SELF-TRACKING AS A PRACTICE OF QUANTIFYING THE BODY: CONCEPTUAL OUTLINES

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A b s t r a c t: The article addresses the understudied phenomenon of digital quantification of the body and everyday life, which has arisen due to the proliferation of wearable and mobile fitness technologies. The author reviews a number of recent studies which have contributed significantly to the conceptualisation of digital self-tracking. Examining various approaches and directions in the study of self-tracking, the author focuses on three aspects: a) on the manifestations and discourses of self-tracking; b) on its styles and practices; and c) on its social contexts and effects. The works under review show how trackers of physical and social activities can transform people's everyday practices, and how users interact with fitness technologies, interpret quantified data and construct their own embodied identity. Importantly, the efficiency of selftracking tools is associated with their 'sociability' and 'intelligence' — qualities achieved through the anthropomorphizing of digital devices and the creation of a culture of sharing. The analysis also emphasises that the practice of self-tracking goes beyond individual experience, actively invading other social worlds, and may eventually become an inherent feature of a 'sensor society'. Summarising the outcomes of current research, the author comes to the conclusion that further conceptualisation of digital self-tracking must take into account its complex and multivectored nature. On the one hand, self-tracking is productive, as it contributes to the broadening of possibilities for self-knowledge and self-management, but on the other hand, it can have disciplinary, discriminatory, coercive, and alienating effects.

K e y w o r d s: embodiment, health, self-tracking, lifelogging, wearable and mobile fitness technologies.

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Self-Tracking as a Practice of Quantifying the Body: Conceptual Outlines

The article addresses the understudied phenomenon of digital quantification of the body and everyday life, which has arisen due to the proliferation of wearable and mobile fitness technologies. The author reviews a number of recent studies which have contributed significantly to the conceptualisation of digital self-tracking. Examining various approaches and directions in the study of self-tracking, the author focuses on three aspects: a) on the manifestations and discourses of self-tracking; b) on its styles and practices; and c) on its social contexts and effects. The works under review show how trackers of physical and social activities can transform people's everyday practices, and how users interact with fitness technologies, interpret quantified data and construct their own embodied identity. Importantly, the efficiency of self-tracking tools is associated with their 'sociability' and 'intelligence' — qualities achieved through the anthropomorphising of digital devices and the creation of a culture of sharing. The analysis also emphasises that the practice of self-tracking goes beyond individual experience, actively invading other social worlds, and may eventually become an inherent feature of a 'sensor society'. Summarising the outcomes of current research, the author comes to the conclusion that further conceptualisation of digital self-tracking must take into account its complex and multivectored nature. On the one hand, self-tracking is productive, as it contributes to the broadening of possibilities for self-knowledge and self-management, but on the other hand, it can have disciplinary, discriminatory, coercive, and alienating effects.

Keywords: embodiment, health, self-tracking, lifelogging, wearable and mobile fitness technologies.

We are currently observing a process of digitalisation and quantification of the body by means of mobile and wearable devices. The use of all kinds of devices and applications for monitoring health and physical activity is becoming a noticeable trend of everyday life, ever more widespread in character. And while fitness bracelets and smart watches remain to a large extent niche products popular with young people and sportsmen, medical and fitness applications for smartphones are intended for quite a wide public. IT giants like Apple, Google, and Samsung are involved in the development of digital health platforms, and, overall, intensive growth is expected in the market segment of digital fitness technologies.

With the help of self-monitoring devices, users can measure various biometric indicators: number of steps taken, quantity of calories burnt, quality of sleep, blood pressure and pulse, stress level, and so on. Bodily activity is constantly digitised and turned into a collection of data for personal analytics. It is supposed that by correcting one's habits with the help of such technology, one can improve how one feels, get oneself into condition as desired, and, overall,

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optimise one's life. The phenomenon in which we are interested, that of the quantification of the body, is denoted in the English-language research literature by the concept of 'self-tracking', and also by a series of related or synonymous concepts such as 'life-logging', 'self-surveillance', 'the quantified self' and 'personal informatics'.[1]

The concept of self-tracking is not yet in active circulation in the Russian segment of the social sciences (at least, the Akademiya Google[2] search engine does not know the word) and the present article is intended to plug that gap. Without pretending to a complete historiography of the question, we shall present a survey of the key trajectories in the study of self-tracking, focusing on three aspects: the manifestations and discourses of self-tracking, its styles and practices, and also the social contexts and effects of the quantification of the body. This will permit an understanding of the directions in which the current conceptual assemblage of self-tracking is proceeding, and also what prospects there are for the further conceptualisation of this social phenomenon.

