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Katleen Gabriels, Mark Coeckelbergh,

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'Technologies of the self and other': how self-tracking technologies also shape the other

Katleen Gabriels

Department of Philosophy, Maastricht University, Maastricht, The Netherlands, and

Mark Coeckelbergh

Department of Philosophy, University of Vienna, Vienna, Austria

Abstract

Purpose – This paper aims to fill this gap (infra, originality) by providing a conceptual framework for discussing "technologies of the self and other," by showing that, in most cases, self-tracking also involves other-tracking.

Design/methodology/approach – In so doing, we draw upon Foucault's "technologies of the self" and present-day literature on self-tracking technologies. We elaborate on two cases and practical domains to illustrate and discuss this mutual process: first, the quantified workplace; and second, quantification by wearables in a non-clinical and self-initiated context.

Findings – The main conclusion is that these shapings are never (morally) neutral and have ethical implications, such as regarding "quantified otherness," a notion we propose to point at the risk that the other could become an object of examination and competition.

Originality/value – Although there is ample literature on the quantified self, considerably less attention is given to how the relation with the other is being shaped by self-tracking technologies that allow data sharing (e.g. wearables or apps such as Strava or RunKeeper).

Keywords Computer ethics, Internet of Things, Ethics of technology, Quantified otherness, Quantified selfhood, Self-tracking technologies

Paper type Conceptual paper

Introduction

Mobile applications (apps) and wearable devices shape the self. In this context, numerous academic articles focus on "quantified selfhood," "self-tracking" and "lifelogging" (Allen, 2008; Swan, 2013; Lupton and Smith, 2018). These self-tracking technologies increasingly steer the self in directions by responding to and evaluating performances. Social networking services (SNSs) allow individuals to share the data generated by mobile and wearable computing. Several (recreational) runners, for instance, share their performances, monitored by popular fitness apps such as RunKeeper or Strava, on Facebook. A graph displays the calories burnt, the distance ran, the roads taken, etc.

This way, the self, including her bodily information, becomes visible for an audience. Even though the Western individual is given more technologically mediated opportunities

to focus on himself or herself, this is never detached from social and moral (online) contexts. Not only the relation to self is transformed by these devices but the self's encounter with the other is altered as well. For instance, people might feel the pressure to perform better because competition might arise out of the use of apps and devices.

Although there is already work on the quantification of self and although philosophers of technology have drawn upon Michel Foucault's (1988) "technologies of the self," considerably less attention is given to how (our image of) the other is being shaped through contemporary technologies, such as self-tracking tools. Processes of quantification also shape our image of the other, which then (re-)shapes our image of ourselves. This article, therefore, has a twofold objective. First, it seeks to investigate how self-tracking technologies (mobile and wearable devices) are shaping the contemporary self and to show how this raises a number of epistemological and ethical questions that need to be addressed. Second, it articulates the idea that self-tracking technologies at the same time shape the other. It seeks to formulate a conceptual framework for "technologies of the self and other," by emphasizing that there is a mutual process of co-shaping. To illustrate this, two cases will be analyzed: first, the quantified workplace; and second, wearables used in a private, non-clinical setting. The framework we propose gives some much-needed attention to an understanding of these interactions between self, other and internet technologies and to their implications.

The structure of this article unfolds accordingly into two major parts. We first discuss self-shaping by mobile and wearable self-tracking technologies, responding to existing literature that mainly draws on Foucault and pointing to a link with historical humanism. Then, we go beyond this discussion and articulate what it means to say that the other is also shaped by these technologies. In this context, we propose the notion "quantified other" to extend the discussion of quantified selfhood to alterity.

Overall, we aim to contribute to the literature in thinking about new media and technologies in a novel way: also the other and the other's body are mediated, and in particular, become quantified and potentially objectified, which mediates how we see ourselves. This adds a distinctive social and other-oriented angle to an analysis that is usually centered on the self.

