DEPARTMENT OF SOCIAL SCIENCES
AND ECONOMICS

SAPIENZA
UNIVERSITÀ DI ROMA

PhD COURSE IN
APPLIED SOCIAL SCIENCES
WORKING PAPERS SERIES
n. 9/2020

Embodied knowledge across self-tracking practices. Rethinking body through the bio-knowledge

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Embodied knowledge across self-tracking practices. Rethinking body through the *bio-knowledge*[1]

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Our smartphones are becoming an entanglement of health-related apps. This ongoing paper tries to investigate how the smartphone carries the body into data flows that are embodied in self-tracking practices aimed to the self-knowledge. The theoretical-interpretative framework draws on the turn to practice, the embodiment and embodied knowledge; new relational materialism, with particular reference to the feminist onto-epistemology of Barad; and a sociomaterial perspective on the medical field as relates to self-tracking practices. We present the user's experience of a privileged witness in order to investigate how her Smartphone becomes a digital space by which body comes to matter. This empirical example tries to capture the process of embodiment by which the knowledge inscribed in the app is situated in everyday practices. The apps suggest a certain knowledge, that is reconfigured by humans using and/or not using some functions and options. This knowledge becomes a biomedical knowledge since it emerges across the tensions between the personal and tacit knowledge about how the biology of life works and, at the same time, the medical knowledge that is inscribed in the app. The paper is constructed around two concerns: (1) how the body learns "to be affected" through the material entanglements between humans and apps, and (2) how self-tracking technologies are engaged in the process of embodied knowledge.

INTRODUCTION

The use of digital technologies for monitoring movements, posting messages or following friends on social networks, rating restaurants, or an hotel, a film or a series, generates data tracks that offer new possibilities of visualizing and knowing behavioural characteristics. Particularly, digital technologies are even more used in order to self-track everyday practices and biometrics information, such as weight, calories intake, mood, body temperature, heart rate, blood glucose, etc. (Lupton, 2013-2016; Bianchieri et. al in Corbasiero and Ruspini, 2016; Maturo and Setiffi 2016; Pantzar and Ruckenstein 2015). Everyday practices and activities, as well as bodily functions, are transformed through these devices into data, developing statistical analyses and graphical representations.

Currently over 85.000 health-related apps are available in the health and fitness category of the Google play store and Apple store[2]. Health-related apps include medical apps, patient-centred, apps for disease management and self-diagnosis, and general fitness and wellbeing apps for lifestyle tracking.

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[2] https://www.statista.com/topics/2263/mhealth/

These technologies rise several questions. If, from one hand, they can contribute at the constitution of democratic spaces of non-formal learning (Benson and Harkavy, 2002; Starke-Meyerring and Wilson, 2008); from the other hand, they can be understood as neoliberal devices that shape "ideal citizens" responsible of their own wellbeing aimed at the constant self-improvement (Apple, Ball and Gandin, 2012; Lupton, 2016; Selwyn, 2013).

This paper is an ongoing work, aimed to extend the research of my first PhD year. The aim is to underscore how the digital is changing daily practices and activities, becoming a mediator in the process of thinking and learning about itself and others.

Digital is material itself as part of ongoing entanglements across a range of everyday activities and practices that combine diverse types of knowledge and capture our everyday spatiality. Here self-tracking practices help us to see the entanglements amongst things, people and data, and how these come back into new materiality ways embedded in the ongoing process of thinking about body and surroundings (Sumartojo et al. 2016). In particular, the current contribution presents an ongoing analysis about the use of the Smartphone as a digital space by which body *comes to matter* (Latour 2004).

This contribution draws on findings from a previous research about the use of apps for menstrual cycle management. Self-tracking apps for the menstrual cycle are intended to map and transform everyday symptoms, mood and body indicators into data – statistics and graphs – in order to visualise correlations and predict fertile moments, premenstrual syndrome and future menstrual phase (Lupton 2015). The finding researchers capture two forms of engagement along an imaginary continuum at whose opposite points we can find - on the one hand - minimal engagement with the knowledge *inscribed* in the app and - on the other - an affective engagement with the knowledge *suggested* by the app (Zampino, forthcoming). This continuum shows the overlapping intra-actions that perform embodied knowledge about how women fertility, subordinate to the various historical stereotypes, works.

The paper is constructed around two concerns: (1) how the body learns "to be affected" through the material entanglements between humans and apps, and (2) how self-tracking technologies are engaged in the process of embodied knowledge.

