on AI-generated texts and images?

Posthuman Imagination, Cryptocurrency, and AI

The concept of a point of view (POV) is founded on the primacy of bodily perception and is therefore paradigmatic for the modern imagination (Wellner, 2018). The transition from modern imagination to digital *post*-modern and posthuman imagination would entail a shift from the POV mode of operation to a layered mode of operation (Wellner, 2018). In this new paradigm, imagination operates by selecting different layers, changing the order of layers, or combining layers into new ones.

The notion of layers is typical to our thinking of contemporary technology. Developers and designers use it to conceptualize the underlying architecture of technologies like 3D printing and augmented reality (Wellner, 2020a, 2021a). Philosophers use it to conceptualize how a technology interacts with various users. The layer logic functions phenomenologically in a mode which I term 'plateaus' (Wellner, 2019) to designate parts in our subjectivity that can intersect and co-shape each other.

With the layer model, we can rethink the concept of imagination as formulated by Kant who provides us with a framework of productive and reproductive imaginations. These require some connection to

reality, otherwise we are in the realm of 'phantasy'. Today, however, we realize that all three forms of imagination are encoded in AI systems through schematization performed on vast amounts of data (Wellner, 2018). Moreover, we need additional categories of imagination that would allow us to think, for example, about cryptocurrency. It is a form of digital money that is not represented by coins available to our bodily senses (reproductive imagination), albeit it is sometimes presented with the terminology of coins. It does not involve imagining representations of monetary value as in the case of bank notes or plastic cards (productive imagination), nor is digital currency a simulation or 'radically new visualizations' as offered for computer-aided design (CAD) software (Ihde, 2009, p. 465; see also Wellner, 2021b). Cryptocurrency is not a phantasy but rather a reality that exists in the digital sphere. We can analyze it in terms of embodiment and hermeneutic relations, but they are of secondary importance. It makes little difference whether we read how many digital coins are stored in a digital wallet on a computer screen or on a cell phone. Their value remains the same, regardless of the embodied perception with which we experience them. Assigning meaning to currency, whether fiat, crypto, or otherwise, requires imagination: what can I buy with this money? How can its amount affect my social status? How can I obtain more 'coins'? All of these questions refer to the future, leaving the body and perception aspects as of secondary importance. Likewise, hermeneutic relations provide a limited understanding of cryptocurrency if they don't take into account the value (or content). It is similar to the situation with digital media which requires us to refer not only to the mediating technologies but also to the content they carry (Wiltse, 2014; Liberati & Nagataki, 2015; Wellner, 2020a).

Similarly, embodiment and hermeneutic relations will provide limited understanding of generative AI that 'imagines' images, texts, etc. DALL-E is one of the currently common examples, but an older software program has been more transparent as per its operation and hence can better reveal how such systems work. My example is Google's 'Deep Dream Generator' that alters an uploaded picture through multiple rounds, each producing a layer in which the picture is slightly altered and becomes more 'dreamy'. The result is a picture that looks like an hallucination (Wellner, 2018). The developers state that 'when

you reach level 6, the dream will become a rare one'.[1] The more layers are added, the more digital imagination operates. This digital imagination operates not in accordance with the intentionality of the experiencing 'I'. Moreover, it shapes perceptions in unexpected ways. Therefore, I suggested reversing the intentionality arrow:

I ← technology—world

I termed this new type of relations 'relegation' to denote a downgrade of the human intentionality while hinting at Latour's notion of 'delegation', according to which technologies take over and operate instead of the human actor. The reversal of the intentionality arrow can redefine hermeneutic relations in the age of AI in which meaning is not freely produced by the 'I' but rather is imposed by the technological system. As in the case of fake news, for example. Instead of humans imagining their world, fake news that repeats in different forms, sometimes produced by AI bots, imposes on the 'I' a certain world view and a certain way to imagine the world.