Contemporary technologies shaping the self

Viewed from a broader historical perspective, there is a long tradition of how humans have expressed, shaped and revealed themselves. For example, in the tradition of humanism from ancient until modern times, this involved writing letters and diaries and creating works of art. Humanist self-construction has always entailed technologies in particular, but not exclusively writing technologies. By keeping a diary, for instance, one reveals and constructs oneself to oneself. Diaries also provide opportunities for self-reflection. A diary is a specific technique of self-shaping and is based on the use of material technologies such as pen and paper. One could also consider the religious confession as a technology of the self. Today, numerous people use internet platforms that construct the self, for instance, in the form of blogging, vlogging or a photo diary on Instagram. However, these technologies have different effects on self and self-disclosure. A diary is a technology that leaves a lot up to the user. There is a blank page which can be filled. It also requires all the attention and engagement of the user and the activity takes place at specific times. For example, a person sits down on his/her desk to write in his/her diary or goes to the priest for confession. Contemporary SNSs, by contrast, are there in the background while not necessarily requiring the attention of the user. In addition, instead of a blank page, the user finds

himself/herself in an environment that is already pre-shaped by the designers. The design of the technology constrains the content.

But there is not only a shaping of the self but also the other is shaped. Again, this has historical precursors. Already, in ancient times, these techniques of self-construction were related to the revealing of the other. For instance, Seneca wrote in Letter XL (*Epistulae Morales ad Lucilium*): "Thank you for writing so often. By doing so you give me a glimpse of yourself in the only way you can" (Seneca, 2004, p. 82). This line points at the two-way process of self-revelation to the other: by the process of writing, the self becomes more known to oneself and to the other. Exchanging letters was an important humanist technology for self-shaping. We may ask, however, why there is a new issue today if technologies and media have constituted the self for centuries.

The difference lies in the technologies used: present-day self-tracking technologies shape the self in specific ways. The example of mobile apps serves to illustrate the first new characteristic: smartphone apps such as those constructed around the quantified self work in the background while escaping our attention. This engenders a situation in which we are never cut off from the network and in which it is not visible who these others are, whom we are connected to and who has access to our data. Second, there is also a temporal and spatial difference: the automatic processes of self-tracking technologies can provide instant feedback on performances, and others, who follow us on SNSs, can immediately respond to updates. The time frame is much shorter than, for instance, in the case of letter writing and the printing press. Third, because of their instant feedback, self-tracking technologies discipline individuals in new ways. Performances become immediately visible. This disciplining also takes place in indirect manners. Consider sharing RunKeeper performances on SNSs: when you know you are being watched, chances are likely that you will try harder. Or, at least, will want to be seen as trying harder. Of course, in theory, one has the choice not to let oneself be hurried. Yet, if your friends use the technology and are active on the platform, chances increase that you will also participate.

Similarly, one can say that the self deliberately chooses to share these data. However, if one wants to use a running app, one has no choice but to give permission to record data and to share them with the company and with any third party the company chooses to share them with. Other scholars have also pointed to the misleading notion of *self*-tracking because it always involves coveillance (peer-to-peer monitoring, for instance, by sharing the data with friends) and surveillance (for instance, by the company that developed the technology) (Lanzing, 2016, p. 9). As our representations of self and other are increasingly steered by algorithms and quantification, it is important to evaluate this, also from an ethical perspective. However, let us further develop our analysis of what exactly happens to the self by using Foucault's concept of "technologies of the self".

Technologies of the self

Michel Foucault (1988, pp. 17-18) conceptualized "technologies of the self" to refer to the "specific techniques that human beings use to understand themselves." In his "hermeneutics of technologies of the self in pagan and early Christian practice," he shows how humans have always used specific techniques to understand themselves. In particular, he pays attention to Stoic and Christian techniques such as writing and confession. Foucault does not explicitly refer to technologies and mainly looks at what one may call the "technique" of the self as a hermeneutic technique such as self-examination that is independent of specific material technologies. Yet, we will focus here on writing as a (material) technology and expand his analysis to other technologies and apply them to a contemporary context.

