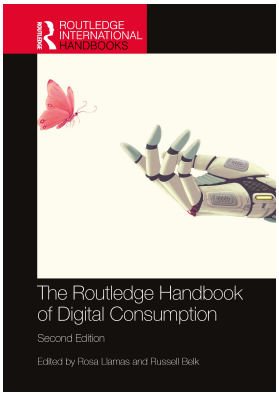

The Routledge Handbook of Digital Consumption

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From techno-utopianism to personal panopticon and beyond

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FROM TECHNO-UTOPIANISM TO PERSONAL PANOPTICON AND BEYOND

A call for a revised self-tracking research agenda

Matthias Bode and Dorthe Brogård Kristensen

Introduction

A "social drama" (Sherry, 1991) was playing out in consumer research and marketing in the 1980s and 1990s. Intense debates about the scientific status and future direction of the discipline, combined with antagonistic struggles about career options and infrastructural presence/absence were unsettling the scholarly community. In the heat of the debate about the role of "Truth" or "truths" in research, Rossiter (1989, 409) claimed: "But you can't argue with the data, because they are real". In the end, the critics of numeric data as the sole benchmark of legitimate research gained wider acceptance (Belk, 1986), and the attacked "number crunchers" had to concede some seats at the table of disciplinary leadership. The position that data does not speak but is spoken for seemed to have become part of the scientific consensus. However, almost identical discussions about the superior knowledge products of numeric data emerged 30 years later again, this time not from institutionally certified research colleagues, but from consumers or "amateur/citizen researchers". These citizen researchers are resisting expert authorities, defining themselves as researchers of their own life, and promote quantitative data as the best representation for life phenomena. Starting in 2007, a group of San Francisco Bay activists brought these people together in a movement with the name "quantified self" (QS) and the motto: "self-knowledge by numbers". An emerging culture of self-tracking took shape and travelled from California to the (mostly Western) rest of the world. One explanation for the rapid movement refers to the widely available new technological opportunities to individually collect data by wearables like fitbit, jawbone or oura, smartwatches, and smartphones.

The internally ideology of QS – as formulated by one of the founders, Gary Wolf (2010) – represents arguments, that can also be found by the guardians of traditional consumer research/marketing in the philosophy of science debate before: human beings are prone to subjective biases; a focus on language (instead of numbers) is not trustworthy because of the ambiguity and multivalence of words and instead of talking and writing, and numbers are preferable in their qualities of being objective, neutral and scientific.

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In the first phase, the public media criticized the phenomenon of self-tracking more as a curious obsession, as "extreme navel-gazing" or "weird narcissism" (Sharon & Zandbergen, 2016, 1704). The proponents were predominantly male (Christensen, 2013), technology-affine, organized in QS groups and got together in so-called "Show & Tell" meetings to share and discuss ideas on how to collect, store, analyse, process, combine, visualize and understand data, often with self-build or modified technologies. The early activists were inspired by a Californian ethos that goes back to a specific US-American techno-culture (Barbrook & Cameron, 1996), pushing forward to appropriate emerging technologies as tools for personal and social transformation.

Around 2013 the phenomenon changed dramatically. Terms like "self-tracking" and "quantified self" became a normalized part of the public discourse, and the associated practices became widespread. According to studies during that time, almost 2/3 of all US Americans were engaged in tracking their weight, diet or exercise and a third of the US population track variables like blood pressure, headaches or sleep patterns (Swan, 2013; Feiler, 2014). In a few years, a practice allegedly reserved for a small group of tech-savvy obsessives had reached what Peterson (2015) called the "middle class, middle American moms".

