



Self-tracking, background(s) and hermeneutics. A qualitative approach to quantification and datafication of activity

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Abstract

In this article, we address the case of self-tracking as a practice in which two meaningful backgrounds (physical world and technological infrastructure) play an important role as the spatial dimension of human practices. Using a (post)phenomenological approach, we show how quantification multiplies backgrounds, while at the same time generating data about the user. As a result, we can no longer speak of a unified background of human activity, but of multiple dimensions of this background, which, additionally, is perceived as having no pivotal role in the process, often being hidden, situated beyond human consciousness, or taken for granted. Consequently, the phenomenological experience of the background turns into a hermeneutic practice focused on the interpretation of representations and descriptions. By adopting a (post)phenomenological approach, we show the problems and limitations of quantification of human activities occurring in self-tracking and the theoretical problems associated with the scheme of human-technology relations.

Keywords (post)phenomenology · self-tracking · background · hermeneutics · datafication · quantification

1 Introduction

In this article we analyse the problem of quantification and datafication of human activities, and the receding of technological infrastructure and physical world (Wiltsse, 2017) into the background of human activities. We analyse this phenomenon by

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using the example of self-tracking. Although self-tracking is usually focused on the body and activities in which the body engages, recently researchers have been devoting more attention to its spatiotemporal and relational dimension (see Kristensen et al., 2021; Pink & Fors, 2017a). Consequently, we would like to explore this field of research to, on the one hand, provide some arguments about the role of the background in the analysis of quantitatively measured human-technology relations, and, on the other, criticise self-tracking practices from a hermeneutic point of view.

In our view, the data quantified by self-tracking technologies consists not only of some measurements of human bodily activity, but also locates a person in a concrete spatiotemporal reality (Pink & Fors, 2017a) and influences the ways in which users relate to their environment (Pink & Fors, 2017b). In this sense, an analysis of the relation between the human being, technology, and space where the activity is performed is especially important. That is why, we endorse an “understanding of self-tracking as being *in* the environment rather than *of* the body” (Pink & Fors 2017a, p. 376; see Sharon, 2017; Schwennesen, 2019). We try to explain what role the data extracted through self-tracking practices plays in our experience of the background in which our activity takes place. Consequently, we apply (post)phenomenology of technology to practices of self-tracking as it offers a more detailed understanding of human-technology relations and highlights both the problem of the background and, through reference to hermeneutics, our interpretative engagement with the background.

The concept of the background in (post)phenomenology has been used to highlight either the role of the body as a schema of consciousness (Welton, 2006, 201) or the fact that technologies become invisible while they are being used (Olesen, 2006, 240). We want to highlight that in self-tracking practices the physical world and technological infrastructure recede into the background. In this sense, the background is a field or a horizon (Langsdorf, 2006, 42) against which human experience takes place but it loses its importance in self-tracking focused on the gathering and interpretation of quantitative data. We argue that self-tracking alienates users from the background as it turns their attention to data instead of the phenomenologically accessible world. This raises questions about the epistemic value of self-tracking and its status as anything more than a data-mediated and deeply flawed interpretative practice. In our opinion, classical hermeneutics might be a proper theoretical framework for describing the background-data relation which emerges through self-tracking. Moreover, a hermeneutic approach can help us elaborate on empirical studies already attempting to deepen our understanding of human-environment relations (Pink et al., 2017; Meneley, 2019).

In the first section of our article, we define self-tracking and provide a general, if limited, overview of trackable activities. We indicate the qualitative problems regarding a data-oriented approach to the analysis of human activity. We emphasize the fact that human activities are spatiotemporally oriented, but current research on self-tracking is predominantly focused on the body.¹

¹ And some parameters relating to “the self”, such as mood or productivity. While we recognize that self-tracking deals with these parameters as well, in this paper we focus on the opposition body–background for the sake of clarity and consistency with the works that form our theoretical assumptions.

In the second section, we analyse how phenomenology and situated cognition can explain the role of the background in human activities. Through the analysis of the bodily-oriented theory of Merleau-Ponty we highlight the need for qualitative, phenomenological interpretation of human activity, while also noting that activities are in a constant relation to a *milieu* in which they may occur. Referring to the notions of situated cognition and enactivism, we want to point to the role the physical world plays in our activity as a constant, even if not always consciously perceived, reference point. We call the physical world background one.

In the third section we analyse the role the background plays in the postphenomenology of Don Ihde where it is mainly understood as a type of human-technology relation. Ihde's theory explains how technological infrastructure falls into a background when it is not in the spotlight, becoming, in our words, background two. By combining Ihde's theory with the interpretations provided by Best and Aydin et al., we diagnose that the background in self-tracking practices is split into two, which has important conceptual consequences.

In the fourth section, we argue that self-tracking activity results in alienation from the backgrounds understood as the physical world and as technological infrastructure. In our understanding of alienation, we follow Rahel Jaeggi who writes that "an alienated world presents itself to individuals as insignificant and meaningless, as rigidified or impoverished, as a world that is not one's own, which is to say, a world in which one is not 'at home' and over which one can have no influence" (Jaeggi, 2014, p. 3). We believe that in the context of self-tracking, alienation occurs when the datafied world encountered through a device appears to the users distant to and incompatible with the physical world in which their qualitative experiences take place.

In the fifth section, we engage with the problem of hermeneutics and the idea that a *background data double* might be the only possible background to which users of self-tracking devices could refer in their technologically-mediated practices. We indicate here that self-tracking practices which overlook the qualitative dimension of the two backgrounds (physical world and technological infrastructure), may result only in numerical representations of lived experiences and ignore the social, cultural, political, etc. dimensions of the tracked activity. However, the datafied representation of a given activity provided through self-tracking nevertheless requires interpretative praxis if it is to become a meaningful representation of our lived reality. We argue that this demands a revival of the hermeneutic tradition and its adaptation to the technologically-mediated context.