Foucault (1988, p. 27) distinguishes between different ancient Greek and Roman techniques of the self, such as writing: people get to know themselves and take care of themselves by writing letters to friends and by keeping notebooks and diaries. "Taking care of oneself became linked to constant writing activity. The self is something to write about, a theme or object (subject) of writing activity." Interesting for our present purposes, Foucault (1988, pp. 28-29) remarks that the Neo-Stoic philosophers Seneca and Marcus Aurelius were concerned with the "unimportant things" of ordinary, everyday life. Although these are deeds only, rather than also thoughts, desires, etc., this practice prefigures Christian confession. Another technique is self-examination, to check if the correct things have been done. It is taking stock of one's activities, in the form of self-administration (Foucault, 1988, p. 34). One reflects on the good things one has done and the things that need further reflection and improvement. These techniques can be further developed in a contemporary context.

Present-day technologies of the self
It is not difficult to recognize in our use of SNSs, for instance, a hermeneutics of the self, which not only uses writing but also posting images and sharing logged data and other digital technologies as a means to get to know oneself, to take care of oneself and to constitute a new and more "perfect" or "ideal" self, the aspects of which are shared with an immediate audience. On SNSs, there is constant writing activity, memorization and a kind of confession. One reports to others what one is doing or where one physically is (e.g. by "checking-in" on locations) and the audience can respond to that, by means of like-buttons or by means of writing. Moreover, practices of self-care such as sport and other health-promoting activities are reported. In this context, it is interesting to make a distinction between truly improving yourself versus trying to give a good impression about yourself to others, by presenting yourself at your very best, even when the shared information is not necessarily accurate.

People take stock of what they have done and of what others have done. This reporting with others helps people to build the "plateau on which I shall find my identity" (Foucault, 1988, p. 25). However, here one writes about "unimportant" things of daily life. Also, the social media user does this self-exposure in public. Instead of confessing only to a priest in a confidential monastic setting, here, the self is exposed to one's (online) community. Moreover, the focus is generally not on moral improvement and reflection but, especially, in the case of quantified selfhood, on physical improvement. This is also illustrated in a recent study, conducted by Lupton and Smith (2018), which involved 40 self-tracking informants. Findings reveal a consistent focus on self-improvement in terms of health, finances and work productivity. Their narratives disclose how "monitoring practices were represented as enhancing their capacity to achieve their particularised version of the ideal self" (Lupton and Smith, 2018, p. 6). The informants "noted that it was very important to them that they 'take responsibility' for managing their bodies and lives" (Lupton and Smith, 2018, p. 6). Their vocabulary echoes a discourse in terms of management, productivity and efficiency, which clashes with above-described views of historical humanism.

These techniques use technologies in the modern, material sense of the word: they depend not only on writing as a technology but also on SNSs as internet-based technologies, related ICTs and material infrastructures. This mediation is not neutral and constitutes the self by providing insight into how people understand themselves. For instance, wrist-wearable devices such as Fitbit or Jawbone disclose bodily data that previously remained opaque. One is being rewarded if one reaches the goal, for instance, 10,000 steps per day. Metrics communicate information about a person in various manners. This information is

also often shared with others. For instance, on the popular website and app Strava, users exchange data and comment on each other's performances, as a new form of "writing technology." These technologies, hence, seduce us not only by playing the role of a technique in self-constitution but also by making use of our curiosity about the other. Let us further develop this other dimension, which is underexposed in the academic literature on self-tracking technologies.

Shaping the other through self-tracking technologies: a mutual understanding

Several philosophers (Abbas and Dervin, 2009; Verbeek, 2011) have extended Foucault's "technologies of the self" to present-day technological mediation. Just like our sense of identity is neither fixed nor given, also our image of the other is constructed through practices, experiences and perceptions of which many are technologically mediated. Although scholars acknowledge that technological mediation actively influences the way others are experienced (Dorrestijn, 2012), the focus has usually been on the self and a conceptual framework for better understanding this is subsequently still lacking.