This change should not be understood as following a traditional diffusion model with the QS members as lead users. The second stage of self-tracking practices is shaped by different forces. Initially, self-trackers and micro-entrepreneurs were influential, often still shaped by the countercultural values of communalism, technocentric idealism, psychedelic bohemianism and new age spirituality. In the second phase the practices were organized by larger companies and organizations, dominating the markets for tracking devices and for practices like data aggregation, processing, analytics, and brokering. Just the end-consumer market for wearables is estimated to reach a global spending of $81.5 Billion in 2021 (Gartner, 2021). This is an 18.1% increase from $69 billion in 2020 and the pandemic situation has further strengthened the demand by foregrounding health and wellness topics during global lockdowns, while market trends like e-health, advantages in sensor developments and an increasing miniaturization drove the market growth. An example here is ingestible sensors paired with pills and patches, like Proteus Discover, positioned as digital medicine (Martani et al., 2020). Furthermore, self-tracking is now integrated into a wider network of everyday tracking practices, that keeps no life sphere anymore untracked. One important area is the tracked and tracking home, with linkages between data tracking and interacting smart speakers, thermostats, doorbells, streaming devices or fridges. Almost everyone is a self-tracker nowadays; however, only a minority will call themselves "self-trackers.

The goal of this chapter is to map a research field about a consumption topic, that has been dominated by a heterogeneous group of disciplinary, conceptual and methodological approaches and to develop suggestions for further research activities. This will be done by presenting the existing research with a focus on epistemic research frames. As the research is diverse, we will first focus on the conceptual dimensions of the research phenomenon: *what* is researched and conceptualized as phenomena under the wide umbrella of self-tracking. Second, we develop four paradigms of self-tracking research, which characterize prototypical ways for *how* self-tracking research was and is practiced. Based on such an epistemic mapping of self-tracking research, we suggest going beyond two constraints we have observed in the existing research. First, more recent approaches emphasize the intertwined relationships of data and the self with the conceptualization of "sensing data" (e.g. Mopas & Huybregts, 2020; Lupton et al., 2018). What have been neglected here are senses beyond the visual sense: beyond seeing then means for example also listening to tracking practices. Second, self-tracking research often has a strong critical impetus. Here we attest consumer research

a lack of connection to the wider area of critical data studies. More critical reflection is then needed to go beyond surveillance approaches to start politicizing the tracking practices (of researchers and researched subjects). This requires acknowledging that it is not only data that is not objective, value-free and neutral. It is also the researcher, his/her positioning in the field and the theoretical tools that are value-laden and charged by a specific political conceptual baggage (Haraway, 1988). Self-tracking practices are political practices as well as research about such practices. It is our position that researchers need to develop more awareness about the political dimensions of their epistemologies (Table 21.1).

Table 21.1 Summary Table

WHAT is researched as self-tracking:
conceptualizations & clarifications

1 *active–passive tracking:*
is the data manually or automatically recorded?
2 *voluntarily–pushed tracking:*
is the tracking initiated by the tracked person or external entities?
3 *continuous–discontinuous tracking*
is the temporal dimension of tracking included?
4 *contextualized–uncontextualized trackings*
how much is the micro and macro context integrated in the tracking analysis?

HOW is self-tracking researched:
paradigmatic perspectives & assumptions

		assumptions:	**theoretical frames:**
1	*barriers & solutions*	consumers have individual problems, and self-tracking can help solving their problems and empower them	consumer psychology; product development
2	*symptoms & surveillance*	self-tracking is pushed by socio-political arrangements and has negative effects for individuals and society.	surveillance, Foucault, neoliberalism, (neo) Marxist, exploitation, commodification, ideology
3	*bugs & glitches*	neither consumers, data or technology are perfectly working in their relations. They co-constitute themselves in often fuzzy, messy, tinkering, and improvising ways	(post)phenomenology, critical data studies
4	*system & focus*	self-tracking is analysed in broader constellations of discourses, practices, meanings and materialities with a focused consideration of the co-constitution of self and data in tracking practices	STS, ANT, assemblage theories, practice theories

GOING BEYOND: suggestions for future research directions

The current focus on data work/sensing data should go beyond the visual sense and include other senses, especially hearing and touching.