AI and cryptocurrency demonstrate how changes in the technologies that mediate our imagination will necessarily alter not only the operation of our imagination but also its definition and meaning (Wellner, 2021a). The experiencing subject imagines differently in the presence of software technologies which mediate the world. Examining our bodily perceptions will not provide a major understanding of crypto-currencies or AI systems or our imagination. Just like examining the embodiment aspects of a watch will result in an analysis similar to that of a bracelet and will fail to recognize the hermeneutic aspects of time reading.

If the focus on embodiment led us to think of imagination in terms of producing new POVs, where should the 'relegation' lead us? In other words, how can we resist the intentionality of AI and reverse the arrow? Inspired by Gilles Deleuze and Félix Guattari, I propose to conceive imagination as plateaus where some are governed by the technology and some by the experiencing 'I' (Wellner, 2021a, 2019). This model should remind us of our role as those who provide the resources for the system to function, and as those who produce meaning from the results. We can

1 https://web.archive.org/web/20160108021107/http://deepdreamgenerator.com/rare-deep-dreams

also play a more active role in recombining different layers-plateaus and adding new ones, thereby redirecting the technological imagination in new pathways. Whereas POV requires the body and hence the extensive discussion on embodiment in the context of imagination, a layered approach to imagination shifts towards a combination of hermeneutic relations and relegation. The intentionality is distributed among the 'I' and the 'technology' and the perception is not as primary as it was for the embodiment-POV understanding of imagination. Embodiment does not disappear altogether, but rather loses its primacy.

Attention and Embodied Perception

Since the late nineteenth century, one of the common understandings of a properly functioning attention has been as a selection process of an object or thought out of a certain collection of potentialities. This type of attention is served by the searchlight metaphor that usually represents the fast switching of a highlight from one object to another. Such an attention consists of a mental selection of a specific object instead of others. This approach is imputed to Husserl (Kelly, 2004, p. 89), who describes attention as a ray of light. It is a 'bodily metaphor', as it is relatively easy to 'feel' how attention leads the body towards the object of attention and thereby puts it under the light of the attentive mind.

Merleau-Ponty criticized the searchlight approach for being too rigid and fixed. First, the reference to a searchlight that 'shows up objects pre-existing in the darkness' (Merleau-Ponty, 1962, p. 26) assumes the priority of the objects over the attention paid to them. For Merleau-Ponty, the searchlight approach postulates that the objective world already exists and thus is fixed and unchangeable. Second, not only is the world fixed but the searchlight effect is fixed as well. He writes, 'The searchlight beam is the same whatever landscape be illuminated' (p. 26), thereby assuming that the formulation of attention is a uniform revealing force that only scans the surface of the world. As a result, a second 'visit' of attention-as-searchlight should yield the same impression. However, in practice, a second visit does provide a different impression and therefore this model of attention, according to Merleau-Ponty, is flawed.

While the searchlight metaphor may be limited by presupposing a fixed light and a pre-given object of attention, it may still be useful for

conceptualizing how attention can be fast switched from one object to another. As Jonathan Crary notes, 'part of the cultural logic of capitalism demands that we accept as *natural* switching our attention rapidly from one thing to another' (1999, pp. 29–30). Additionally, the superficial illumination of the surface is implicit in the searchlight image and serves well the paradigm of shallow and flat involvement. This logic has been implemented for the Internet, echoing the searchlight metaphor to describe Internet activity in terms of 'skimming' and 'scanning' (cf. Carr, 2010).

Merleau-Ponty provides an alternative explanation as per how attention works: the first operation of attention is, then, to create for itself a field, either perceptual or mental, which can be 'surveyed', in which movements of the exploratory organ or elaborations of thought are possible (1962, p. 29). He asserts that attention 'bring[s] to light the object of attention itself' (p. 29). For him, the relation between the experiencing 'I' and the object of attention is yet another manifestation of the indispensable role of the body.