The article is organised as follows. The first section outlines the theoretical-interpretative framework of the related empirical research, drawing on the turn to practice, the embodiment and embodied knowledge (Gherardi 2018); new relational materialism, with particular reference to the feminist onto-epistemology of Barad (2003–2007); and a sociomaterial perspective on the medical field as relates to self-tracking practices (Lupton 2018). In the second section, the discussion of empirical findings draws attention to the forms by which the embodied knowledge is back through material engagements between humans and apps.

EMBODIMENT IN THE DIGITAL LIVES

Self-tracking practices are reconfiguring our experience of embodiment, our relationships and our meanings of body through the quantification of the self. Self-trackers experiment on their bodies through the emergence of 'personal analytics' practices that typically aim for self-knowledge (Pantzar and Ruckenstein 2015).

In this perspective, the body becomes an assemblage that can be scrutinized and separated into digital flows. The result is that flows exist into assemblages of heterogeneous elements. The elements that compose assemblages are multiple, comprised of social and material parts and processes. Self-tracking technologies standardizes these flows that can be surveilled and controlled

by subjects, transforming the body into digital information, that are mobile and comparable. The body is broken down in different settings through a series of 'data doubles', that circulate in "surveillant assemblages" (Haggerty and Ericson 2000). Surveillance has become a salient topic in the analysis of how self-tracking practices emerge as part of an ongoing process in which body is abstracted by subjects and controlled at the same time by governments and markets.

The use, online and offline, of digital technologies leaves traces of personal preferences, choices, habits and so on. These small data generated with and through digital technologies are often aggregated into big data and thus become commercially profitable for second and third parties. Some scholars have highlighted several important implications and issues concerning access to and control of small data (Kitchin and Dodge 2007; Kitchin and Dodge 2011; Kitchin 2014). Most designers and developers of apps are very unclear about how the data are gathered, analysed and then used in terms of becoming a kind of dataveillance to generate predictive health scores for users, as well as preferences and choices for shaping human behaviours (Boyd and Crawford 2012; Bossewitch and Sinnreich 2013; Kitchin 2014; Mann and Ferenbok 2013). The term 'dataveillance' is used to indicate the systematic employment of digital data to surveil and monitor the practices and activities of individuals or groups of people (van Dijck 2014). Thus, for example, a smartphone becomes an assemblage of personal information, algorithms, websites, platforms, manufactures and retailers, policymakers, software and hardware developers, etc. It is a black box that renders invisible the process of dataveillance by which the personal information gathered can easily be analysed and grouped into discrete categories (Lyon 2002).

When citizens voluntarily collect and share their personal data and evaluations of various aspects of their social life and urban environment, they contribute to various scientific research projects and policymaking. They become data gatherers from below with the emergence of a datafied space, that provides a set of possibilities for how and where things can (or cannot) materialise (Taylor 2016). Moreover, some choose to participate in scientific research projects, collecting data that is very important for scientists. These initiatives directly involve citizens who collect health indicators from their local environment, themselves or a combination of both. Cities and bodies become expanded laboratories in which citizen-scientists take on a crucial role for scientific and governmental organizations in the empirical phase of collecting observations and measurements for free (Coletta et al. 2018; Kitchin 2014).

The protagonist in this phenomenon is the body. A materialism perspective provides to see the body as flows of heterogeneous elements that are multiple, comprised of social and material parts and processes. As Latour (2004, 205) underlines, "to have a body *is to learn to be affected*, meaning 'effectuated', moved, put into motion by other entities, human or nonhuman" (original emphasis). The materiality is able to render the body sensitive to the differences of the world. The body is enacted in different ways, continually constructed through processes of incorporation and exclusion (Mol and Law 2004). Reciprocally, the body shapes how practices are done, and practices produce new responses performing the body in social and material ways (Lynch and Cohn 2016). This argument enables to open the discussion on the turn to practice that addresses the attention on embodiment and embodied knowing (Gherardi et al 2018). The concept of practice put forward a view of knowing situated in the intra-activity of social and material entanglements, in which the boundaries between body/mind are blurred and embedded in practices that are performed itself by the sociomateriality of the worlds.