Research with a surveillance focus should complement broader systemic analyses with ethnographic consumer data

Table 21.1 Continued

Researchers should focus less on data per se but on the link between self-tracking and the politics of algorithms, and automated systems
The politics of self-tracking should further be linked to the reproduction of inequalities based on notions like gender, class, race, religion, etc.
Researchers should widen their phenomena focus by looking into non-Western self-tracking practices and their specific systemic localization.
Western self-tracking researchers should further collaborate with non-Western knowledge experts and reflect upon the effect and adequacy of Western knowledge formations

Source: Own elaboration.

Mapping the field

A Scopus search (January 24, 2021) resulted in 952 documents related to the topic of "self-tracking", while approximately half of them (462) included a discussion of the QS. Sorting the overall self-tracking publications reveals as main subject areas *computer science* and *engineering* (together 41.4%), followed by *medicine/health* (22%) and *social sciences* (13.1%), including marketing & consumer research. While articles about self-tracking including quantified self-discussions have peaked in 2017 and publications are slowing down, the general self-tracking publications are still increasing (after levelling between 2017 and 2019) with 152 publications in 2020. This reflects an overall trend, where self-tracking as a practice is losing its main anchor in the QS movement and is merging with several other trends.

A broader research overview will therefore necessarily create an artificial coherence of a field, where the interaction, mutual receptions and follow up discussions are too often limited to the own subject areas and disciplinary peer groups. At the same time, the phenomena of self-tracking practices are becoming an integral part of a tremendously growing field of digital sociology, critical data studies, algorithmic governance or data politics. Consumer research so far has followed a historically typical research development model, by first focusing on new phenomena with an existing theoretical apparatus (Bode & Askegaard, 2017). It is recommended to strengthen the second step to advance self-tracking studies by also incorporating externally developed conceptual developments.

WHAT is researched as self-tracking (conceptualizations & clarifications)?

Due to the heterogeneity and diversity of self-tracking practices, an awareness of the specific dimensional configurations in research projects is important. In our conceptualization overview for *what* is researched under the umbrella of self-tracking, we build upon taxonomies of tracking types by Boesel (2013) and Lupton (2016) and summarize the different conceptualizations into the following dimensions of tracking practices:

1 Active–passive tracking
This distinction focuses on the data recording mode. Passive tracking involves automatic data recording where data is recorded without a user's input. Active tracking involves manual data input, where users record text, images, or sound for instance about current mood (usually the randomly pings the users) or food consumption. Kitchin (2021, 6) decides therefore between tracking that results in data footprints (that people actively choose to create) and data shadows (that are tracked apart from the subjects'

preferences or even knowledge). The tendency towards automatic tracking is supported by specialized trackers and IoT (Internet of Things).

2 Voluntarily–pushed tracking
While the initial focus on QS emphasized the voluntary aspect of tracking practices, there is a growing range of self-tracking practices that are pushed by other entities. These can be family members or social groups and can be supported by the tracking actor (tracking as an entrance to a sporting community like Strava or Peloton cycling groups). Such initiations often involve the social sharing of data and the linked public commitment to achieve health and wellness related goals (e.g. Couture, 2021; Ehrlén, 2021). More and more pushed self-tracking is initiated by organizations like insurers, medical authorities (Lupton, 2017), companies who push self-tracking of employees at their workplace and outside of it (e.g. Moore & Robinson, 2016); higher education institutions requiring their students to track activities (e.g. Dawson, 2006; Monahan & Torres, 2009) or state authorities (see for instance the public tracking apps developed through the COVID-19 epidemic, Klar & Lanzerath, 2020).