The phenomenon and discourses of self-tracking

In its most general aspect, the concept of self-tracking describes biometric practices directed towards the regular monitoring, recording, and measurement of the details of human behaviour or bodily functions [Lupton 2016a: 2]. Although digital fitness technologies began to be actively developed during the last ten years, the actual phenomenon of self-tracking is not a fundamentally new thing in human history. Reflexive methods of tracking and documenting the life of one's own or someone else's body have existed for many centuries. In some families the tradition of measuring a child's height by making marks on the door-post is still very much alive. The use of such devices as scales became widespread at the end of the nineteenth century, and the apparatus migrated from the doctor's surgery onto the streets, public squares and shops, and later into the intimate space of the home [Crawford,

[1] Lifelogging is the practice of documenting one's everyday life by means of portable digital devices (cameras, sensors, etc.) over a given period of time. Lifelogging need not be connected with the ideas of self-optimisation (like self-tracking), and often has the function of computerised memory. Self-observation is a concept developed in surveillance studies, where 'observation from above' (surveillance) is distinguished from 'observation from below' (sousveillance). Personal informatics and personal analytics are terms which are often used in research on the interaction between human beings and computers. 'Quantified Self' is the name of a community centred upon a site of the same name, whose members use data from portable devices and mobile applications for the purposes of self-understanding and self-improvement. At present the concept of the 'quantified self' refers to any practices of digital self-tracking. In the present article the terms enumerated here are used in a synonymous context, but they are examined in greater detail in a number of works [Lupton 2016a; Neff, Nafus 2016; Selke 2016].

[2] The equivalent of Google Scholar [Eds.].

Lingel, Karppi 2015: 481]. Over time various means of bodily self-monitoring became part of the domestic routine, though they were mostly used only in cases of necessity: thermometers, blood pressure monitors, glucose meters, pulse oximeters, pedometers, breathalysers and pregnancy tests. Diary entries in which people record their physical and emotional conditions based on their subjective feelings can also be included among the tools of self-tracking.

However, before digital self-tracking technologies were invented, bodily experience itself was generally felt to be qualitative and not quantitative. For example, Michel de Certeau wrote in 1984 that steps cannot be measured statistically, since the tactile and kinaesthetic properties of each are unique [de Certeau 1984: 97]. Walking is here understood as a means of assimilating urban space; the individualised 'rhetoric' of the walk, according to de Certeau, cannot be reproduced or calculated (unlike prescribed routes). Yet, as James Gilmore remarks [Gilmore 2016: 4], portable devices like Fitbit (the first fitness device, released in 2008) convert steps into quantitative data, and mobile apps like MapMyRun convert spatial navigation into automatic operations of observation and mapping. The qualitative character of steps acquires a quantitative dimension, which becomes dominant in the perception of the owners of portable fitness devices. Furthermore, people adapt their pedestrian and other practices to the recommendations of these devices, for example choosing routes that allow them to take the 'necessary' number of steps. The writer and designer Craig Mod followed this motive when deciding which places and sights to visit in Paris. On one occasion, when he had forgotten his Fitbit fitness bracelet at his hotel, first he felt devastated that his steps through Paris were not being measured and counted, but then he still managed to enjoy the beauties of the city without using his device [Mod 2012]. Informants often admit to researchers that they cannot begin some activity (running, walking, training, eating, sleeping, working, sexual intercourse) without switching on the option for tracking and generating data, otherwise the activity is perceived as pointless, as a waste of time.[1]

Another important element is the possibility of sharing one's data with other people: indicators and achievements become more significant when they are evaluated by the external community. The digital quantification of the body goes beyond individual experience, and there comes into being a culture of self-tracking that brings about an active expansion into different social worlds (sport, medicine, the family, work, education, insurance, etc.).

[1] For example, one informant admitted to ethnographers that if he forgot to put on his Fitbit bracelet before starting to play football, he would continue to play, but feel irritated, as if the time were being spent to no purpose [Pink, Fors 2017: 232].