In the conclusion we sum up the results of our exploration and highlight the importance of a qualitative turn in the analysis of quantitative practices.

2 Self-tracking, quantification and datafication

Evaluating the self through the means of numbers, graphs and tables has attracted the attention of thinkers for centuries, with Benjamin Franklin's (2005) moral tables being the most notable example. However, such practices did not gain wider popularity until the introduction of technologies specifically designed to facilitate self-quantification.

tification.² For example, Crawford et al., (2015) demonstrated how the introduction of public scales, and later their bathroom counterparts, made the members of the general public interested in regularly monitoring their weight and laid the foundation for the emergence of what could be called the self-tracking movement.

Today, there exist numerous digital technologies whose main purpose is to quantify information about users' bodies and everyday activity. A typical self-tracker might monitor their daily steps using an accelerometer embedded in most contemporary smartphones or track their heart rate and sleep patterns with the help of a wearable wristband or a smartwatch. Other devices allow the collection of data about more specific factors, such as blood glucose levels, and coupled with dedicated medical devices (e.g., insulin pumps), they can facilitate illness management.

The promises offered by self-tracking devices made an impact on the public imagination and inspired numerous enthusiasts to engage in wide-ranging practices of self-quantification. People like Chris Dancy, dubbed by the media as the most connected man (Murphy, 2014), use wearable sensors to gather insights about highly specific parts of their daily life (for example, correlations between the level of lighting in their surroundings and their eating habits), while the organisational efforts of two former Wired editors, Kevin Kelly and Gary Wolf, led to the creation of the Quantified Self movement connecting thousands of people all over the globe (Ruckenstein & Pantzar, 2017). Members of the movement take part in 'show & tell' events, where they discuss their own self-tracking data, share it with other self-trackers and encourage them to experiment with self-quantification, also by refashioning existing devices to better suit their own needs.

The rapid rise of self-tracking brought considerable attention from scholars, particularly in the fields of sociology and anthropology. Authors study the everyday experience of users of self-tracking technologies (Kristensen & Ruckenstein, 2018; Fotopoulou & O'Riordan, 2017), as well as the use of quantification in the workplace (Gabriels & Coeckelbergh, 2019; Till, 2014) or healthcare contexts (Ajana, 2017; Sharon, 2017). Moreover, there has been much discussion about ethical and social concerns related to self-tracking, such as erosion of privacy (Lanzing, 2019; Nissenbaum & Patterson, 2016), unclear ownership structures of self-tracking data (Kreitmair & Cho, 2017; Neff & Nafus, 2016; Till, 2014) and user autonomy (Baker, 2020; Lanzing, 2019; Owens & Cribb, 2019; Sharon, 2017) among others.

Most relevantly to this paper, self-tracking is often associated with 'datafication'.³ According to this view, when data about users is collected by devices and processed

² On the other hand, it could be argued that the wide-ranging, statistics-based disciplinary and governance measures employed by biopolitical regimes, as discussed by Foucault (1978, 2008), could be considered practices of social quantification. In fact, Foucault is often referenced by authors discussing self-tracking technologies (Ajana, 2017; Fotopoulou & O'Riordan, 2017; Gabriels & Coeckelbergh, 2019).

³ Of course, as Ruckenstein & Schüll (2017) demonstrate, self-tracking has been also discussed in the context of surveillance studies, biopolitics, technologies of the self, Deleuzian control society and neoliberalism. The social and political implications of self-tracking technologies cannot be overstated, but our paper focuses on the phenomenological aspects of self-tracking data, which makes datafication the most apt theoretical concept for our analysis. The focus on data and reduction of qualitative experience into quantitative data enables us to focus on the impact self-tracking has on perception and interpretation of lived environment in the context of their numerical representations. Arguably, datafication is much more suited for this purpose than other approaches identified by Ruckenstein and Schüll. On the other

by algorithms, certain aspects of the monitored phenomena become more pronounced (e.g., the number of steps made during a walk), while others are obscured from view as they are either not capturable by the device or deemed irrelevant by the designers (e.g., the user's mood during a walk). Consequently, by referring to datafication, authors note that self-tracking can privilege quantified ways of generating knowledge about the self, while obscuring or reducing more intuitive or embodied means of perception, or even alienating the users from their bodies (Kreitmair & Cho, 2017; Neff & Nafus, 2016; Sharon, 2017). This is also exacerbated by the fact that self-tracking data is often framed as more reliable than traditional way of self-evaluation or as a means of overcoming the limitations of human perception, such as biases (Kreitmair & Cho, 2017; Ruckenstein & Pantzar, 2017; Sharon, 2017).

While self-tracking itself and its scholarly interpretations have predominantly focused on the tracked individual and their activity,⁴ we believe that the above considerations should be extended to the quantification of the background in which self-tracking takes place. Following Meneley's argument that "Fitbit does not really care where you take these steps" (Meneley, 2019, p. 134) and the associated exclusion of the activity from the place where it is performed, we argue that it is necessary to ask questions about the status of the background in self-tracking. This can be understood both as the background in which the tracked activity occurs (i.e., the physical environment, as well as contextual information relevant to it), but also the background to which self-tracking technologies themselves inevitably slip as they become more common in everyday life. In what follows, we discuss the implications of the reductive character of quantification and the creation of data doubles in connection with the background of self-tracking practices and technologies.