This includes a reconceptualization of knowing and acting as embedded in sociomaterial inter-relations (Law 1992; Law and Mol 1995). From feminist materialist perspective, matter acts in assemblages in which human subjects are entangled with technologies as part of more-than-human worlds (Lupton 2018). Boundaries between humans and non-humans, Barad (2003) argues, are not

naturally given but historically co-constructed. The author proposes using the term 'intra-action' instead of 'interaction' in order to take into account the mutual constitution of humans and non-humans. This term is a way to reconsider the ability to act within the relationships and not outside of them. In this regard, she uses the form "agential realism" to keep attention on the process in which the agency of subjects and objects acts symmetrically in the production of social and material worlds. The body emerges in ongoing discursive-material practices: "'We' are not outside observers of the world. Nor are we simply located at particular places *in* the world; rather, we are part *of* the world in its ongoing intra-activity […] we know because 'we' are *of* the world" (Barad 2003, 29–30). Self-tracking technologies may be considered as objects of knowledge (Knorr-Cetina 1997) that are invested with expert and tacit knowledge related to idealised embodiment.

The aim is not to extend subjectivity to things. How Suchman (2008) emphasizes humans and non-humans are not necessarily constituted one another in the same way. Agency does not pre-exist separately, but "agency-and associated accountabilities-reside neither in us or nor in our artefacts, but in our intra-actions" (Suchman 2008, 8).

As at least a preliminary analysis, the contribution tries to note the intra-actions as bodily/materiality articulations, which perform different modalities of embodiment mediated by conventions and traditions. The term of "embodiment" enables to discuss how the dichotomies mind/body, nature/culture is blurred in the materiality of the bodies. Adopting Scheldeman's (2010, 145) definition of embodiment as "the way we live life 'embodied': with and through our bodies"", provides to see the embodiment as a process by which the lived body becomes a material-discursive phenomenon that comes to matter in the mutual constitution of entangled agencies.

Particularly, humans and apps work together in generating human-app assemblages (Lupton 2018), in which emerge knowledge as a doing, not only a mental activity, situated and enacted within and across humans and nonhumans.

THE "BIO" AND THE SELF-TRACKING TECHNOLOGIES

Health-related apps are part of the process of personalized medicine that aims to the development of self-management practices oriented to the constant self-improvement with the use of digital technologies.

Feminist Technoscience Studies tries to deconstruct the patriarchal character of the medical science, recovering the material dimension of the body in interconnection with other bodies and objects, which inscribe and prescribe masculine and feminine ways of acting. Digital self-tracking technologies prescribes a medical knowledge about the body never neutral. On the contrary, feminist scholars have highlighted how medical knowledge is based on the assumption of male physiology as normative, with the consequence that women's bodies and experiences are particularly susceptible to the medicalisation process (Bird et al. 2010).

The medicalisation is defined as the process by which aspects of life, previously outside the jurisdiction of medicine, comes to be delineated as medical problem. Particularly, some scholars try to integrate the sociology of health and science and technology studies by introducing the concept of biomedicalization as an extension of the medicalization's theory in order to emphasize the largely technoscientific changes in biomedicine (Clarke et al. 2010, 2009, 2003).

The *bio*medicalization process is situated in complex and multiple trajectories, performing heterogeneous assemblages in which the technologies intra-act with humans. The theoretical framework of medicalization underscores the social construction of the disease, emphasizing the accessibility of dominant sociocultural conceptualizations, as well as the active participation of

citizens in the different and interrelated practices that often affect the body at the macro, meso and micro level (Conrad 2005, 2007; Illich 1976). The term "bio" is used to declare the extension of medical jurisdiction not only to diseases or disorders, but to the concept of well-being which, understood in a holistic sense, is at the center of technoscientific transformations in computer sciences and biosciences, such as genomics, molecular biology and pharmacogenomics, as well as biotechnologies, nanotechnologies, and medical visualization technologies (Clarke et al. 2003). Using the term of biomedicalization means stressing the development of new forms of medical treatment, organization and care.

Digitalization opens new challenges for the sociological research. The material of digital technologies is nowadays interwoven in the production of social. Matter, otherwise understood as bodies, things, objects, spaces, places, is active in the "world's becoming" (Barad 2003). Health-related apps therefore may be considered as objects active in the production of agential capacities and affective forces and relational power.

The sociologist Deborah Lupton (2018), following the feminist materialism theoretical perspective, analyses as the apps come into relations with the humans producing *human-app-assemblages* in which the matter is active in the co-construction of bodies, meanings and languages. More generally, they are assemblages of human and non-human actors, which are the product of continuous translations and re-articulations (Law 2007; Latour 2005). Adopting this approach allows to involve the materiality in the analysis of social phenomena.