We will discuss two cases, derived from an everyday context, that are generally presented as self-tracking but that nonetheless also involve other-tracking (in specific, coveillance and surveillance). First, we elaborate on the quantified workplace: employers are offered ever-more tools to closely monitor their staff, such as the use of wrist wearables or arm-mounted terminals. Second, in the health context, we focus on devices not used by doctors, nurses and other medical professionals, but by lay persons in everyday contexts, such as devices for measuring heart rate, blood pressure, etc., and making the data public for others, who, in turn, often also share their bodily data.

The guiding concerns and lenses through which we look at these cases are both epistemological and ethical. First, we investigate the processes of quantification and objectification. Before the wider dispersal of self-tracking technologies, it was hard to attain these data, and they often were stored in a medical context only. Scholars also write about "the corporeal turn" (Moore, 2015) to point at the increased possibilities to attain more visibility and truth about the self's and the (tracked) other's body. In so doing, we touch upon the epistemological question of knowledge, framed in terms of what happens between self and other. Drawing upon Goffman's "giving off" we also argue that this increased transparency brings about a loss of control of what one seeks to communicate to the other; for example, in the first case, employees cannot hide their location, heart rate, number of steps walked, etc., when these parameters are measured. These technologies (re)organize the social interactions and relationships between people. This brings about new manifestations of surveillance, coveillance and social organization, which reach into the body (i.e. the internal becomes externalized).

Second, we elaborate on the question of how knowledge of the other, which previously remained hidden, influences our ethical orientation. In so doing, we seek to expand the discussion on quantified selfhood with the "quantified other" in terms of how alterity is being challenged by the encounter with a more metric other. On the one hand, the other and his/her body become more visible (and hence proximal). On the other hand, however, new forms of distancing arise because the other is at risk of being approached as a measurement for one's own (physical) performances and goals. The other could increasingly become a mere tool for self-reflection and measurement: observing, evaluating and comparing one another. This concern has also been raised by other scholars (Lanzing, 2016, p. 13) and cannot be separated from the design that stimulates users to compete with others to receive a reward, such as a medal or a virtual badge, in turn.

Case 1: corporeal monitoring for corporate goals

The Dutch real estate company Colliers participated in a one-year (2015-2016) scientific experiment on self-tracking technologies at the workplace that was named "the quantified workplace" (http://quantifiedworkplace.eu/). In total, 30 employees, from different status levels within the company, deliberately participated to self-track at work and to share these data with managers and colleagues. They wore a smart wrist-wearable (Fitbit) that, among other things, monitored their stress level, heart rate, how long they sat during the day, how many hours they worked on their computer and steps taken per day. Their performances were made visible on a personal dashboard. These data, however, could also be voluntarily shared with colleagues, either openly or anonymously. "This shared dashboard elucidates employees' happiness or dissatisfaction in various situations, shows their work-related stress levels, and the circumstances under which we perform best as a team" (Coenders, 2015, Web). This way, colleagues got a look "inside" each other's bodies. Even though this experiment was presented as "self-tracking," it clearly involved other-tracking, both top-down (surveillance) and between colleagues (coveillance), who can screen one another when they are given insight into each other's data on dashboards. A form of "peer-to-peer authority" subsequently arises.

Self-tracking at work (and subsequently sharing the data) can lead to undesirable effects on both psychological and physical health (Moore and Robinson, 2016). The sort of knowledge of both self and other that comes to the fore is mainly quantitative. A form of "gamification of social relations" is at risk to appear, making the self's relation to others' appear more and more as a calculable manifestation and competition, to attain better scores.

Ethical concerns arise from these co-shapings. For instance, we cannot ignore privacy concerns when location-based tracking makes geographical positions transparent. This self-tracking is a technique of the self in a Foucauldian sense but now with a very concrete technology: it is working on yourself in quantified terms. Employees are subjected to continuous examination, shown in graphs, which is likely to affect self-image (Lanzing, 2016, p. 15).