3 Continuous–discontinuous tracking
The early focus on QS, with dedicated, deliberate and committed self-trackers, led to a neglected aspect of the temporal development of self-tracking practices. There is an inherently dynamic momentum of QS, in continuously expanding the range of tracked variables to develop "a better window" into the self. QS members reported an inherent necessity to continue the tracking, as otherwise longitudinal data would become worthless due to data gaps. With increased research and widening the range of self-trackers from QS activists towards more mundane, and everyday trackers (e.g. Didžiokaitė et al., 2018) it became clear that a continuous tracking is not necessarily covering fragmentary, episodic and discontinuous forms of tracking (Gorm & Shklovski, 2019). Furthermore, with everyday tracking devices, first-time users might feel an initial curiosity with a soon fading interest due to interaction issues, lack of desired results or data interpretation issues (Rapp & Cena, 2016; Charitsis, 2019).

   The temporal dimension is also related to past/present/future constellations. Through self-tracking practices the present is datafied into small units, working as traces of the past, which can be stored, accessed and imagined as part of our futures (Gardner & Jenkins 2016; Jacobsen & Beer, 2021). From this conceptual perspective self-tracking has been analysed as a practice that interweaves into the temporalities of everyday life (Fors et al., 2019) as alternating between continuous and discontinuous use (Kristensen & Ruckenstein, 2018, Pink et al., 2018; Gorm & Shklovski, 2019) as episodic use (Didžiokaitė et al., 2018) and as flow (Lomborg et al., 2018).

4 Contextualized–uncontextualized trackings
Self-tracking practices can be analysed in micro- or macro-contexts, with different emphasis on the analytical relevance of the context. Contextualization of self-tracking research means on a minimal level acknowledging the boundedness of research in discussing limitations for the transferability and generalizability of results. On a more developed level, contextualization involves the co-constitution of context and research.

The call for more contextualized research is coming from two positions. First, science and technology studies (STS), actor-network theory (ANT) and assemblage theories inspired research on self-tracking have a paradigmatic starting point of looking into a wider set of constellations to understand tracking practices (Barad, 2003; Marcus & Erkan 2006). Second, the wider field of data studies is increasingly emphasizing the necessity to put data

into context (e.g. the early discussion by Boyd & Crawford, 2012). As Loukissas (2019, 128) underlines, all data are local and must be put into an interactional and operational context: "Contextual practices (…) should be understood within culturally embedded knowledge systems, composed of inherited roles, concepts, and technological affordances". Data in this perspective is not raw but cooked (Kitchin, 2021, 5). Data is the result of choices and decisions made by people embedded in a socio-technical system of norms, regulations, traditions, routines, laws, etc.

A clear conceptualization of self-tracking research, being aware of the researched phenomenon dimensions, is necessary, to enable a discussion that acknowledges a potential difference between self-tracking research about people looking at their screen time summary on an iPhone; checking the most listened songs on Spotify; using the H-index for academic or tracking data of an implanted heart defibrillator. On the practice level it should also be clear that self-tracking practices can be analytically separated, but in reality they are often intertwined, hybrid and dynamically related in vertical (as different layers happening at the same time) and horizontal orientations (as temporal chains of practices).

HOW is self-tracking researched (paradigmatic perspectives & assumptions)?

After mapping research based on conceptual dimensions (the *what* of research), in the following we will present paradigmatic types of self/tracking research (the *how* of research). While work by individual researchers can be present in several paradigms, they represent prototypical, coherent paradigms for having a heuristic value in exaggerating internal homogeneity and external heterogeneity to enable further productive theoretical developments.

a barriers & solutions
b symptoms & surveillance
c bugs & glitches
d system & focus

a) Barriers & solutions

This paradigm is characterized by the assumption that self-tracking practices, mediated and organized by appropriate technology, can and should work to enable optimal use. When there are problems in terms of user acceptance, adaptation, efficiency, or outcomes, they can be solved by learning more about the users and improving the tools. The wider social-cultural context of self-tracking practices, like questions of social dynamics of areas of use, problem definitions or technology impacts, are backgrounded (Neff & Nafus, 2016, 112). Consumers have individual problems, and technology (in the sense of neutral tools) can solve them: research then becomes a design management problem, barriers are there to overcome (Swan, 2013; Choe et al., 2014). This perspective, closely linked to the Silicon Valley culture of entrepreneurs and early self-trackers, has been critically described as "techno-optimism" (Tutton, 2021) or "techno-solutionism" (Barbrook & Cameron, 1996).