3 From the body to the background in phenomenology

When we think about our activity, our attention is focused on the "know-how": what we do, how is it possible, what is the aim, who is responsible for the action and what are its effects. The space in which our activities are performed, the "know-where" is not discussed to a similar extent. We believe that the background should be a central element in the analysis of each activity since human practices are always performed in some space, but this space is rarely in the spotlight when these practices are analysed. Our activities and knowledge about them are situated (Lakoff & Johnson, 1999) which means that the body and the background are significant to them (Dreyfus, 2001). The role of the body is rarely overlooked when practices of quantification are analysed – valuable data cannot be created without it. The background, on the con-

hand, our exclusive focus on datafication does not allow us to adequately discuss the social and political implications of quantification of the background. However, we hope that these will be elaborated upon by other scholars in future work.

⁴ Arguably, even authors who criticize existing research on self-tracking as focusing excessively on the body, still treat the individual as a main reference point. For example, Dufault and Schouten (2020) analyse the quantification of credit scores as an instance of self-tracking not related to the users' bodies, but still discuss it predominantly in the context of individual identity and subjectivity.

trary, seems to be credited with a less important role since it is perceived only as the spatiotemporal identification of the body.

In the following paragraphs we argue that the body and the background are inextricably related. Moreover, we argue that quantification of activity affects the way we perceive the background in the phenomenological sense, splitting it in two and reducing its significance for the perceiving subject, thus alienating them from the space in which activities are performed. This can be conceptualised in the context of datafication, briefly outlined in the previous section. To explain this thesis, we introduce Maurice Merleau-Ponty's phenomenology of body and space and the theory of situated cognition, as well as Don Ihde's concept of the background as a relation between human beings and technology. Merleau-Ponty's theory focuses our attention on the body and our cognition as happening through the body, but situatedness⁵ is of great importance in his theory since it emphasises the spatiotemporal context of human activities. In this sense, we demonstrate that Merleau-Ponty's phenomenology understood in the light of the situatedness approach makes it possible to deepen our understanding of Ihde's relational ontology.

In the phenomenology of Merleau-Ponty we know the world through our bodies because our reference to external reality occurs only through bodily experiences. Our bodies are a medium between the I and the external world and we cannot separate ourselves from them. Even more so, Merleau-Ponty emphasises that humans perceive external reality not because they have bodies, but because they are bodies (Merleau-Ponty, 1962, pp. 90–94; Carman 1999, p. 208). "(...) as for my body, I do not observe it itself: to be able to do so, I would need the use of a second body, which would not itself be observable" (Merleau-Ponty, 1962, p. 91). This statement of Merleau-Ponty seems reflected in quantification performed by devices such as Apple Watch or Fitbit. In order to know and observe the body, the user is able to focus on data, which would not be available through sensory experiences but may be recorded by a device and turned into a cognisable piece of information. A person has access to their own body as a source of valuable data extracted by means of technological separation from or technological distancing to the body. In quantification, a person's knowledge about their activities is constructed not in the language of phenomenological experiences, but in the language of numbers, graphs, and tables, which creates a distance from first-hand, embodied, and intuitive ways of perceiving the world.

Furthermore, according to Merleau-Ponty, the body does not exist in a void, but is constantly in a spatial relation to other bodies and objects. He highlights that human beings experience their bodies as a body schema which enables a spontaneous adjustment of the body to different situations, gestures, and behaviours. Carman clarifies this concept of Merleau-Ponty saying: "The body schema is the crux or reference point that establishes a stable perceptual background against which I perceive and respond to changes and movements in my environment, and thereby opens me onto a world of other selves" (Carman, 1999, p. 220). In other words, it provides stability in

⁵ We are aware that the notion of situatedness is similar to the concept of situated objectivity as discussed by Pantzar & Ruckenstein (2017). However, we believe that situated objectivity refers to the way we interpret data and not to the spatiotemporal situation of activity, as discussed in this section. We elaborate on the differences between situated objectivity and our approach towards at the end of this paper.

the changing environment. It is the perceptual background in the body which makes experiences possible.

The philosophy of Merleau-Ponty places particular emphasis on the body, but it also highlights the meaning of the external world. The body schema can only exist in the physical environment. “This maximum distinctness in perception and action defines a perceptual *ground*, a basis of my life, a general *milieu* for the coexistence of my body and the world” (Merleau-Ponty, 1962, p. 250), which could be called a situatedness of the body (Carman, 1999, p. 218). Situatedness is the idea that human beings need bodies and environment for their own development. This approach is close to enactivism, in that it assumes that human action, perception and cognition are intermingled and stimulated by the environment which creates obstacles and barriers for the developing body, thus forcing it to undergo inner changes and adjustments (Clark, 2001). On the level of cognitive studies both above theories are connected with the extended mind, extended cognition or embodied cognition approaches (see Varela et al., 1991; Lakoff & Johnson, 1999). However, even if the theoreticians of situatedness and enactivism emphasize the role of the environment in human cognitive evolution, they are mainly focused on defining the human mind (Giere & Moffatt, 2003) and less on the detailed analysis of the material conditions of the environment.

We want to emphasise the role of the background understood as a field (or horizon) against which human experiences take place. We focus in this argument on self-tracking practices by using (post)phenomenology of technology which could fruitfully correspond with situatedness assumed by Merleau-Ponty and enactivism. To fulfil this aim, we must explore the role technology plays in building our relations with the external world. Up to now researchers have analysed the role of the background mainly in the case of the Internet and virtual life. As Hubert Dreyfus highlights, there are no real bodies on the Internet, even though they normally play an essential role in our perception of the world, ourselves, and human relations (Dreyfus, 2001; see also Brownstein 2011, p. 42). But what about technologies which are not purely virtual and are used to measure our activity in the physical world? Is it possible to speak of a background in this context?