No technology mediates this process in Merleau-Ponty's description. This absence can be spotted even in more recent works on attention, like Bernard Waldenfels' 'Thresholds of attention' as part of his *Phenomenology of the Alien* (2011), Sean Dorrance Kelly's 'Seeing Things in Merleau-Ponty' (2004), and Maren Wehrle's 'Horizontal Extensions of Attention' (2016). This lack of reference to technology stands in stark contrast to the discussion on the attention economy and how the Internet and mobile apps distract the users' attention. Although attention has been managed by media technologies as such, and to an even larger extent since the introduction of electronic media (e.g., cinema and radio), these technologies hardly appear in the phenomenological discussions on attention.

Another lack in the classical phenomenology of attention is with regards to multi-tasking. The implicit underlying assumption is that since we have one single body, then our attention functions on the singular. This assumption leads to attempts to measure attention by the eyes' movement and to examine the gaze through a device called an eye tracker. It is assumed that wherever the eyes look, this is where the 'ray of attention' is directed. Hence, there can be only one object of attention. But we can look at one object and listen to another and even think in

parallel of a third object. Even if our sight is limited to one object of attention (and it's not, as captured by terms like 'peripheral vision'), our body as a multiple-sense system can be attentive to several targets.

A much-discussed example is driving a car while talking on the cell phone (also known as 'celling') or navigating with the help of a GPS-based app (Besmer, 2014; Irwin, 2014; Michelfelder, 2014; Wellner, 2014). These usage modes can be easily classified as multi-tasking. Once we think of the concept of multi-tasking in the context of new technologies, we realize that multi-tasking as such is not a new phenomenon. It has been present before the Internet and the cell phone in mundane acts like talking to someone while reading the newspaper or washing the dishes (Tun & Wingfield, 1995); playing football, which requires paying attention to the ball, the player's group members, the other group members, and the referee (Tripathy & Howard, 2012); or driving while talking to the other passengers (Irwin, 2014). In these everyday situations, attention must be paid to more than a single object simultaneously.

Attempting to understand the multi-tasking experience of driving with classical phenomenology requires identifying a field of awareness and examining how the exploratory organs operate within that framework to produce bodily perceptions (Rosenberger, 2014). It fails to describe the experience of driving properly with children 'fighting' in the back of the car (Irwin, 2014), a dog sitting on the driver's lap (Michelfelder, 2014), talking on the cell phone (Wellner, 2014), or all of the above at the same time.

Multi-Attentions

To address attention in the context of technology (especially digital technology) and multi-tasking, I have introduced the term multi-attentions. The term draws inspiration from Donna Haraway's (1998) conceptualization of 'knowledges', wherein the addition of the 's' may be read by the spell-checking software as an error. However, this plurality aims to challenge the conventional view towards the plurality of tasks and attention. The concept of multi-attentions means that our attention is not necessarily directed at a single object. It can do that, and in that situation, we are focusing, but this is just one mode-of-attention among others. Multi-attentions involve various levels of attention directed

at different objects. It is not limited to the structure of foreground-background that implies 'one focus' (foreground) and 'one awareness' (background), but can encompass three, four, or more attentions.

The term 'multi-attentions' describes various experiences. Think of the attentions involved in crossing a busy street: attentions are paid to the act of walking; to noticing holes in the road due to endless roadworks; to noticing cars and attempting to create eye contact with the driver to ensure they stop their car; to the other pedestrians and more importantly to e-scooters that ride on the sidewalks; and possibly to thinking—on family matters, on the political situation, or plans of where to go and what to do in an hour, tomorrow, or next week. All these happen simultaneously and non-hierarchically.