The optimistic tenor of such research is exemplified by the narrative of self-empowerment, as it permeates especially health-related research within this paradigm: self-tracking promises greater individual autonomy over health. According to Vonod Khosala, a health care venture capitalist, the purpose of data-driven health innovation should be "to make the consumer the CEO of his own health" (Neff & Nafus, 2016, 141). This perspective is mirrored by the first scholarly works on self-tracking, which resonate with the techno-optimism and the vision of self-tracking as a tool of empowerment (Swan 2009, 2013).

b) Symptoms & surveillance

This paradigm shares the assumption that technology and self-tracking practices are working and have material effects. However, the focus is less on individual consumers but foregrounds the socio-political embedment and consequences. Furthermore, the effects are not necessarily evaluated as being beneficial for users and society, but as strengthening existing tendencies towards a neoliberal, repressive, illiberal system of surveillance capitalism (Zuboff, 2019). Self-tracking is more or less pushed towards users by a neoliberal individualization of social responsibilities. In this paradigm, there is a strong emphasis of Foucauldian inspired concepts like biopower, governmentality, "technologies of the self" or a digital panopticon (Sanders, 2017). This paradigm is foregrounding the political dimension of self-tracking, with questions about exploitation, privacy issues, data ownership and how to engage in a more progressive way with the threatening tendencies of a digitalized life-world, managed and sustained by a few dominant companies (Ajana, 2017; Moore, 2018).

This research paradigm heavily criticizes the individualist idea of empowerment and optimization of the first paradigm and regards it rather as a symptomatic special control mechanism (French & Smith, 2013; Lupton 2014b, 2016). Stark (2020) talks about the "psycho-computational complex" in his analysis of mood trackers and the shaping of felt human sociality by institutional and commercial actors. Research in this paradigm critically accesses the notion of the neoliberally driven self-imposed obligation to become fitter, healthier or better as well as the inherent commodification of QS-tracking technologies (Ajana, 2017; Berg, 2017, Owen and Cribb, 2019). Utilizing the prosumer concept, the work developed by Charitsis (2016) and Charitsis et al. (2018) emphasizes from a (neo)marxist perspective the economic exploitation through the digital labour of data generation of the consumer ("prosuming self") and the ideological construction of the subject in such market conditions ("prosumed self").

c) Bugs & glitches

The first two paradigms share the assumption that self-tracking potentially works in the announced and intended way. When there are problems, they can and will be solved. Where they differ is the evaluation of the potential consequences. Where the first paradigm sees empowerment and optimization, the second one sees control and exploitation. However, the assumption of a theoretically working technology is not shared by all researchers. More recently the position emerged that technological perfection is a myth, and bugs and glitches are not the exception (which then can be eliminated) but should be seen as the normal and necessary reality when it comes to self-tracking. This refers to the conceptualization of data (see e.g. Kitchin 2014, who discusses the gaps, inconsistencies and errors in bigger data sets as a structural problem, not a method issue), as well as to the conceptualization of consumers and their relations with data. The paradigm is based on a dynamic understanding of the self and points to the co-work with other human and non-human actors, as well as to the "repair" work or the tinkering with technologies. Hence, building on conceptual frameworks which take into consideration that data often is messy, dirty or "broken", scholars point to the arrangement of humans and non-humans that are complicit in the care work of mending, avoiding or appropriating "brokenness" (Pink et al., 2018). Further conceptualizations can be found as "idiotic data" (Tironi & Valderrama, 2018) or "haunted data" (Blackman, 2019). "Data work" (Bossen et al., 2019; Kristensen et al., 2021) is a concept that refers to sense-making, analysing and making decisions based on data outputs. Rather than being "hooked", human actors are often selective, they can improvise and experiment with their frequency of use (Gorm & Shklovski, 2019) and they interpret, adapt and tinker with the technologies and data (Lomborg et al., 2018; Pink et al., 2017, 2018; Weiner et al., 2020).