4 From the background to the backgrounds in postphenomenology

As bodies are related to external objects, they imply, at least phenomenologically, the existence of some reality around the body. In his postphenomenological approach, Don Ihde outlines four human-technology relations through which technology shapes our perception of the external world.⁶ We discuss these four relations in the context

⁶ Notably, Van Den Eede (2015) discusses self-tracking in the context of Ihde’s postphenomenological relations and other key concepts of his philosophy. However, his approach is predominantly focused on the user. Even when he suggests that the physical world may be disappearing, he argues that it is because self-tracking technologies seem to be equating the user with the world that is being encountered in the postphenomenological relation (Van Den Eede, 2015, p. 154). We follow some of his intuitions in this paper (i.e., the necessity to expand Ihde’s view of hermeneutics and to examine what kind of knowledge is constructed through self-tracking), but explicitly focus on how the physical world is encountered by self-trackers. Moreover, while Van Den Eede calls to expand Ihde’s hermeneutics, we build on this

of their interpretations by Best and Aydin et al. to emphasize how the background, understood as the horizon against which human experience takes place, splits in two. This provides us a chance to see some conceptual problems occurring in data-oriented self-tracking practices.

In the first relation, embodiment, human body is adjusted to technology or empowered with new, technologically-mediated, perceptive capacities (Ihde, 2009, p. 42). Archery is a good example of technological embodiment. At first, a person has to learn how to properly use a bow, but after some practice, they are able to perceive their own body as connected with the bow. In this sense a human can perceive the world *through* the embodied technology.

Ihde's second relation is the hermeneutic relation, in which the world is either observed or "read" thanks to technology, or in which technology changes our interpretation of who we are and what is the appropriate description of the world (Ihde, 2009, p. 43). The best example here could be a telescope which completely changed our vision of the universe, as well as our perception of the cosmological position of the Earth and, consequently, of people.

The third relation is alterity. When people see new artefacts, cutting-edge technologies, or simply have to focus their attention on the operation of the device, they put technology in the spotlight (Ihde, 2009, p. 43). This is the case with robots which always attract people's interest and motivate them to ask new questions about the boundaries of human interactions with others, but an alterity relation also arises when the use of an ATM requires us to follow the instructions appearing on the screen of the machine. In this sense, technology encountered in alterity relations comes to the foreground of our perception.

The background relation is the fourth one in Ihde's scheme. In contrast to alterity, in the background relation technologies are not consciously perceived, or they are not the main focus of perception. They are somewhere in the background as the infrastructure necessary for different (inter)actions mediated by technology (Ihde, 2009, pp. 43–44). The lighting system in your home which allows you to read this article is an example of a technology with which you enter into a background relation. You currently focus on reading, not your lightbulbs or the light itself. However, without the technological background your activity would be more difficult, and your attention would be redirected from this article to potential sources of light. On a similar note, Susanna Paasonen has observed that digital technologies have become part of everyday infrastructure on which we depend even in deeply personal context such as intimacy and friendship (Paasonen, 2018). Echoing Heidegger's (1972) observations, she notes that this technological background is taken by users for granted and that infrastructure only fully captures the users' attention when it breaks down, also eliciting a strong emotional response in the process (Paasonen, 2015).

These four relations follow a general scheme of "I – technology – world" and they all demonstrate how human intentionality is mediated by technology. Mediation is understood in postphenomenology not as "being in the middle", as it is usually understood in classical media studies (Mersch, 2010), but as "being a part of the

suggestion even further by drawing on classical hermeneutics and thus reaching beyond the postphenomenological paradigm.

relation” (Aydin et al., 2019, pp. 326, 337). The consequence of this approach is that technologies cannot be treated as a neutral instrument of human use, but as an active, even agential, part of the equation (ibidem, 326).

However, even if technology is a part of the relation, it is still crucial to ask the question: what exactly does technology mediate? Postphenomenology answers: an interaction between humans and the world. This creates an impression that there is always some external reality to which we refer in all our relations with technology. In the case of embodiment, the external world seems to be the surroundings where we do something with the help of the embodied technology. When we speak about the hermeneutic relation, we assume that there is a physical world which is revealed by technologies. Regarding the background relation it may even be said that because technology is in the background, we can focus our attention on the physical world. Only in the alterity relation the physical world is forgotten for a moment when we use and engage with technology.

As observed by Best (2010), we have to discern which world we invoke when technology is used. She highlights this problem by distinguishing between media and technologies. Media deliver the imaginative world which creates a new form of experience and reality (Best, 2010, p. 153). Technology becomes a medium when it enables immersion, and allows users to communicate their experiences of the world they have been offered. In other instances, it may be a communicative technology – as a thermometer is – but not a medium. Best assumes that in the original description of relations between a human being, technology and the world, the media world takes the place of the physical world. Consequently, to analyse the social, cultural, economic or political role of the media we have to focus on the scheme: “I – technology – media world” in all its transfigurations for embodiment, hermeneutics, alterity, and background relations (Best, 2010, pp. 146–147). She assumes that our relation with the media world is doubled – we are in a relation with technical agents in the form of a concrete technology we use, but also with the media world which we discover by using technology (Best, 2010, p. 147). Best’s interpretation ignores the status of the physical world, since her intention is to emphasise the significant role of media worlds, and she assumes that access to it is still available in terms of Ihde’s original description of human-technology relations.

Similarly, Aydin et al. highlight the active role of the technological background in shaping human experiences. Following Ihde’s assumption that mediation of intentionality is a key aspect of technology, they analyse technologically saturated, “smart” environments as a new form of agency (Aydin et al., 2019, p. 331). Combining postphenomenology and material engagement theory (Malafouris, 2013), they develop the Active Technological Environments approach which perceives the technological background as partly shaping the conditions of human life. This opens a possibility for treating the background as interactive and people as immersed in this interaction (Aydin et al., 2019, p. 336). By being directed *at humans* and by helping us perceive human activities and analyse the human body, technologies become our partners in the interpretation of the human.