My first work on attention was focused on the role of cell phones. In the debate between those who assert that cell phones are distracting and therefore dangerous while driving, and those who use them regardless, I unfashionably supported the latter. The distraction claim presupposes single attention as the only possibility, whereas the pragmatic approach regards multi-attentions as an always-already part of our lives. The two positions were presented in a special issue of *Techné Research in Philosophy and Technology* (Volume 18, issue 1/2) that examined the multiple aspects of driving while celling and related topics. On the single-attention side, Robert Rosenberger (Rosenberger, 2014) claimed that celling while driving is dangerous based on a phenomenological analysis and cognitive research. On the multi-attentions side, I presented (Wellner, 2014) a contestant view based on a genealogy of the notion of attention that uncovered how attention had attracted negative vocabulary in the nineteenth century (Crary, 1999) and how this negativity is duplicated into the discussion of driving while celling. The concept of multi-attentions conceptualizes how seeing (e.g., the road) and hearing (e.g., the cell phone) can be accompanied by calculating the route to one's destination and recalling the day one had in the office. Driving while celling means one can drive and see the road while talking on the cell phone and navigating towards the destination.

This multiplicity of senses is in sharp contrast with the single-attention view which implicitly assumes that seeing means being attentive, so that the operation of any other sense—such as hearing—is likely to impair driving. From a technological perspective, multi-attentions turned into

a viable mode-of-attention when the cell phone, and especially the smartphone, became part of our everyday life. Philosophically, the cell phone enabled us to recognize that we always already practice multi-attentions, be it because of our multiple senses (e.g., seeing one thing and listening to another, like driving through busy traffic while listening to the radio), or because of the technologies that we have around us, such as the radio and cell phone that accompany us in everyday life. The various senses and technologies can each be regarded as a layer, and together they compose a whole experience. Here, the observation of Merleau-Ponty regarding a 'second visit' that yields new experiences is relevant and productive. The layers explain the mechanism that generates such new experiences through endless combinations.

The concept of multi-attentions does not mean that attention is necessarily spread equally. Each object of attention can enjoy a various degree of attention (Watzl, 2017). For example, while listening to jazz music, 'you might focus your attention on either piano or saxophone, but remain conscious of both in either case' (Watzl, 2011, p. 723). If, while commuting, reading the headlines on the news app (or my friends' statuses on a social networking app, or any other activity involving the cell phone's screen) attracts most of my attention, I am still attentive to the happenings around me and the stations. I can notice who among the other passengers stood up, and can realize (almost always) when the train or the bus is nearing the station where I disembark. Hence, multi-attentions are a set of attentions given to several objects to various degrees and extents. This represents a complex real-life experience.

A Genealogy of Attention: Attention in AI

In my work on attention and technology, I discovered that the notion of attention changes over time and cannot be considered ahistorical. It has a genealogy. Crary (1999) mapped this genealogy up to the early twentieth century. He marked the last quarter of the nineteenth century as the moment in which attention became a problem, known as distraction. The negative discourse on attention unfolded once workers in factories were obliged to remain attentive to the monotonous work near machines for long hours. This 'problem' migrated from the factories to schools and other social institutions. It is not a coincidence that the

cinema was invented during that era and shaped so that spectatorship was sedentary in a dark hall and leading the viewers to concentrate on the movie. The cinema can be regarded as an attention machine that operates within the logic of the searchlight and ensures the viewers' attention is equal to focusing on a single object, which is presented on the illuminated screen.

Crary's genealogy ends at the beginning of the twentieth century and portrays the 'modernity moment' of the notion of attention. My genealogy continues from that moment and carries into the next step in the mid-twentieth century, with the introduction of electronic mass media, i.e., radio and then television. Here the prevalent mode of attention transforms into a scanning, from one broadcasting station to another. Like the cinema, mid-century mass media was mostly consumed while sitting and preferably being attentive to the broadcast content. The difference is the fast switching of attention between several objects. The third step was with regards to the cell phone and how it participated in the multi-tasking experience of driving as described above.

Now it is time to move forward and refer to AI. AI developers have embraced the common understanding of attention that equates it to focusing. It was a kind of 'delegation', to use Latour's terminology, that attempts to transfer a human action or capability to a technological artefact. The adoption of attention into AI systems was done in two parallel paths, one regarding text and the other regarding images.