d) System & focus

This paradigm shares the assumption of the "system & surveillance" approach to look into the wider arrangements of researchers, users, data, technologies and wider dynamic socio-economic arrangements. However, it does not start with the assumption of self-tracking as either positive, empowering and liberating or as disciplining and a threat to personal autonomy. It furthermore shares the assumption of the "*bugs & glitches*" approach to emphasize interactional and relational aspects of the "liveliness of data" (Ruppert et al., 2013, 29). This paradigm points to the mutual constitution and intertwining of data and the self (Bode & Kristensen, 2015; Kristensen & Ruckenstein, 2018; Mopas & & Huybregts, 2020). The background for this paradigmatical frame is based on STS, ANT and assemblage theories which enables to look into interacting economic, technological, social and cultural logics (Barad, 2003; Marcus & Erkan, 2006; Lupton, 2014a). This means moving beyond the argument that an algorithm or a technology has definitive agential capacities, within infrastructures or arrangements consisting of technologies and human actors (Barad, 2007; Lupton, 2019; Schwennesen, 2019). In this way the "system and focus" paradigm emphasizes in the analysis of self-tracking practices the dynamic and historically intertwined constellations of discourses, practices, meanings and materialities.

The paradigm does not take self-tracking as a symptom for a systemic situation. Rather, such approaches work in both ways: conceptualizing the self-tracking in a wider perspective to then go more narrow on specific elements in the wider arrangements. One main focal topic here is data sensing as a mutual constitution of self and data, which also highlights the close connections of such paradigm with new (feminist) materialism, posthumanism and postphenomonology (Barad, 2007; Bennett 2009). Further studies have developed that point with a focus on the embodied experiences and sensoriality of data (Fors et al., 2019), and how people respond emotionally to data (Ruckenstein, 2014)). The idea of the data double (Ruckenstein 2014), digital doppelgänger (Bode & Kristensen 2015), data shadow (Raley, 2013) or digital subject (Goriunova, 2019) has been used to analyse the complex interweaving of bodily self and data not as a final result of self-tracking activities, but as a relational actant in a performative process.

Going beyond

So far, we have focused on mapping the existing research, which is divided up into silos, with a lack of a) conceptual clarity internally and of b) integrating digital conceptual developments externally. The mapping intends to support improvements in the conceptualizations of the phenomena, by making differences and similarities more explicit to support internal discussions. This also includes mutual interactions in-between the different paradigmatic types. While there are different value assumptions, research on tinkering (in the "*bugs & glitches*" paradigm) can have an impact in the "*barriers & solutions*" paradigm for better design solutions. And research on data sensing (in the "*system & focus*" paradigm) can be used in the "*symptoms & surveillance*" paradigm to enrich work on potential cracks in hegemonic systems.

In this "going beyond" part we now look outside of the existing self-tracking research, where we see developments that could and should have a stronger resonance to further advance self-tracking research. First, there is a potential to build on the sensing data research in expanding the focus on the visual sense. While there is also the touch sense which invites further elaboration, we focus on the neglected sonic dimension: tracking can be seen, but it also listens and can be heard. Second, while we support the critical approach to tracking

practices, there is a narrow focus on symptomatic surveillance, while researched tracking practices itself are less reflected in a necessary critical perspective.