METHODOLOGY

The development of Web 3.0 - the 'intelligent Web' that uses semantics, natural language, data-mining and machine learning in order to provide a more productive and intuitive user experience - is intensifying the production of data on different aspects of everyday life. Some authors refer to this explosion of digital data as a 'data deluge' (Savage and Burrows 2007) that brought the opportunity to rethink everyday practices and routines in a datafication process by which human behaviours, emotions and social relations are recorded and converted into numbers (Roberts et al. 2016).

Particularly new materialism theory tends to progress from a set of questions that guide the analysis. There is no one method, but there are a series of principles that define method and empirical analysis as situated. Researchers acknowledge that their own experiential positions and interests make a series of "agential cut" contributing to choose what to research and how to present their arguments (Hultman et al. 2010). This follows the suggestion of Mazzei (2013) that the interview yields sociomaterialist insights that can be thought of as an assemblage in which participant voice "is produced in an enactment among researcher-data-participants-theory-analysis" (p. 739). Researchers become part of the entanglements, assemblages, dynamics of power «The key research inquiries that provide inspiration and impetus for new materialism empirical researchers include a focus on identifying what bodies can do, adopting an analytic that pays attention to the flows of affective forces, relational connections, and micropolitics which give vitality and power to assemblages» (Lupton 2018, p. 5).

As said previously, the research is ongoing. For this reason, we present the user's experience of Elena (invented name), 40 years old, as a privileged witness in order to investigate how her Smartphone becomes a digital space by which body *comes to matter*[3].

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[3] According to Gobo (2004), studying an emblematic case - theoretically oriented - is important to define criteria or features aimed to identify the principal proprieties of the analysis unit. Indeed, the emblematic case can be used to

Elena's interview is part of a previous research about the use of apps for menstrual cycle management (that counts a group of eighteen interviews); and in the next months the group of interviews will be enriched. The group of interviewees will be constructed in order to analyse how the body becomes material thorough the use of health-related-apps. The aim is to extend the analysis from self-tracking practices evidently genderized to the use of technologies that should be "neutral". The interviewees are recruited using an online survey structured in order to investigate what type of app are used, asking a contact if interested in doing an interview.

The semistructured interview, lasted one hour, was been conducted to reconstruct the role of the materiality in order to understand the subjectivity of the user's experience. The episode-interview was used to try investigating digital everyday activities and practices. This technique has the aim to ask the interviewee questions that lead them to tell concrete episodes and situations (Flick, 2000). For this reason, the first question was aimed to open the discussion on how the smartphone was used during the days. Moreover, the interviews were additionally enriched by using the app in real time in order to join the experience of use at the practice of use. The structure of the interviews was intended to examine four essential concerns: (1) the choice of applications; (2) the relationship between body and apps; (3) sharing data; and (4) privacy and developers.

The interview was audiotaped and professionally transcribed. The transcript was analysed drawing on the theoretical literature to identify the relational engagement and knowing embodied generate in the intra-actions between human and non-human actors. The following excerpts draw attention to how Elena embed the knowledge *inscribed* in the app through an affective engagement with the knowledge suggested by the app itself.

She uses the smartphone also with the scope to self-track her physical activity and calories burned, through the use of the FitBit - a wearable technology - and Yazio - a food tracking app. The interview has been analysed to investigate how the body is materialized into data flows embedded in self-tracking practices.

EMBODIED KNOWING IN DIGITAL SPACES

In this session, we illustrate how the smartphone carries the body into data flows that are embodied in practices aimed to the self-knowledge.

Elena is mother of two children. She went to the gym before having children. Now, she has not time, so she uses the smartphone to do work-out at home and try to follow a healthy diet. She follows a Facebook group who gathers people who wants sharing their experiences and discuss about wellbeing and home fitness. This Facebook group provides fitness motivation, becoming a community in which is possible to find support and advices about exercises or healthy diet. Here, we can find also story of life – success and/or failure – talking about familiar, social, individual factors.