This approach is a very promising analysis of the ontological status of the technological background as the basis of human perception. However, technology is focused here on the human – especially the human body and its behaviour – not on

the other objects found in the physical world. Aydin et al. state (2019, p. 337): “This radically new environmental character of human existence marks a new stage in the history of homo faber and, therefore, of the human condition itself”. We believe that this theory might be fruitfully extended with a more detailed examination of the background (i.e., the physical world).

The example of self-tracking practices allows us to demonstrate that the role of the external world in human technological experiences is problematic and requires a more in-depth interpretation. As we highlight above, quantification is often seen as reducing the body and, consequently, the external world. It suggests that this relation with a device should be called an alterity relation, but quantification of the activity does not really focus attention on the technology in the moment it is used, only on its product – data. Quantification is not so immersing as to become an alterity relation and seems to be closer to embodiment (cf. Van Den Eede 2015). However, it is focused on the analysis of the human body and the world itself does not play a significant role. A person analysing their own activities develops only a mediated relation with the world which in its physical form becomes, quite literally, the background. This mediation may result in a form of distance to an external world, which, after Jaeggi, we take to be a form of alienation.

However, the space around us may be phenomenologically distant, but it is not empty – our experience assumes not only the existence of a perceiving body, but also of external reality on which our perception depends. This can be labelled *background one* (in Ihde’s terms – the world) and its structure is similar to the body schema mentioned above. Any activity and perception have to take place in some spatio-temporal context which is the condition of our perception and activity, but is not always immediately perceived and rarely becomes the focus of our attention. In the case of self-quantification, it can be understood as the immediate surroundings in which the measured activity is performed.

Furthermore, as different modern technologies utilise the Internet (including the Internet of things), satellites, sensors and cameras, our world is saturated and influenced by technologies. As the Active Technological Environments approach suggests, our basic bodily attitude to the environment is now mediated by different technologies functioning in the background of our daily existence (Aydin et al., 2019). This infrastructure on which we depend on our everyday life, but which we rarely notice can be called *background two*. It is something purely technological, but it is constructed on top of the existing background one and the boundaries between them are often blurred.⁷ The question remains as to what we could learn from these two backgrounds, and how self-quantification affects our experience of them.

To address these issues, we must analyse the reduction of the body which occurs in practices of self-quantification and results in the alienation from the background.

⁷ Wiltse (2017) analyses similarly to us the hidden aspects of technologies and their relations with both media and environment. However, she focuses on the agencies of infrastructures, and she calls technology, media, and environment (the last one treated as “technosphere”; *ibidem*, p. 9) “mediating (infra) structures”, while also assuming that an infrastructure is invisible and remains beneath the surface. Her approach is very inspiring in defining the ontological status of infrastructures, but according to us, it is still too technologically oriented to be effectively used in an analysis of the background in self-tracking practices.

Our being-in-the-world is also our being as bodies in the world and these two aspects of being are intermingled. There is no possibility to think of the human being without body, but it is always being-in-the-world which is stressed in phenomenology (see: Heidegger 1972). We argue that quantification of human activities alienates humans both from background one, reducing the importance to qualitative experience, and from the background two⁸ whose impact on the way we perceive our activity is often ignored as it rarely becomes the centre of our attention – as something understood purely in technological terms, it slips into the postphenomenological background relation. In the next section we explore what this dual alienation from the background means and how it occurs through the datafication of human experiences.

5 Background(s), reduction and alienation

Quantification is an inherently reductive process. The various kinds of human behaviour and activity occurring in different spatio-temporal and technological environments can be reinterpreted and recorded as data only if they are easily distilled to their mathematically measurable form. This process cannot capture the entire world of our experiences and omits a wealth of qualitative information. As Van den Eede & Gabriels (2018, p. 48) emphasise, “an algorithmic culture, putting so much emphasis on data, leaves little room for experiences and realities that cannot be easily measured or quantified, but that are nonetheless intrinsically meaningful and essential”. In phenomenological terms the process of datafication could be interpreted as a reduction of everything that can be an obstacle for the distilling of the mathematical essence of an activity. Speaking more precisely – forget about the context of your activity and focus only on the data which you can extract from it. This results, however, in alienation from the background. Datafied perception divorces a person from the situatedness of their activity and creates a sense of distance from the physical world. In the following paragraphs we explore what this alienation means for background one and background two.

Our contemporary culture is largely algorithmic since algorithms present in ubiquitous technologies such as social media (see Bucher 2018) often mediate our understanding of ourselves and the society. Similarly, algorithms can influence our attitude to the background of our activity (Van den Eede & Gabriels, 2018, p. 48). The relation occurring as a result of the processes of quantification can be schematically illustrated as the following:

human being (body) – technology (device) – [background].

In the case of quantification, we always have to assume that there is a body (a human being) which refers through an app or a device to the technological infrastructure or physical world hidden in the background. We highlight the invisibility of the background by using “[]”. The result is that the background is either accessible primarily through algorithms (an idea we will explore later) or deprived of any

⁸ However, we do not consider the consequences of this process of alienation from the background for the body. In this case we agree with de Boer (2020) that self-tracking practices greatly influence the perception of one’s own body.

significance (at least as far as the practice of quantification is concerned). It is not, however, an alterity or embodiment in the interpretations presented by Ihde and Best, since technology does not focus our attention on itself and, even if it is embodied, there is no relation with the world created through this form of embodiment.

We argued above that the background can be divided into two, so it is necessary to supplement our scheme by a more detailed analysis of the background in its two-sided dimension:

[background two (infrastructure) – background one (physical world)].⁹

The background should be considered as both the infrastructure and the physical world, and we believe that the person using technology for self-quantification is alienated from both dimensions of the background. As background two is directly connected with the technology enabling quantification, we propose to take it as a starting point of our investigation. The relation between the human being, technology and the infrastructure which makes quantification possible can be schematically written as:

human being (body) – technology (device) – [background two (infrastructure)].