The pioneer of this culture was the global movement and community called 'Quantified Self' (QS), founded in 2007 by Gary Wolf and Kevin Kelly, the editors of the American magazine *Wired*. Its numerous adepts, following their motto of 'self-knowledge through numbers', share their experiences of self-measurement at local meetings and annual international conferences in Europe and America.[1] It is not only QS activists that take part, but also politicians, self-tracking technology developers, academics and clinicians. The QS site offers more than five hundred instruments for individual monitoring of physical and social activity, and also a large quantity of video materials presenting the methods and results of the application of self-tracking technologies. In addition, in 2012 the Quantified Self Institute (QSI) was founded at the Hanze University of Applied Science in the Netherlands and, alongside applied research, is developing its own educational programmes at first-degree level. Among these is a minor in 'Global Health & Quantified Self' (and a summer school with the same name), and also minors in 'Healthy Ageing' and an 'Honours Minor in Research Skills', which assumes the study of various aspects of self-tracking.[2]

At present, 'Quantified Self' refers not only to the community and its website,[3] but is also a general designation for all digital practices connected with individual measurement of biometric data. In this sense QS is a synonym for self-tracking.

The concept of self-tracking has already been included in the Oxford English Dictionary, where it is defined as 'The practice of systematically recording information about one's diet, health, or activities, typically by means of a smartphone, so as to discover behavioural patterns that may be adjusted to help improve one's physical or mental well-being' [*Oxford Dictionaries* 2018]. The problems of self-tracking are appearing more and more often in the media and on social networks: digital self-measurement is becoming a popular cultural trend in society. The growing interest in the phenomenon is also shared by representatives of the most diverse branches of scholarship, from medicine, information science and mobile design to sociology and ethnography.[4] The study of QS

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1 In particular, the Quantified Self Symposium 2018 took place on 19 April at the University of California at San Diego, and the previous conference took place on 17–8 June 2017 in Amsterdam together with the Quantified Self Institute (QSI) at the Hanze University of Applied Science.

2 See the QSI site: <http://qsinstitute.com/services/education/>.

3 <http://qsinstitute.com/>.

4 This interest has manifested itself in the organisation of a series of conferences on the subject, in particular 'Metric Culture: The Quantified Self and Beyond' (7–9 June 2017, Aarhus Institute of Advanced Studies, Denmark); 'Monitoring the Self: Negotiating Technologies of Health, Identity and Governance' (8–10 November 2017, Helsinki Collegium for Advanced Studies, Finland); 'Labouring Bodies and the Quantified Self' (5–6 October 2018, University of Mannheim, Germany). We should also note the geographical extent of scholarly publications on self-tracking: the subject is being studied by

is taking place at the crossroads between such tendencies as research into mediatisation, sensor technologies, corporeality and everyday life, digital health, data and algorithms, surveillance studies, etc. Moreover, two key discourses are observable in the corpus of literature on QS, which we shall call 'emancipatory' and 'critical'.

In the first case, the accent is on the liberating potential of the practice of digital self-tracking, manifested in the expansion of the opportunities for self-knowledge and control over many aspects of one's life, including the improvement of one's physical, psychological and social well-being. An important direction here is the study and development of effective systems of personal informatics, intended for the collection and analysis of personal data, and also to motivate users to change their behaviour [Li, Dey, Forlizzi 2010; Rooksby et al. 2014; Epstein et al. 2015; Kersten-van Dijk et al. 2017]. Another significant layer of literature supporting the discourse of self-optimisation is devoted to the prospects for using the technologies of self-tracking in the area of digital health, where they may help to lower the risks of falling ill and improve communication between patients and doctors [Swan 2009; 2012; Turner-McGrievy et al. 2013; Topol 2012; 2015; Wang et al. 2014]. Overall, typical of the 'emancipatory' perspective are ideas of how quantitative data can allow cognitive access to oneself, revealing hitherto concealed patterns and connections, and that they are more reliable, objective, intellectual and performative in comparison with sensory experience, and that in the end the figures reflect our true selves [Lupton 2016b: 65]. Equipped with sensors, the body comes to resemble an experimental laboratory, an information machine (the working of which can be evaluated in terms of expenses, conditions and productivity) or an 'intelligent' thing, integrated into the digital environment along with other smart objects.