There is a curious tension here: on the one hand, some aspects of oneself become forcibly more public, and so one loses some substantial degree of control of them; on the other, those aspects that are not easily quantifiable not only remain hidden but also may be seen to have diminished in importance. Erving Goffman (1959) made the well-known conceptual distinction between the expressions that the self gives and gives off in a face-to-face meeting with others. Giving "involves verbal symbols or their substitutes" that are used and controlled by the self to convey the information and communication to others in the traditional sense (Goffman, 1959, p. 14). Giving off "involves a wide range of action" treated by others to acquire information about the self already possessed (Goffman, 1959, p. 14, p. 13). The self can control "giving" but not "giving off," which involves the events that may "occur within the interaction which contradicts, discredit, or otherwise throw doubt upon this projection" (Goffman, 1959, p. 23). Translated into a twenty-first century "metric life" this giving off refers not only to language or body language but also to data that become visible to others. The employee can control less what he or she discloses at the workplace and this may influence how colleagues and directors perceive him/her. A controlling effect might be established because the employee is aware that others can access the data and graphs.

Case 2: wearables in a private and self-initiated context

The second case to illustrate the interactions between "technologies of the self and other" is the use of wearables in a self-initiated context. These tools increase possibilities to become the "manager" of one's health (Gabriels and Moerenhout, 2018). Automated wearable

devices can also be connected with other smart objects such as bathroom scales to exchange data and to attain a richer data set to disclose more patterns (*Internet of Things*).

Self-trackers can also deliberately connect their wearable with someone else's (e.g. friend and partner) device. This way, they can access each other's data and evaluate one another's performances: sleeping habits, calories burnt, steps taken, etc. Just like SNSs, this connection with others makes possible instant live connectivity and instant feedback and judgment. Also, just like in the previous case, one could argue that the technology mediates the possibility to game oneself and others, playing "against oneself" and playing against others, again an element of competition and again this is a specific way of structuring and organizing (and mediating) social relationships. The other can be approached in terms of "he/she performs better," is "healthier" or "has a better sleeping pattern". Algorithms analyze the data; yet, humans also interpret the results and patterns and use them to subsequently rate and categorize others. Before, these forms of judgment were limited to what one visually noticed, such as being overweight, looking tired etc. Now one can attain a look inside the body. Just like in the previous case digital technologies and health become more intertwined as the technology makes these data visible.

How the quantified other problematizes alterity

Both cases aimed to illustrate that self-tracking already involves other-tracking. Because these technologies are so new, little is (empirically) known about the (long-term) impact on our relations. Potential undesirable implications should be recognized as these technologies are implemented. One example of an undesirable consequence is how these technologies might establish harmful power relations, especially at work.

Having insight into one another's data affects how we perceive the other and ourselves. As mentioned before, the remote tracking of the other's (bodily) data engenders a situation in which the other is approached through data and algorithms. In *Totalité et infini*, Emmanuel Levinas (1961, p. 25) defines otherness in terms of "l'hétérogénéité radicale de l'Autre." To quantify the other might hinder a sincere moral understanding in this Levinasian sense, as the other is at risk to be encountered as an object or as a particular profile, for instance. In the context of apps and wearable devices, the other's data appear instantly present in real-time. These technologies bring us "too close" to the other as the other is constructed as transparent, and respect for the other's heterogeneity (difference) is at risk to be disregarded. Interestingly, at the same time and in another sense, the technologies create too much distance, as when the other is quantified, an ethical relation might become difficult to attain, especially when the design motivates one to subordinate the other in light of one's goals (e.g. attaining a reward or a higher score).

This brings us to the issue of both surveillance and coveillance, which is also relevant to the technological construction of self and other. A space of surveillance and coveillance is created, in which information is (immediately) available. This is not only a problem in terms of privacy but also changes our social relations. In pre-modern times, individuals compared themselves to nearby others. This shaped identity and relation toward these others. Today, in a global context we can potentially compare ourselves to an enormous number of people on the internet. Instead of comparing ourselves to, say, our neighbor next door, we now compare ourselves to others-as-quantified, that is, we quantify and profile ourselves and compare these numbers and profiles to these of others. The techniques of self and other shape a particular kind of self.

Moreover, the view we have of others is also selective. The illusion of transparency (and truth) might be provided, whereas in reality we are only offered a narrow perspective, limited by the specific design. It is, of course, always impossible to capture both self and

other in their totality, but we approach this in the sense of limits to the quantitative relation and a diminished chance to see and respect otherness (alterity). Instead of experiencing the other in terms of otherness, we are at risk to see more of the same: more numbers, more profiles, more statistics and more objectification.