Many modern technologies are based on algorithms – a pre-determined set of instructions which organises the way technology works and how it processes data (Bucher, 2018). The results of algorithmic operations are accessible through an interface – a machine which structures the way we see data and information. Many researchers have already demonstrated that algorithms are not neutral but have ethical relevance. They are biased, they discriminate, filter our information and confirm our ideological stereotypes (Wittkower, 2018, p. 24, see also: Pariser 2012; Sunstein, 2009). Importantly, for our argument, however, algorithms influence the background relation between technology and human beings. They analyse our behaviour during the use of technology, and recommend us information, ads or products, thus also shaping our actions and our understanding of everything that is algorithmically mediated. However, as highlighted by Wittkower (2018) algorithms suggest content not only by analysing what users are consciously doing when using a concrete technology, but also by studying their location data which is rich with information.

The non-neutral working of algorithms affects the way in which we perceive the technological infrastructure. For example, targeted ads can make it very evident to users that their online interactions are being monitored and consequently create a sense of distrust towards their devices (Ruckenstein & Granroth, 2020). In recent years, some researchers have attempted to “decode” how algorithms shape our behaviour, monitor our activity and remain constantly present, if invisible, elements of our lives influencing our self-perception. Especially interesting in this context is the work focusing on people’s imaginaries and “different tactics for and acts of circumventing” this algorithmic influence (Lomborg & Kapsch, 2019, p. 746; see also Kara-

⁹ This does not mean that we take background one and two to be distinct. After all, technological infrastructure is still a part of the physical world. Rather, we understand them as two aspects of the general background understood as a horizon in which our experience takes place. The division allows us to focus on the different ways in which the infrastructure and the physical world are perceived and experienced. For example, the infrastructure is arguably meant to recede into the background, whereas the disappearance of the physical world in self-tracking was most likely not intended by those who designed the process of quantification.

kayali et al., 2018; Siles et al., 2020; Ytre-Arne & Moe 2020). When it is captured by algorithms, background one also undergoes changes as it is being intermingled with the technological infrastructure of background two and loses its independent reality. In this sense, background two plays a mediating role between the offline reality and the users of concrete technological devices.

However, while personalised ads might be so ubiquitous and intrusive that they often focus our attention on the operations conducted by algorithms in the background, this is not necessarily the case with the data supplied through self-tracking devices. When you monitor your fitness, you expect to receive concrete data points that outline the number of burned calories or describe your physical activity by referencing minutes of exercise or steps made. Or maybe you use apps to analyse the regularities of your behaviour throughout the week or month. This is all based on numbers, diagrams, graphs – on the objectivated representation of human behaviour and activity. But the algorithms analysing an activity performed in a concrete environment are not visible or consciously analysed by users and technology developers often make significant effort to obscure their functioning (Baker, 2020; Lanzing, 2019). All that is available to a self-tracker are the numbers displayed on the screen and the entire infrastructural dimension of the tracking falls into the background (or becomes the background two). The ways we arrive at data and the role played by algorithms, sensors, satellites, and other artifacts is easily forgotten.

We have demonstrated above the ways in which self-tracking technologies can alienate users from background two by obfuscating its impact on perception and distancing the users from the algorithmic processes happening behind the scenes, while still facing them with their results (i.e., non-transparent data). In turn, alienation from background one – reality, the offline world – can be written in our scheme as:

human being (body) – technology (device) - – [background one (physical world)].

The already mentioned problem of algorithms collecting socio-political information on the basis of the physical location of users demonstrates one way in which tracking technologies invade the environment of the users without their knowledge. However, even more crucial for our analysis is the fact that self-tracking technologies, as focused on data as they are, alienate the person from the reality they experience. The data recorded about your morning run contains little to no reference to the physical environment in which you jogged. Your favourite park is reduced to a number of kilometres, the feelings you had during exercise might be only slightly reflected in the variation of pace and many other factors which were most likely important to you during the run (e.g., the singing of birds or the appearance of first spring flowers) cannot be found anywhere in the information perceived by the device. As it is framed during the process of quantification your surroundings filled with real objects disappears from your field of view and ceases to be of interest (as your attention should be focused on the data). Alternatively, it might be algorithmically reduced to the level of infrastructure and absorbed by background two. Some of the information that is not reflected in your metrics might still be found in the metadata and less important secondary data (i.e., the location where you ran or the level of the surrounding noise). This kind of reduction is necessary to extricate the specific, quantitative description of the tracked activity. However, quantification simultaneously

diminishes qualitative experiences of reality which becomes something considered only from the standpoint of its functional relevance to the process of quantification – stripped of any inherent value and importance.

Moreover, as self-tracking practices do not consider feelings, experiences, or attitudes to the physical world in which we perform our activities, they can reduce the human being to an element of the digital network, a source of valuable data. The reduction of the background one to the analysis of behaviour simultaneously reduces a human being to the measurable entity and can be a tool to discipline and control our spatiotemporal activities.

Since datafication results in the alienation of both the background one and the background two, it raises the question whether we gain access to any background in the process of self-quantification. Is there still a background understood as an external world to which we can refer, or should we understand the relation to the background that occurs in self-tracking only as a narrow form of hermeneutics – the analysis of cultural texts? We analyse these questions in the next section.

6 The background of self-tracking and hermeneutics

In her influential analysis of self-tracking, Ruckenstein (2014) argued that self-trackers do not gain first-hand insight into the operations of their bodies and the activities in which they engage. Instead, they perceive a digital representation of themselves – a data double. As data doubles are constructed on the basis of information collected and inferred about a living individual, interactions with them can enable new insights and practices. However, data does not describe the users with complete accuracy (and users can change over time with relation to their previously collected data which serves a foundation of their digital profile) and data doubles can be qualitatively distinct from the person on which they are based. They could be understood as a different, even if related, entity than the user they represent. In this sense, when interpreting the data collected by a device you would most likely construct an altogether different image of the user than you would have done if you were given a chance to observe the same user for a few days. Similarly, a user engaging with their own data double might arrive at different conclusions about themselves than they would have only on the basis of embodied, qualitative experience.