Elena is a passive member, she reads the stories, discovers exercises and programs of work-out to do home fitness:

> Let me show… there is this section where you can find various YouTube links. You can follow the various fitness schedules directly on YouTube channels of personal trainers. For examples, I was thinking of following this schedule. She has 99 videos, and you make one a day for 99 days. So, you can put on your smartphone the tutorial and

following it. The video is very specific and explains every exercise for every single part of the body, for goals by level of intensity. There are work-out for doing home fitness, for running; there is anything, anything you need on YouTube…

She says that chooses the work-out based on her goals of the moment. It is interesting to note the interconnection between various platforms. Indeed, Facebook becomes a medium in the practices of lifestyle management and self-improvement endorsed by the app *Yazio*.

Yazio checks the calories, fat content, and other nutritional info of the food. Yazio counts the calories consumed and burned throughout the day, giving a picture of eating habits through the production of charts and statistics. Particularly, Yazio has a huge database of food, and it is possible add it if the food is not there. This food tracker app is designed to be easy to handle. The core of the track food app is the nutrition database, that shows the calories of what you eat during the day in order to find a way to conduct a healthy lifestyle, increase activity level, or lose weight.

Elena uses Yazio with the scope of tracking her eating habits, and during the use she has become more conscious of how many calories, carbohydrates and fats she consumes every day, with the aim to tweak along the way to a healthier lifestyle. She says:

> … I set a series of parameters. So, my goal is to lose weight. I would like to lose 500 grams in a week. So, every day I have this tot available of calories which they must be further distributed as follows… this is my typical day, I have 1469 calories available of which 161 gr of carbohydrates, 90 gr of proteins and 47 of fats. Then, I add what I'm eating in the app, which become a database of my diet. For example, this morning I have eaten 3 "gocciole". That calorie bombe! I add on, and he says you how many of these calories are carbohydrates, proteins and fats. Because the objective is clearly not only caloric but is also maintaining the proportion between the three main macronutrients in a certain way. This is the evolution of the diets today. You can't eat 1500 calories of only carbohydrates because you don't lose weight.

She understands the biochemistry of the body through the app and the support of the group Facebook. Elena reads books in order to enhance the knowledge suggested by the app, that is labelled with affective and human language. She categorizes the food with the Yazio's support regarding the "macrobiotic" and "macronutrient" that she needs to achieve her goals without, and often damaging, self-denial. Yazio teaches her to conduct a sustainable lifestyle:

> […] an important thing that I understood […] through Yazio, I have learned to reflect about issues of sustainability. What it wins in the long time is a lifestyle that is pleasant for you […] There is not one diet. There should be a healthy lifestyle with exceptions. There is the day when you would like to eat everything, and it's ok […]

However, she recognizes the risks associates with its possible uses. Indeed, Yazio can be connected to the FitBit. FitBit is a bracelet (wearable technology) that tracks activity, exercise, food, weight and sleep:

> I use FitBit just when I walk and when I train, because it's not so reliable. It tends to overestimate the caloric expenditure because it tends to make you enthusiastic about your achievement. So, it tells you "Wao! You are very good! Good job!" and so on […] However I need just a parameter of my training. I use it as one of the many parameters

[…] Indeed, the risk it is that you can use FitBit in order to burn the calories eaten and calculated by Yazio […] You can imagine how the combination of these technologies can be used by someone that have eating disorder […]

It is interesting to note that Elena find out the function to track her cycle through FitBit. She underscores as her hormonal changes have an impact on food and physical energy. She recounts:

[FitBit] enables you to record the symptoms, besides the beginning of the period. Obviously, this is a forecast. Then, you can adjust it if it does not match. You can record the flow, spotting and symptoms. Taking into account all information helped me a lot. Indeed, my cycle was so irregular before pregnancies, and I had the children very late. […] I am talking about a cycle that could skip also 6 months. Crazy! I had a lot of problems, and I was incapable of reading the symptoms of the premenstrual syndrome, that for all women is a wake-up call to say "Ah! Ok, then you'll see that next week…" And with the app, besides the fact that the period is more regular now, I learn to have a different acknowledgment about how my body works. Now I can read symptoms as linked to the menstruations. Maybe, I had symptoms, but they were so random that I didn't have a historian chronology. I learned from the app to understand my body and hormonal changes as regards to the cycle phases. […] The app helps me to manage the symptoms. So, if I have a lot of abdominal tension and I do work-out, I feels really good afterwards. Maybe it weighs more on me training, but it makes me feel better, because there is a production of endorphin and serotonin that act as relaxants.