Going beyond seeing: the sounds of tracking

Self-tracking research has so far applied a narrow perspective on data and reproduced a Western ideology of a predominantly visual constitution of subjectivity and knowledge (Levin, 1993). Visualization is seen as "especially helpful in the context of self-tracking" (Kneidinger-Müller, 2018, 637) or categorized as a "core dimension of self-tracking" (Lomborg & Frandsen, 2016, 7). Typically, the visualization stage is one of the fixed practices of self-tracking. Especially the "*barriers & solutions*" paradigm is strongly focused on increasing engagement with tracking devices by new forms of data visualizations.

Lupton (2013) was early on mentioning the practical and theoretical privileging of visual representations of the user, and it was the research move towards sensing data, where the reality of a multimodal world was first addressed (Lupton & Maslen, 2018, 191). However, the full sensory dimension of self-tracking is still underdeveloped, with conceptual consequences.

First, there is a wide range of tracking activities based on sonic information and acoustic sensors like a smartphone microphone. As Berg (2017, 1) mentions, there are "unseen (sic) and neglected dimensions of our lives, bodies, and experiences" which tracking devices and strategies promise to "shed a light" on. What is tracked predefines the relevant epistemological areas of our existence and the elements to be optimized. Examples for sonic tracking are human noise for sleeping trackers or sexual and reproductive activities trackers; active tracking input by voice for speech-based food logging trackers or in health tracking the use of AI-assisted cough tracking in corona detection apps (Laguarta et al., 2020). One practical example is a research project by the University of Cambridge with their Covid 19 sounds app (https://www.covid-19-sounds.org/en/). There is a wider trend to use human sounds (especially speech) as important biomarkers in the biomedical literature, which has consequences of tracking sound for individual users and for medical authorities (Robin et al., 2020).

The existing sound sensor technologies are also having an impact on invisible, forced tracking practices. One example is Walmart, who has filed a sensor patent for tracking sounds of their employees in order to evaluate further performance metrics (Neville, 2020). These sonic tracking options are increasingly relevant due to voice-based human-machine interactions and virtual digital assistants like Siri, Alexa, Google Home, Cortana, Bixby, etc. (Norouzi et al., 2019). This integrates a permanent tracking in the domestic space and contributes to what sound studies researchers like Schulze (2019, 226) discuss as an emerging sensotechnoculture and sensologies: "ideologies of, in, and through the senses". This contributes to the "*symptoms & surveillance*" with a more specific sensory level to the Foucauldian concept of the panopticon and concepts like eavesmining and a sonic epistemology of surveillance (Neville, 2020).

Another aspect refers to the representational forms of data, here not in a visual but acoustic form, which is also known as sonification (Lenzi & Ciuccarelli, 2020). In the area of self-tracking, there are artistic, conceptual projects like the "singing bowl" by Barrass (2014), where a year of tracked blood pressure is printed into a 3D resonating steel construction to explore sonic metaphors and poetic, aesthetic interactions with tracked data. A more political, performative intervention is explored by Pitts et al. (2020) in their project "sonifying of the quantified self". It was actually the subjectivity of data interpretation, mistakes and

technical glitches which for them highlights "the absurdity and subjective undertow of any claim to total objectivity in the data or its digital representation" (Pitts et al., 2020, 12).

Further research questions would be for example: How can the phenomenon of self-tracking be widened to include a full multimodal representation of the world? What are the (social, individual and techno-cultural) consequences of changing emphasis in the senses involved in self-tracking (e.g. from seeing to hearing to touching)?