The critical view, primarily developed within the social sciences, articulates as series of contradictions and problems connected with the spread of QS culture [Whitson 2013; Lupton 2016a; Neff, Nafus 2016; Selke 2016; Ajana 2018]. Basing themselves most of all on the works of Michel Foucault [Foucault 1986 (1984); 2004], a number of authors have examined self-tracking as a disciplinary practice of 'The Care of the Self', and the fitness devices themselves as the normative instruments of biopedagogy, which impel people to construct 'ideal' bodies [Ruckenstein 2014; Lupton 2016a; Fotopoulou, O'Riordan 2017]. The object of critical reflection here is the policy of neoliberalism, which places on the citizen entire responsibility for his / her own health and well-being, nudging him / her towards effective self-supervision, including by digital tracking

researchers from the USA, Europe, Australia and East Asia. Russian scholars are only just beginning to assimilate this subject area.

[Kelly 2013]. The culture of lifelogging is also fed by the ideology of 'metric power' [Beer 2016] and 'dataism' [van Dijck 2014], based on a belief in the creative power of algorithms and big data, while the latter are included in the processes of social categorisation, discrimination and exclusion. Furthermore, in the post-Snowden world questions of privacy and the security of data systems are making researchers uneasy, including the ambivalent attitude of society towards the problem of the confidentiality of personal data [Spiller et al. 2018]. The platforms used for self-tracking are not neutral, and the information that they collect and process may serve the commercial and administrative interests of third parties who make profits out of voluntary digital labour [Till 2014].

Unquestionably, the research landscape that is forming around the study of self-tracking cannot be reduced to the two poles of discourse here described, but demonstrates an increasing diversity of theoretical approaches and empirical methods. The various practices and styles of self-tracking are of particular interest to anthropologists and sociologists, and so are users' perceptions of the technologies of self-supervision and their interpretations of the data that they receive.

Practices and styles of self-tracking

The specifics of the interaction between users and their self-tracking tools and 'digital doubles' (visual representations of their own activity in the form of data)[1] have been studied in a whole series of investigations.

The British researcher John Rooksby and his colleagues have identified five styles of self-tracking from interviews with users of digital fitness technologies [Rooksby et al. 2014]: directive, documentary, diagnostic, collecting rewards, and fetishised. This typology is based on the distinction of the aims and motives of lifeloggers.

Directive tracking presupposes the setting and systematic achievement of specific goals, for example losing weight or fulfilling training programmes. The goal is often prompted by the device itself, such as the ten thousand steps that pedometers recommend as standard. *Documentary* tracking makes no claims to palpable changes in activity or lifestyle, although with time it may change into regular monitoring of the first type. People can observe the quality of their sleep, the distance they have walked or their food consumption episodically, out of a feeling of curiosity and the desire to have

[1] By 'digital doubles' we understand the concept of the 'data double' developed within the research on self-tracking by Minna Ruckenstein [Ruckenstein 2014]. It describes the conversion of human minds and bodies into flows of data which can be reconstructed as visual images for the purpose of personal perception and interaction with them.

a documentary history that they can share on social media. *Diagnostic* tracking is a relatively rare practice, since it is oriented toward the analytical search for mutual connections between two or more things. For example, one of the people surveyed had established by means of lifelogging technology that his stomach problems resulted from the combination of medicines with particular foodstuffs; another informant had obtained a Jawbone UP fitness bracelet specially in order to discover the reasons why he felt so bad in the morning despite having had an adequate amount of sleep [Rooksby et al. 2014: 1168]. The *reward-collecting* style of self-monitoring is maintained by various encouragements of digital 'care of the self'. These prizes and bonuses may be symbolic (in the form of 'medals' and 'leader boards' and other gamified indicators of achievement), or material, including receiving Amazon gift vouchers or reduced insurance premiums (for policy-holders of those insurance companies that have marketing partnerships with the producers of fitness trackers). Finally, *fetishised* tracking is characteristic of the adepts of the 'Quantified Self' movement and digital 'geeks' who are purely interested in the latest gadgets and technologies. In addition, portable devices and brands may be attributes of prestige and fashion that underline their owners' status.

John Rooksby and his colleagues' typology allows an understanding of the intentions of the self-trackers, but does not take into account the social contexts of their use, omitting the hermeneutics of the relations between people and their devices. Australian researchers [Lyall, Robards 2018] have, in the course of in-depth interviews, established three roles (which are not mutually exclusive) which users attribute to their self-tracking devices: *tool*, *toy* and *tutor*. In the last case the app is acknowledged to have the ability to teach people and even to manage their lives — qualities which pertain to social subjects.