The self-tracking technologies *suggests* knowledge that is reconfigured and embedded into everyday practices. Elena underlines how the knowledge *inscribed* in the app contributes to testing her food program, discovering practical suggestions for starting the personal journey towards a healthier lifestyle. Particularly, she is producing a diary of her diet transforming her lifestyle into data. The food is a parameter of wellness. The app contributes to quantify the wellness transforming into data the calories intake. In this sense, Elena learns to read the food through the materiality of the charts and statistics produced by the app, that is linked to other platforms as Facebook group and wearable technologies as FitBit. She uses the knowledge suggested by the app to categorise the food regarding the macronutrients; and this acknowledgement is important to set up her physical activity to achieve her goals following tutorial for home fitness on YouTube. Moreover, she tinkers with the apps and other digital devices and use them as an indicator in order to increase her knowledge through research on Internet or reading thematic books.

CONCLUSIONS

The empirical example of Elena shows how the body is enacted by digital data situated in sociomaterial practices of self-knowledge. Here body learns to be affected through the materiality of self-tracking technologies that performs different modalities of embodiment based on overlapping forms of engagement with the knowledge inscribed in the apps.
Analysing the materiality of the self-tracking practices enables us to put attention on the knowledge suggested by the different inscriptions designed from the developers. Self-tracking practices are situated in *bio*medical, engineering, lay and tacit knowledge(s) that *suggest* different modalities of thinking about their own body/mind. Elena tracks her eating habits with Yazio, does work-out

following training programs on YouTube, tracks calories burned and her hormonal changes through FitBit. Self-tracking practices emerge as part of social and material technologically mediated worlds in which knowledge emerges as a doing situated in intra-actions of humans and non-humans, objects and subjects, blurring the boundaries between body and mind.

Thus, we propose to look the process of embodiment, since the "body" and the "mind" are not dichotomized but entwined and situated in sociomaterial practices in which agency is relational and distributed among material and social entities. Particularly, self-tracking practices enact an embodied knowing, that is the effect of intra-actions between tacit and expert knowledge. Humans and apps work together achieving agency into human-app assemblages, where bodies learn to be affected across the materiality of the worlds (Lupton 2018; Latour 2004).

This interpretation is sustained by the use's experience of Elena, who learns to read her premenstrual syndrome in relation the phases of her cycle. This knowledge becomes a *bio*medical (Clarke et al. 2003, 2009) knowledge since it emerges across the tensions between the personal and tacit knowledge (Polanyi 1967) about how the biology of life works and, at the same time, the medical knowledge that is inscribed in the app. We can say the same for food tracking, a practice oriented to achieve the goals of wellbeing, where the body is the object and the subject of self-tracking practices. We learn to use the body to become sensitive to the world through practices by which doing and learning overlap (Gherardi 2009).

The Elena's story underlines how the engagement in the human-app assemblages is social and material together where the knowledge is situated and relational, embedded in the objects and in the subjects (Barad 2003; Law and Mol 1995; Knorr-Cetina 1997). This empirical example tries to capture the process of embodiment by which the knowledge inscribed in the app is situated in everyday practices, where emerge the relational agency between non-humans, *suggesting* a certain knowledge, and humans, using and/or *not* using some functions and options. Indeed, despite FitBit has the options to track the food, physical activity, the sleep etc., Elena uses Yazio to manage the food, and YouTube for creating her training schedule.

Regarding this point, it is interesting to note that our smartphones are becoming an entanglement of health-related apps. Adopting a biomedicalization prospective allow us to show how the medical jurisdiction is spreading to the concept of well-being, so to the *bio*, that is the issue of the principal technoscientific innovation in computer sciences and biosciences, such as genomics, molecular biology and pharmacogenomics, as well as biotechnologies, nanotechnologies, and medical visualization technologies (Clarke et al. 2003).

Self-tracking practices emerge as part of the entanglement of people and things (Sumartojo et al. 2016). Moreover, the body, acting in a more-than human world, can be surveilled and controlled by governments and healthcare (Kitchin and Dodge 2007; Mann and Ferenbok 2013). Analysing the engagement with the materiality can deepen our understanding of what happens when people as embodied beings act with technologies as inscribed knowledge, putting attention on the tensions that emerges from the encounter between several knowledge(s) and - often invisible - actors. This allows to see health-related apps as digital spaces, constantly reconfigured by the individual daily practices, from one hand, and, from the other, by the top-down forms of relational and affective power, interconnections and micropolitics, that influence and control behaviour patterns of citizens, transforming them in *bio*citizens.

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