Any attempt at inferring something about the background in which the activity occurred would probably arrive at a similar difficulty.¹⁰ When reconstructed, the traces of information relating to the background would allow us to create some image of the world, but just like in the case of a data double, it might not be warranted to speak of a straightforward relation between a phenomenon and its representation.

¹⁰ It is difficult to assess whether the perception of a datafied background is more alike the perception of a user's data double by the same user or by a third party. While it is possible for different people to have qualitative experiences of the same spatio-temporal background, it would be not *the same* experience, and their interpretations of the phenomenon might be different. At the same time, an individual has a radically different kind of access to their own body and activity than external observers. In this sense, interpretation of a background data double, as discussed below, is arguably more akin to interpretation of a personal data double by a third party as both perceptions concern external objects (see de Boer 2020).

We argue, that if it is possible to gain access to any background on the basis of self-tracking data, it is not the background understood as the physical world or technical infrastructure (background one and two respectively), but a *background data double* analogous to the data double described by Ruckenstein.¹¹

As we have already noted before, self-tracking might lose reference to the actual background, which inevitably slips to the metaphorical background, obscured by data continuously supplied by their devices. Although the surroundings remain available to users during the course of activity, when data is later reviewed, self-trackers refer only to a background data double constructed from the traces of information collected by the device when they analyse their own activity. Any knowledge about the background (one or two) that might be generated on the basis of a background data double will, by its very nature, be fragmentary and mediated by the operations of algorithms and design decisions of which the users cannot be fully aware. Moreover, as the background itself is not primarily thematised through the use of self-tracking technologies, we argue that background data doubles are much shallower means of interacting with reality than personal data doubles.

Consequently, if it is possible to speak of some form of a hermeneutic relation in connection to self-tracking practices, it would have to be defined in a limited sense. The world can only be accessed in such a limited hermeneutic relation¹² through the interpretation of some traces of its traces – a reconstruction of a background data double created on the basis of a subset of the characteristics of the world. Even though it might be possible to provide an Ihde-inspired scheme for this relation:

human being – non-transparent technology → data double of the world → potentially world itself(?),

a postphenomenological description might not be the most illuminating in this instance. In the graph above, a human being uses a non-transparent technology (i.e., a self-tracking device) to encounter a data double of the external world which might not be an accurate representation of the external, physical world. In addition to being rather cumbersome, such a description cannot adequately problematise the multiple

¹¹ In our view, a background data double should be understood as similar in form to a personal data double but different in content. It is still a data-based representation of a phenomenon, but pertaining to the background, not the user. Consequently, it influences the way users engage with the background and mediates their experience of it.

¹² We distinguish between a limited hermeneutic relation and philosophical hermeneutics for three reasons. First, we want to make clear a difference between the hermeneutic relation of postphenomenology, i.e., interpretation of the world mediated by a technology, and the wider discipline of philosophical hermeneutics as defined in this paper. Referring merely to a hermeneutic relation and hermeneutics as a field could mislead the reader. Second, we believe that the hermeneutic relation of postphenomenology is limited in comparison with hermeneutic philosophy, as it focuses only on the ways in which technologies take part in shaping our relationship with the world. By contrast, hermeneutic philosophy analyses the process of interpretation in general and investigates how culturally conditioned structures of meaning (e.g., prejudices, but also technologies) influence our understanding. In this sense, the concerns of hermeneutic philosophy are much broader than those of postphenomenology, and, as we argue, this philosophical approach is more informative in the context of self-tracking than a postphenomenological analysis. Third, we discuss a *limited* hermeneutic relation to refer to the extra layer of mediation happening in the discussed example, which puts a background data double between the human and the world itself (if it is actually possible to speak to a reference to world itself in this context, as we discuss below) in addition to the mediating role of the self-tracking technology itself.

layers of mediation occurring in this example, as well as the interpretative processes necessary at each of the steps.

Instead, we propose to approach this problem using the language of philosophical hermeneutics, which in the recent years has received considerable attention from philosophers of technology examining the role of interpretation in the digital environment (Reijers & Coeckelbergh, 2020; Romele, 2020).

Sometimes defined as the philosophical discipline concerned with understanding the process of interpretation (Vattimo, 1997), hermeneutics is concerned with the ways in which human beings make sense of the world. One of its crucial concepts, discussed at length by Gadamer (2004), is that of pre-structures or prejudices, which are inherited ways of understanding that colour the ways in which we interpret the world, thus shaping our knowledge and perception. According to the hermeneutic tradition, nobody could fully wrest themselves clear of their prejudices, similarly as it would not be possible to divorce one's perception from the body schema. Although the term prejudice might have negative connotations, in hermeneutic philosophy it is merely the historically developed conceptual framework through which we approach and understand reality. The awareness of factors that might colour our understanding, is the first step on the way to the development of new perspectives. A hermeneutic subject might reevaluate their prejudices or take them into brackets, thus broadening their cognitive schema and creating a way for new experiences to occur and new interpretations to be formulated.

Existing research on self-tracking has attempted to account for the interpretative processes in which users engage to make sense of their data by proposing a notion of situated objectivity, i.e., a view of the metrics supplied by devices that considers the role of users' interests, unique circumstances, individual variation and ambiguity in data-fuelled meaning making (Pantzar & Ruckenstein, 2017). While this idea is certainly in line with our hermeneutic view of self-tracking, we believe that it does not adequately consider some factors that problematise the notion of understanding in the context of self-tracking, namely the opacity of self-tracking technologies and the layers of mediation they introduce. Moreover, the concept of situated objectivity has been endorsed in the context of health and does not refer to the meaning making procedures users initiate when referring to the background in which their activity takes place.