In 2010, the notion of attention was integrated into AI systems that deal with texts in order to solve a problem in which the system ignored early inputs and referred mostly to those that came later (Larochelle & Hinton, 2010). Thus, the concept of attention originates as a variation of memory in the context of multiple inputs over time,[2] and later evolved into a mechanism for choosing a direction to go ('hard direction', in the words of the AI Summer). Thus, attention becomes a way for an AI system to encode only part of the information in the source input.

In image recognition systems, the integration of attention can be spotted already in the late 1980s as a selection mechanism and target

2 See N. Adaloglou (2020, November 19). How attention works in Deep Learning: Understanding the attention mechanism in sequence models. *AI Summer,* https://theaisummer.com/attention/

detection, but '2015 [was] the golden year of attention mechanisms' (Soydaner, 2022, p. 13373). Interestingly, Derya Soydaner opens her review of attention mechanisms in AI with an explanation of the visual attention as developed in neuroscience that follows the logic of focusing on a single target. As a result, attention serves as an algorithmic mechanism that leads a model to focus on what it considers to be the important part of the picture, like a human body. Consequently, one definition of attention in AI frames it as: 'the ability to dynamically highlight and use the salient parts of the information at hand'.[3] This approach of attention in visual processing is similar to that of traditional attention that equates it with focusing. It uncritically adopts the searchlight metaphor. Technology specialists explain that, in practice, attention allows neural networks to approximate the visual attention mechanism humans use. Like people processing a new scene, the model studies a certain point of an image with intense, 'high resolution' focus, while perceiving the surrounding areas in 'low resolution', then adjusts the focal point as the network begins to understand the scene.[4]

From the textual and visual processing technics, algorithmic attention further developed and became a way to solve a 'big problem': attention models, or attention mechanisms, are input processing techniques for neural networks that allow the network to focus on specific aspects of a complex input, one at a time, until the entire dataset is categorized. The goal is to break down complicated tasks into smaller areas of attention that are processed sequentially, similar to how the human mind solves a new problem by dividing it into simpler tasks and solving them one by one.[5]

The result is a model that can handle a 'big problem' like translation from one language to another not linearly word by word but rather on a higher level of overall meaning. The limitations of human sight and the reliance only on the sense of sight have led the development of AI systems towards an attention that is focused on a single subject. A wider conceptualization would have enabled the development of more complex systems where attention is given to more than one object, what

3 S. Cristina (2023, January 6). What is attention? *Machine Learning Mastery*, https://machinelearningmastery.com/what-is-attention/.

4 Attention models. *DeepAI,* https://deepai.org/machine-learning-glossary-and-terms/attention-models

5 Ibid.

I termed here as multi-attentions. It is an attention that is not limited to the embodiment aspects (i.e., the eye gaze), but can include also a stream of thoughts that runs in parallel to the sight, or to hearing.

Summary and Conclusions

This chapter is structured as a two-dimensional matrix. One axis delineates phenomenology, stretching from classical phenomenology to postphenomenology and its subsequent developments; the other axis expounds two basic human traits, namely imagination and attention, and the challenges that digital technologies pose to our understanding of them.

In imagination, bodily perception has been the prevalent perspective in phenomenology since Merleau-Ponty's *The Primacy of Perception*. Digital technologies have led to a kind of return to the body itself, but this return serves as a springboard to discuss the virtual body, that which exists in the mind, as in the case of computer games and virtual reality apps.

In attention, a significant discussion assumes—in most cases implicitly—that attention can be directed to a single object, using the metaphor of a searchlight. Much of the phenomenological literature does not refer to technologies as participants in attentive processes, and outside this field the reference is mostly negative, as a source of distraction that hampers attention. Also lacking from the phenomenological discussions is the possibility of multi-tasking, and again, outside the field it is considered in a negative manner.

The challenges to the phenomenological approach are described through the lens of technology. In the case of imagination, the examples of cryptocurrency and generative AI apps like DALL-E and Deep Dream Generator exemplify the need for new postphenomenological relations, and even draw some guidelines to its operation as layers.