Other authors have discovered a more evident tendency toward anthropomorphising self-quantification systems [Rettberg 2018; Ruffino 2018]. Although the technologies are non-human agents, their users often see them as social beings that 'tell' them when and how much they must walk, stand, sleep, eat, etc. [Kreitzberg et al. 2016: 99]. The perception of means of documenting everyday life as companions is not new in itself; it applies particularly to paper diaries, which have served people as silent interlocutors for many a long year [Rettberg 2018: 32]. But while paper diaries and many other instruments of QS take on the role of passive listeners and vessels for information, there are now technologies being developed that have their own 'personalities' and are able to engage in dialogue and tell stories. For example, the Lark app, which has an interface like that of a messenger, communicates with its users in conversational English, wishes them good morning, encourages various kinds

of activity, reminds them when they need to rest, and sometimes even tries to make jokes. However, the user cannot answer the application in natural language; instead of that (s)he must choose from a small selection of possible answers. The Vi sports earphones, made by LifeBEAM and equipped with biosensors and artificial intelligence, demonstrate an even greater anthropomorphism. An auditory personal trainer, analogous to Apple Siri and presented as 'a friend for your fitness', ever ready to help, 'lives' in them. It is the sociality and 'rationality' of fitness technologies that attracts the consumer, and that is what the modern mobile and portable device industry is aiming for. This marketing strategy of a close connection between human being and device is subtly decoded by the British media researcher Paolo Ruffino, who uses a romantic metaphor to describe his two-year 'relationship' with his Nike+ FuelBand bracelet, which ended in a break-up [Ruffino 2018].

Undoubtedly, electronic fitness technologies may be perceived not only as 'significant others', but also as 'parts of oneself', blurring the boundary between the body and its 'digital double'. They shape the corporeal self, often setting the parameters for the interpretations and sensations of one's own physical conditions. In other words, users begin, subjectively, to feel tired or rested, fatter or thinner, healthy or infirm in the actual process of perceiving the 'objective' visualisations of their biometric data. Let us cite one autoethnographic testimony: 'We (the Apps and I) had coconstructed a digital model of my self, and here I was, managing myself, it seems, by proxy. The feedback from that digital model often took precedence over how I physically felt. When I didn't eat "enough" protein I felt weaker, and when I had too much sugar I felt fatter. These were delayed reactions; a rereading of my body from the model' [Williams 2013]. It remains an open question for the author of these reflections whether the digital model of himself was bringing him closer to himself or, on the contrary, taking him further away.

Let us note that the viewpoint of self-tracking works not only at an individual level, but also at an interpersonal one, when users share their biometrics with each other. Thus one informant informed ethnographers that he examines the data about his wife's sleep quality and physical activity in order to predict the mood in which she will arrive home from work. If the indicators show a low level of physical activity and poor sleep, he prepares to be gentler and more considerate when she comes home [Pink, Fors 2017: 233]. In this case the use of tracking technology furthers a greater mutual understanding in the family. At the same time, the fact that he needs to use a digital device to understand the condition of a person close to him suggests a weakened ability to 'read' someone else directly. The fitness technology is a sort of 'prosthesis' for this ability, and the personal relationship is profoundly mediatised.

Although the above examples indicate a noticeable and many-sided influence of self-tracking on people's lives, in most cases, with the exception of members of the 'Quantified Self' movement, these effects are selective, temporary or mitigated in character [Didžiokaitė, Saukko, Greiffenhagen 2017]. Many users do indeed achieve the goals that they have set themselves with the help of this sort of self-supervision: they lose weight, feel better, improve their sports results, and so on. But, probably, a significant number of them afterwards 'drop' their fitness apps and devices or relegate them to the background, only occasionally taking an interest in the data. Why does this happen? There are several possible reasons: once the goal is achieved, the motivation disappears; they are stressed when they discover things going wrong and inaccurate data; they are irritated by the work of entering the data (when it has to be done manually); the information they get appears trivial; they find something else to amuse themselves with (if it was a 'toy'); they are concerned about their security or unwilling to become dependent on technology; they are disillusioned with the very idea of a 'quantified self'. People's relationships with particular fitness devices or brands begin, develop, and come to an end, but the tendency to quantify the body and everyday life is itself constantly on the rise.