Finally, the quantification of both self and other leads to a situation where we can shape and develop ourselves according to the quantified profiles we get through our use of the devices. Yet, numbers also strip away understanding, reflection and context. While older technologies do not necessarily lead to such understanding and reflection, they at least encourage it or leave more room for it.

Concluding thoughts

In this paper, we illustrated how our relation with the other is also being shaped by self-tracking technologies. Our concepts of self and other are co-created at the same time as being reshaped by them. This paper aimed to provide a conceptual framework for discussing "technologies of the self and other," by showing that, in most cases, self-tracking also involves other-tracking. We addressed two cases and practical domains to illustrate this mutual process. We argued that these shapings are never (morally) neutral and have ethical implications.

Some may object that we can choose not to use the technologies. However, this is a misunderstanding of the problem. The pervasiveness of the technologies often creates a situation under which opting out is in many cases a theoretical possibility only. This also relates to the question of power, because one might feel (peer or group) pressure to use the technologies. As the technologies are so much interwoven with our daily lives and practices, the effects are difficult to avoid. In this context, we also have to be particularly attentive for health insurance companies that are already incorporating self-tracking in their policies. Past September, the BBC (2018, Web) reported that the American insurance company John Hancock will sell only so-called "interactive" policies that collect bodily data through self-tracking technologies. The interactive part refers to the interactions between self-monitoring and surveillance by the insurance company with whom the data should be shared.

The technologies encourage a particular perception and experience through the design. In other words, the technologies make us think differently (steer our thinking). The problem is not only about privacy, power, coveillance and surveillance but also about ethics in the sense of a number of values and related concerns. Our claim is that contemporary technologies of the self, through quantification, selection and other effects, re-shape both our relation to our self and to others. The other can become a means to reflect on the self's individual performances and statistics: in this case, the other is subordinated to the self's goals. Therefore, more focus (and awareness) is needed on the humanist aspect, i.e. reflection and self-revelation that was richer and more complex. Our analyses show that people are dealing with self-revelation in a way that is not only textual (written) but also increasingly visual and public. Voyeurism (lurking) has become an accepted social norm: the self "confesses" and others can lurk without interaction or dialogue. While the Stoics had an ethical and reflective attitude toward self-constitution – amongst others in terms of self-control – this reflection seems to disappear to the background. This is also related to the instantaneity of present-day ICTs: our focuses shift constantly because of the stream of new updates, and reflection and focus subsequently become more difficult to attain. There are always opinions and events that disturb us – instead of competition and showing off, focus should be more on autonomy and self-control, to make self-shaping less dependent on likes and opinions. An interesting path to explore here is a more humanist and open-ended form of self-tracking, for instance, by means of a less metric design. Instead of focusing on

physical improvement, these technologies focus on moral improvement and self-knowledge in the humanist tradition. There are already apps such as "Stoic Meditations" on the market that seek to promote a more complex attitude toward self-constitution.

To conclude, this paper has pointed to the unintended, but very real influence of mobile technologies and SNSs on how self and other appear to us and how they, indeed, shape the self and other. Academic literature on self-tracking could give more attention to the interactions and co-shapings between self- and other-tracking, both from empirical and conceptual perspectives. Especially potentially undesirable impacts of the co-shaping of human relationships through technology require more in-depth and long-term empirical studies. In addition, future research should explore alternative ways of self-tracking that can promote more genuine knowledge and care with respect to the self. Moreover, if we really recognize the power exercised by these technologies and media, it is important to have more public discussions about it, as well as about ethical frameworks and develop policies that help us dealing with the challenges. How we think about ourselves and about others is not a marginal affair. It is a crucial part of what we do, especially in Western humanistic and religious traditions, and it matters a lot for how we shape the future of living together and the information that is shared.

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Corresponding author
Katleen Gabriels can be contacted at: k.gabriels@maastrichtuniversity.nl