In attention, the notion of multi-attentions was introduced along with the examples of driving while celling and crossing the street. These examples show how multi-attention works and how it fits to our contemporary everyday experiences. The more recent examples from the field of AI demonstrate how the nineteenth century understanding of attention is duplicated into technological systems to identify images,

translate texts, etc. Now the challenge is to move in the development of AI systems from a searchlight, single-target attention to multi-attentions that take into account multiple inputs from various kinds and sources.

Imagination and attention in the age of AI demonstrate the applicability of the concept of co-shaping, which conceptualizes how the development of new technologies leads to new possibilities of imagination and attention, which leads to the development of new technologies, and so on in an endless loop. This process ties imagination and attention on the one hand and technology on the other, so that they can hardly be separated. Co-shaping also assists in answering difficult questions such as the embodied aspects of imagination for AI algorithms. How can algorithms imagine if they do not have a body? A co-shaping analysis would regard embodiment as one element in the imaginative process that is contributed by the human actor: there is a difference between listening to jazz in a lab versus listening in a club with a live audience. An AI algorithm like Shimon the robot that improvises jazz would play differently in these two settings. Co-shaping models how the various layers interact and how they produce vibrant experiences.

Another insight refers to the primacy of perception. For classical phenomenology, understanding of imagination and attention is tightly related to the body and the perceptions. In the case of imagination, perception seems to lose some of its primacy and there is now some room for the virtual body, especially in the presence of digital technologies like cell phones and VR. In the case of attention, the body has been orienting the analysis to focus on a single attention while overlooking the possibility of multi-attentions. Technologies like the cell phone accentuate such possibility. AI technologies are accelerating these processes. While they have important bodily aspects, their focus is on intelligence, mind, and other non-bodily-oriented concepts. The non-bodily orientation can be examined with the relatively new concept of embrainment. Rosi Braidotti (2013) coined the term but did not elaborate on it. Is it possible to use this term as a complementary aspect of embodiment by focusing on mind-related aspects of imagination and attention? It can be regarded as a response to the embodied cognition paradigm shift that aimed to show how cognition is embodied.

Phenomenology places a strong emphasis on bodily aspects, and now it is time to bring the mind into focus. When considering the mind, the term embrainment might need to be reconsidered in order to reflect the shift away from the body-brain connection and instead emphasize the mind. In any case, for postphenomenology, this could involve moving beyond embodiment and hermeneutic relations to incorporate embrainment relations. These could be useful for analyzing many digital technologies that have minimal or even negligible bodily aspects.

References

Braidotti, R. (2013). *The posthuman*. Polity Press.

Carr, N. (2010). *The shallows: What the internet is doing to our brain*. W. W. Norton & Company.

Crary, J. (1999). *Suspensions of perception: Attention, spectacle, and modern culture*. MIT Press.

Ihde, D. (1973). *Sense and significance*. Duquesne University Press.

Ihde, D. (1979). *Technics and Praxis*. D. Reidel Publishing Company.

Ihde, D. (1986). *Experimental phenomenology: An introduction*. State University of New York Press.

Ihde, D. (1990). *Technology and the lifeworld: From garden to earth*. Indiana University Press.

Ihde, D. (2002). *Bodies in technology*. University of Minnesota Press.

Ihde, D. (2009). From Da Vinci to CAD and beyond. *Synthese, 168*(3), 453–67, https://doi.org/10.1007/s11229-008-9445-0

Irwin, S.O. (2014). Technological reciprocity with a cell phone. *Techné: Research in Philosophy and Technology,* 18(1–2), 10–19, https://doi.org/10.5840/TECHNE201461613

Jansen, J. (2016). Husserl. In A. Kind (Ed.), *The Routledge handbook of the philosophy of imagination* (pp. 69–81). Routledge.

Kelly, S. D. (2004). Seeing things in Meraleau-Ponty. In T. Carman (Ed.), *Cambridge Companion to Merleau-Ponty* (pp. 74–110). Cambridge University Press.

Langsdorf, L. (2020). Relational ethics: The primacy of experience. In G. Miller & A. Shew (Eds), *Reimagining philosophy and technology, reinventing Ihde* (pp. 123–140). Springer.