The social contexts of self-tracking

To a large extent the attractiveness of QS culture is connected with the fact that it is a culture of sharing, it creates and maintains communities. The possibility of sharing one's biometric data with other people over social media or special digital platforms is one of the key factors in the popularity of the practices of self-tracking. For example, self-tracking apps such as Strava, Endomondo, Garmin Connect, or Runkeeper have social network functions that allow users to get in touch with each other. Facebook, Twitter and Instagram are also actively used by lifeloggers for communication. The largest sharing platform is the site of the 'Quantified Self' community, which has over 70,000 members worldwide.[1]

As Rachael Kent has noted [Kent 2018: 66], other people's voyeuristic attention on social media does act as a motivational instrument. Posts, likes, comments, observation of each other's 'progress' and a spirit of competition stimulate users to continue with self-tracking and press on to improve their results. The media representation of working on one's health stresses the choice of a 'proper' lifestyle demonstrating the capacity for self-management which is highly

[1] <http://qsinstitute.com/about/what-is-quantified-self/>.

regarded in the culture of neoliberalism with its specific type of 'governmentality' and biopower [Rose 2006; Miller, Rose 2008]. At the same time the image of the 'healthy self' that is formed is in practice a collective product, the work of the online community. Its construction proceeds taking into account the shared tacit expectations and norms of the web fitness community. In particular, to avoid criticism one should not display unnecessary fanaticism or excessively idealise one's body and lifestyle. Moreover, visual representations of bodies or diets should be aesthetically pleasing. The 'real' physical body remains concealed, replaced by quantitative data, and also by carefully constructed narratives and images by which other people evaluate its condition. In the course of in-depth interviews with respondents who regularly exchange tracking data on social media, Kent discovered an interesting tendency: the more lifeloggers 'share' and discuss their practice with the community, the more likes and followers they have, the 'healthier' they feel [Kent 2018: 66–73]. This 'healthy' identity is a collective construction, which may not altogether reflect the 'real' state of affairs, particularly because the fitness devices and apps that it is based on do not give particularly accurate measurements.

Such conclusions confirm the idea previously expressed by James Gilmore [Gilmore 2016: 2531] that the sociality of fitness technologies, which is connected with the sharing option, allows them to be seen as a qualitative as well as a quantitative phenomenon. Society is 'added' to these technologies because they have in addition a socialising effect.

There is one more important element characteristic of societal participation in digitalisation self-supervision practices. So far we have been examining self-tracking primarily as a private occupation and a personal choice, but that is not always what it is. The culture of lifelogging extends to many segments of the social world, and is becoming ever more compulsory in nature. The Australian sociologist Deborah Lupton [Lupton 2016a: 115–38] has identified five regimes of self-monitoring, depending on how voluntary it is and with what aims it is being done: private, pushed, communal, imposed and exploited.

Private tracking is the personal free choice of the lifelogger and may have a great variety of goals, from discovering and constructing one's corporeality to ludic experiments with data. The private character of this monitoring practice is best expressed by the 'n=1' concept shared by the members of the 'Quantified Self' community. It takes for granted that personal information must remain personal, to a certain extent even offering 'soft resistance' to the victory march of the big data [Nafus, Sherman 2014] in which third persons (state and commercial organisations) are so interested.

Pushed self-tracking is characterised by outside influence coming from another social actor (employer, insurance company, parents or educational institution). For example, employees are offered the use of a fitness bracelet within the framework of a corporate health programme. And although digital monitoring of one's health and productivity is relatively voluntary in this case, it is to a greater extent a response to external pressure or propaganda. There is a fine line between this mode and *imposed* self-tracking, when a person has practically no choice but to use the fitness device and allow third parties (his / her employer, say) to examine his / her personal data. Considering that this practice is beginning to be institutionalised, refusal to participate in programmes of this sort threatens the loss of better career opportunities or other social privileges.

The *communal* self-tracking examined above is primarily that of those who regularly share their biometric data with other people. Moreover, their communality may manifest itself not only in competitions and discussions with other lifeloggers, but also in civic initiatives such as crowdsourcing, when, for example, people monitor their running or cycling routes or their health indicators so that they can form part of a big database. This information can then be used by the local authorities or town planners in their efforts to realise the concept of a 'smart' or 'healthy' town. Another good illustration would be the online platform 'PatientsLikeMe', which was created so that patients suffering from the same maladies could exchange data with each other. However, in this case the unique information uploaded by users becomes accessible to representatives of the medical and pharmaceutical industries. Personal information is transformed into commercialised big data.