Going beyond surveillance: the politics of tracking

To acknowledge the politics of tracking, it is first necessary to expand on the core relation between data and the self by including the role of algorithms and automated systems. There is an abundance of literature with the human agent in centre – focusing on the voluntary acts and self-tracking practices by the human agents or self-tracking by patients in the medical system. However, tracking that is performed in an invisible or voluntary way by an automated system has not been enough addressed in the self-tracking literature. Examples are algorithmic profiling of users and user suggestions performed by Facebook, Amazon, Netflix, Spotify, which apart from a few exceptions (Ruckenstein & Granroth, 2020; Barassi, 2020) has not been addressed from the lives of the human beings that it affects on a daily basis. The root to this overlooked aspect might be due to the fact that the literature is split into two streams – one occupied with surveillance and control, another occupied with practices with a point of departure in "the human in the loop": who is the locus of decision, agency, control and ethics (Amoore 2020: 22). We here propose to integrate the two approaches, by also focusing on the experience of data and the effect of algorithms in areas that are outside voluntary actions, control and agency. A work that points in this direction is that of Barassi (2020) who connects Zuboff's work on surveillance capitalism and ethnographic work on everyday life, by attending to ways people respond to the datafication of their lives and how they reflect on the future of the data in everyday decisions. This integration then leads to further aspects of the politics of tracking with a new stream of literature within algorithmic culture and automated decision making that attend to ways that data practices are inscribed into notions of gender, class and race and whether and how algorithms reproduce or even produce new forms of inequality (e.g. D'Ignazio, C., & Klein 2020; O'Neil, 2016; Eubanks, 2018; Noble, 2018; DuFault & Schouten, 2020).

This leads to a last aspect of politicizing tracking, questioning the neglected practices, bodies and subjectivities in different political and cultural contexts: where are non-Western systems of self-tracking? Research on self-tracking almost exclusively originates from Western universities, practiced by Western researchers working with Western respondents. This has consequences, which can be discussed as: technologies should be adjusted for non-Western users. This discussion falls into the "*barriers & solution*" paradigm. An example is the cultural adaptation of smartwatches as assistive care technologies for elderly Arab persons (Al-Baity, 2018). The "*system & focus*" paradigm approaches the issue differently, starting with the assumption that technologies are not neutral tools but incorporate values, norms, tradition, experiences from the developers and programmers. However, the explicit acknowledgement of such assumptions in the form of contextualizations is rare (see as an exception Sysling, 2020, 104). More common is an implicit construction of a "we", that is in effect exclusive and conceptually flawed. Too often the "we" in self-tracking research is excluding a majority of people, their unique experiences and their special contexts and data practices in the global world. Exceptions are the self-tracking research in Jerusalem within a Palestinian community by Meneley (2019), or research within aboriginal communities by

Christie and Verran (2013). It should also be acknowledged that for a certain group of privileged people to be tracked and tracking can be an issue of privacy and individual rights, with the privilege to exit. For others, it might mean an essential form of legitimizing their existence.

The current research situation is lacking in political epistemological practices, as the normalized procedure in self-tracking research is to assume a shared exclusive club of "we", that can conceptually and experientially link to reflexive modernization, the neoliberal subject, fragmentation, individualization, etc. Non-Western contexts are not conceptualized as an alternative social imaginary (Gaonkar, 2001), but as "the other", as a contrast to "our" social imaginary in the contemporary West. However, outside of the global north there are different political, historical, cultural experiences and developments as well as a variety of non-Western knowledge products, that are systematically excluded in the current research literature. From such perspective, the idea of Western modernity is a mythological construction, underplaying inherent (neo)colonial and repressive dimensions (e.g. Bhambra, 2007). In this logic, to reach out to non-Western data tracking systems is not just an empirical question about research phenomena, but a political and epistemological question about researchers (see also Jafari et al., 2012).

We therefore argue that future self-tracking research should work in two ways to improve in terms of theoretical and political relevancy: research should look internally in improving the conceptual clarity to advance comparability and mutual discussions. Externally it means to link to recent developments in digital cultures and algorithmic studies. Finally, to broaden the view externally has important internal consequences: engaging in non-Western self-tracking practices requires to acknowledge non-Western modernities and subject constructions, and needs local knowledge authorities as research collaborators to critically reflect on the assumed "we" of the subject and object of research, as well as on the partial and politicized Western knowledge apparatus within researched practices are constructed.

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