Liberati, N., & Nagataki, S. (2015). The AR glasses' 'non-neutrality': Their knock-on effects on the subject and on the giveness of the object. *Ethics and Information Technology, 17*(2), 125–37, https://doi.org/10.1007/s10676-015-9370-0

Merleau-Ponty, M. (1962). *Phenomenology of perception* (C. Smith, Trans.). Routledge & Kegan Paul.

Michelfelder, D. P. (2014). Driving while beagleated. *Techné: Research in Philosophy and Technology, 18*(1–2), 117–132, https://doi.org/10.5840/techne201461818

Rosenberger, R. (2014). The phenomenological case for stricter regulation of cell phones and driving. *Techné: Research in Philosophy and Technology, 18*(1–2), 20–47, https://doi.org/10.5840/TECHNE201461717

Soydaner, D. (2022). Attention mechanism in neural networks: Where it comes and where it goes. *Neural Computing and Applications, 34*(16), 13371–13385, https://doi.org/10.1007/s00521-022-07366-3

Verbeek, P.-P. (2008). Cyborg intentionality: Rethinking the phenomenology of human-technology relations. *Phenomenology and the Cognitive Sciences, 7*(3), 387–395, https://doi.org/10.1007/s11097-008-9099-–x.

Watzl, S. (2011). The philosophical significance of attention. *Philosophy Compass, 6*(10), 722–733, https://doi.org/10.1111/j.1747-9991.2011.00432.x

Watzl, S. (2017). *Structuring mind: The nature of attention and how it shapes consciousness*. Oxford University Press.

Wehrle, M., & Breyer, T. (2016). Horizonal extensions of attention: A phenomenological study of the contextuality and habituality of experience. *Journal of Phenomenological Psychology, 47*(1), 41–61, https://doi.org/10.1163/15691624–12341304

Wellner, G. (2014). Multi-attention and the horcrux logic: Justifications for talking on the cell phone while driving. *Techné: Research in Philosophy and Technology, 18*(1–2), 48–73, https://doi.org/10.5840/techne201432712

Wellner, G. (2018). Posthuman imagination: From modernity to augmented reality. *Journal of Posthuman Studies, 2*(1), 45, https://doi.org/10.5325/jpoststud.2.1.0045

Wellner, G. (2019). Digital subjectivity: From a network metaphor to a layer-plateau model. *Azimuth: Philosophical Coordinates in Modern and Contemporary Age, 14*, 55–66.

Wellner, G. (2020a). Postphenomenology of augmented reality. In H. Wiltse (Ed.), *Relating to things: Design, technology and the artificial* (pp. 173–187). Bloomsbury Visual Arts.

Wellner, G. (2020b). When AI is gender-biased: The effects of biased AI on the everyday experiences of women. *Humana.Mente, 13*(37), 127–50.

Wellner, G. (2021a). Digital imagination, fantasy, AI art. *Foundations of Science*. https://doi.org/https://doi.org/10.1007/s10699-020-09747-0

Wellner, G. (2021b). Digital imagination: Ihde's and Stiegler's concepts of imagination. *Foundations of Science*, https://doi.org/10.1007/s10699-020-09737-2

Wellner, G. (2021c). I-algorithm-dataset: Mapping the solutions to gender bias in AI. In J. Büssers, A. Faulhaber, M. Raboldy, & R. Wiesner (Eds), *Gendered configurations of humans and machines: Interdisciplinary contributions* (pp. 79–97). Verlag Barbara Budrih.

Wellner, G. (2022). Attention and technology: From focusing to multiple attentions. In M. Wehrle, D. D'Angelo, & E. Solomonova (Eds), *Access and mediation* (pp. 239–258). De Gruyter Saur.

Wiltse, H. (2014). Unpacking digital material mediation. *Techné: Research in Philosophy and Technology, 18*(3), 154–182, https://doi.org/10.5840/techne201411322