Exploited fitness tracking is evidently where all the other modes of self-monitoring are inevitably heading. In the modern economy of digital knowledge, biometric data are converted into a valuable commodity, produced free of charge by the lifeloggers themselves, while the results of their labours are used by other actors [Till 2014]. Considering that digitised human bodies become nodes in the Internet of things, generating information and exchanging it with other intelligent objects, in the near future it will be hard to escape from the 'sensory society' [Andrejevic, Burdon 2015], as it will be to find out where your personal data have gone.

Fantasising about those prospects, Deborah Lupton writes that in the future we can expect to have chairs that track how long anyone has sat on them, chopping boards that record our culinary habits, sofas that expel their owners when they have been sitting for too long and 3D printers that prepare food in accordance with daily data about people's physical activity [Lupton 2016a: 139–48]. Self-tracking may become an integral part of everyday life, and this is

far from a digital (anti)utopia. Like any other innovation, digital self-tracking is a complex, multidimensional phenomenon, and its effect on people's lives has many vectors: as it creates new opportunities, it also gives rise to risks and contradictions. If the social costs of this technology turn out to be too high, there will inevitably be tactics of resistance in society directed towards limiting its scale and effects.

Conclusion

The study of self-tracking is only just taking shape as an independent interdisciplinary direction arising out of the crossover between many areas, from sociology and ethnography to computer science and medicine.

This survey of existing publications on the topic allows us to make a number of generalisations that reflect the key trajectories of the conceptualisation of the QS phenomenon within media and cultural studies.

Firstly, digital fitness technologies construct a corporal identity that is perceived through data ('you are your data'). But the 'digital double' is not a mirror that reflects the 'real' condition of mind and body, but a reductive model. There are various ways of interacting with this model: in one case there may be a 'gap' between it and the 'bodily self' which allows the discrepancies between the representation of one's condition as data and one's own sensations to be identified; in another case these very bodily sensations are partly conditioned by interpretation of the data, i.e. they are formed by the model. One way or another, tracking assists in self-knowledge and the 'objectivist' or 'constructivist' modes of perception of the data depend on a range of cognitive and social factors.

Secondly, the technologies of self-tracking encourage changes in everyday life, allowing routine practices (physical, spatial, communicative, consumer, labour, etc.) to be modified. People can achieve the goals they have set themselves by using fitness devices — have a good night's sleep, lose weight, be more active, work more productively. However, it is not entirely clear to what extent these achievements are due to QS technologies, although their stimulating effect is acknowledged by the users themselves. This requires asking the question of wherein the source of motivation lies: in the device itself, in the person or in society? In our opinion, this source is divided: even the most inspiring interface is only effective where there is personal motivation, and that is formed to a large extent by the social environment. Self-tracking devices are instruments of biopolitics, they contain the imperative to look after oneself and the ideal of health shared by the consumer.

Thirdly, the main distinction between modern tracking technologies and older ones (such as mechanical scales) is their sociality and 'intelligence', which means the possibility of bilateral communication. This possibility is realised in two ways: through anthropomorphising the lifelogging instruments and through the creation of a culture of sharing. Above all, the fitness device itself becomes an active companion, capable of maintaining a 'human' dialogue with its owner, and as artificial intelligence technologies evolve, this trend will become ever stronger. In addition, a lifelogger's companions are also the other people with whom (s)he shares biometric data on social media and in conjunction with whom (s)he constructs his / her 'healthy self'. In the foreseeable future this fitness community will be joined by intelligent things that will monitor the condition and activity of a person in the background.

Fourthly, although today self-tracking may be a personal hobby, a movement or a subculture, it is gradually invading different social worlds and acquiring features of compulsion and exploitation. In this context self-tracking should be examined as a complex multi-vector phenomenon. On the one hand, it is a potential productive practice, allowing increased opportunities for self-management and a reduction in various individual and social risks. On the other, self-tracking may have a disciplinary, discriminatory, alienating and manipulative character. Therefore future social research into the digital technologies for self-measurement should not lose its focus of critical reflection.

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