In our view, it is difficult to imagine how a detailed metainterpretation of the factors influencing our understanding could happen in the context of a limited hermeneutic relation, as that occurring in reference to the background perceived through self-tracking technologies. Many of the factors colouring a self-tracker's experience of the background take place outside of our view and are tied to the non-transparent logic of the discussed technology. Somebody depending in their interpretation of the world on the data supplied by the device¹³ will have their perspective influenced by the functioning of the algorithms and the often arbitrary decisions of the designers

¹³ Some research suggests that users of self-tracking devices can become cognitively dependent on the discussed technology and relegate a significant part of their systemic capacities to quantification. In cases where the readings of a self-tracking device contradict their own perceptions, they can develop feelings of anxiety and self-doubt (see: Duus et al., 2018; Lomborg et al., 2020).

(e.g., relating to what is relevant or normal in a given situation). It is unlikely that users will be able to unravel all the prejudices, in the hermeneutic and literal sense, which are behind the background data double presented through the device. This has significant implications for their ability to consciously interpret and critically engage with this image, not to mention the physical world which an interpreting subject could reach in this context only through a series of references. A hermeneutic subject depending on the testimony of their senses might be able to problematise their relationship to the perceived objects and attempt to enrich their perspective by examining all the factors contributing to their understanding. In our view, the spectrum of feasible options available the users of self-tracking technologies extends between two alternatives: either accept the interpretation of the world presented by the device or assume the sceptical position of rejecting any potential reference to the actual background as biased, limited or incompatible with their individual worldview.

In practice, many users have demonstrated a great ability to navigate the interpretative dimension of self-tracking by appropriating existing technologies, adopting critical attitudes and engaging in hermeneutic work, often alongside others (see Kristensen et al., 2021, Sharon & Zandbergen, 2017). However, our focus on self-tracking as alienating users from their background allows us to highlight the interpretative challenges users face when attempting to situate their self-tracking practices and refer to the background to which they occur. Moreover, it points towards significant limitations of quantification as a tool for understanding and allows us to question its epistemic foundations and validity.

7 Conclusions

Our article has highlighted two problems. Firstly, we have analysed the role of the physical world and technological infrastructure as two different backgrounds of our experience and discussed how quantification influences our relation with these backgrounds. Background one, physical world, is a phenomenological environment in which all of our experiences take place. Background two, the technological infrastructure, is the artificial construction built on the real world which allows us to use different technologies in various spatial circumstances. Our argument is that self-tracking practices focusing on quantified data limit our relationship with both of these backgrounds and alienate us from our lived reality, in the sense of the term proposed by Jaeggi. We argued this thesis with the help of the phenomenology of Merleau-Ponty (to introduce the significance of the background one) and the postphenomenology of Ihde accompanied with the interpretations by Best and Aydin et al. (to introduce the background two).

Secondly, this problem of alienation turned us to the question of the status of self-tracking practices and their connection to backgrounds one and two. Consequently, we argued that it is mainly an interpretative praxis – an analysis of data, which could be understood as a new form of hermeneutics focusing on the interpretation of a background data double. However, we noted some hermeneutic difficulties users are bound to encounter when they try to make sense of their self-tracking practices and attempt to relate to their lived environment.

Consequently, can it be argued that interpretation of a background data double gives us any original and meaningful knowledge about the world? In one sense, it could be described as interpretation of a specific culturally and technologically mediated understanding of a given phenomenon. But due to its historical roots as a discipline concerned with the interpretation of literary texts, hermeneutics has always managed to ascribe value to interpretation of existing interpretations (Gadamer, 2004). It could be argued that analysis of datafied images of the background would be just another face of this rich and often illuminating cultural tradition and any scepticism regarding the meaningfulness of the practice is merely an expression of anti-self-tracking ludditism.

However, in our view if quantification leaves us with any reference to the physical world, the path that we would need to travel to gather knowledge about external reality might be too obscure. Moreover, we have to consider that the most zealous enthusiasts of self-tracking engage in great efforts to convince the general public of a much greater objectivity of the quantified data and present the discussed tools as a way of overcoming human limitations (Ruckenstein & Pantzar, 2017). But as our analysis suggests, self-tracking is a field fraught with interpretation and any claim to objectivity dissolves in a chain of references and mediations, without necessarily granting users meaningful, not to mention deepened or enhanced, access to the phenomena that are the substance of their everyday experience. While existing research has already discussed how data doubles can distort users' perception of themselves (see, e.g., Vegter et al., 2021 for an interesting example), we contribute to the debate by showing that similar processes occur in relation to other aspects of users' lived reality, namely the background in which the tracking occurs. Moreover, our findings are guided by the discussion found in hermeneutic philosophy and thus refer to a nuanced and rich theory of interpretation and its influence on our everyday perception of the world. While existing research has discussed the necessity of interpretation of self-tracking data, our hermeneutic approach allows us to more clearly demonstrate the difficulties users encounter when trying to make sense of themselves and their environment as represented by data.

Last but not least, our analysis was motivated by drawing researchers' attention to the qualitative dimension of bodily experience and to the fact that people are always in specific spatial contexts. Quantification obscures the presence of the physical world and its qualities while simultaneously enlisting physical world data to analyse the behaviour of users of technology. It makes our being-in-the-world increasingly complex and difficult to describe. The contemporary mediation of human activity by technologies obscures the obvious, spatial dimension of human existence, which is why we require a qualitative approach in the study of human-technology relations. One that is oriented not only toward the human being and their body, but also to their environment and the background.

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Conflict of interest The authors have no conflicts of interest to declare that are relevant to the content of this article.

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