

University of Tartu  
Department of Semiotics

Vedrana Nikolić

SELF TRACKING AS A MEANING-MAKING PRACTICE AND ITS  
ROLE IN THE SOCIAL CONSTRUCTION OF THE SELF

Master's Thesis

Supervisor: Ott Puumeister, PhD

Tartu

2021

## Table of Contents

<i>Introduction</i>	3
<i>1 Research Object and Material</i>	6
1.1. Wearable Technology and Self-Tracking .....	6
1.2 Quantified Self and Personal Science.....	11
1.3 Research Material.....	12
<i>2 Methodological Framework</i>	15
2.1 Discourse Analysis .....	15
2.2 Defining Discourse .....	16
2.3 Discourse and Construction .....	17
2.4 Rhetoric.....	19
2.5 Self, Narrative, Memory.....	20
2.6. Self-Description .....	23
<i>3 Analysis</i>	25
3.1 Data in Discourse .....	25
3.1.1 Concept of Data.....	26
3.1.2 Data and Meaning Making in Personal Experiments .....	29
3.2 Construction of Nature.....	34
3.2.1. Cultural Construction of the Mindfulness-Stress Dialectic .....	34
3.2.2. How Does One Quantify Mindfulness and Stress? .....	40
3.2.3 The Irrational Nature and the Noisy World .....	47
<i>Conclusion</i>	55
<i>References</i>	57
<i>Kokkuvõte</i>	62

## Introduction

The term “self-tracking” refers to practices that involve (conscious and purposeful) use of technology to collect and analyze data concerning various aspects of an individual’s daily life, including physical, mental, and emotional performance. Self-tracking (often also referred to as lifelogging or personal informatics) is a disparate set of practices, enabled by an ever-growing range of digital media in the form of wearable devices and software used for collection and analysis of data that allow individuals to track their own heart rate, number of steps, calorie intake, sleep phases, or essentially any other point of interest. Due to the rapid development and growth in popularity and applications in various contexts of hardware and software that allows for self-tracking practices, the phenomenon has attracted considerable attention of researchers in the recent years. Researchers in fields of health care and interaction design explore the potential applications, benefits, and potential for future development, while “the implications of self-tracking have been discussed under a critical-sociological lens in terms of surveillance, labor and loss of privacy” (Lomborg, Frandsen 2016: 1017).

Self-tracking is in essence a communicative practice and one where meaning is created through the interaction of individuals with technology, but this aspect has not yet been explored in detail. For example, Lomborg and Frandsen note that “we know very little about and have very few theoretical tools to grasp what is actually going on in the user’s practical engagement with concrete self-tracking technologies, the data they collect and the communicative networks and personal trajectories in which they are embedded” (Lomborg, Frandsen 2016: 1018). On a similar note, Deborah Lupton, one of the most prolific researchers of self-tracking in the field of sociology, notes that: “Further investigation is required of how these interactions [of human and nonhuman actors] operate and the ways in which people construct, make sense of and negotiate the data doubles that are generated by self-tracking assemblages” (Lupton 2014: 84).<sup>1</sup>

---

<sup>1</sup> The concept of data doubles was introduced by Haggerty and Ericson in the context of surveillance systems and used consequently to talk about self-tracking by Lupton (2014) and Ruckenstein (2014). However, I avoid using

The goal of this research is to answer these questions from the point of view of semiotics. Self-tracking is arguably a form of representation and one that is a part of a network of sign systems and communicative practices. Moreover, it involves representations that individuals use to make sense of and talk about themselves, hence a form of self-description. The first step in this quest is to understand what kind of communicative processes self-tracking involves. Furthermore, the product of tracking is always data, but what exactly is data<sup>2</sup>? How is it generated, by whom or what is it generated, what are its properties, and how does a human individual apply it to oneself? Answering these questions is crucial for understanding the data paradigm in relation to living human subjects. To explore the concrete and specific engagements with self-tracking technologies, I will focus on Quantified Self, a community of self-tracking enthusiasts founded in the USA but now reaching global popularity. The public presentations of members of this community of their own self-explorations with the help of technology will serve as a starting point. These presentations are published online and present a unique narrative combination of self-descriptions and descriptions of data practices combined with data visualizations. Hence, they appear as a good point of entrance for understanding personal meanings of data. The first set of questions will thus be concerned strictly with ‘data’: What role does quantitative data play in descriptions of the self? How is it used to create factual descriptions and construct narratives?

An important characteristic of self-tracking is that the practice is rarely used with the goal of simply recording the various points of interest – the knowledge gathered usually leads to interventions into the self and attempts at optimization. As such, the various self-tracking tactics appear as tools for enhancing and troubleshooting various aspects of everyday life in order to produce healthier, happier, more productive individuals and this is achieved by attempting to control the variables discovered through tracking. Self-tracking thus appears to

---

this concept as it further obscures the relationship between the point of view of the human individual and the data generated by ‘surveillant assemblages’.

<sup>2</sup> Although it is customary in academic publications to treat the word ‘data’ in English as a plural noun, I find that in the context of self-tracking and more broadly digital technologies the concept acquires a certain materiality that justifies treating the word as a collective singular. As explained by Rosenberg: In Latin, *data*, is always plural, but in English, even in the eighteenth century, common usage has allowed ‘data’ to function either as a plural or as a collective singular. [...] Indeed, it seems preferable in modern English to allow context to determine whether the term should be treated as a plural or as a collective singular, since the connotations are different. When referring to individual bits or varieties of data and contrasting them among one another, it may be sensible to favor the plural as in ‘these data are not all equally reliable’; whereas, when referring to data as one mass, it may be better to use the singular as in ‘this data is reliable’. (Rosenberg 2013: 19)

be concerned with externalizing and making visible the very reality of human nature where this externalization makes it possible for individuals to analyze and work on their own bodies, habits, and minds. However, taking that perception is always mediated and that signs do not relate directly to objects but that objects are rather constructed in discourse, it is possible to ask – how is human nature understood and constituted in the self-tracking discourse? Data and human nature, I will argue, are established in self-tracking discourse as two alternate versions of understanding reality, but they inevitably interact when the multiple signs are interpreted by individuals.

The first chapter of the thesis will briefly introduce the history of wearable technology used for self-tracking and provide an overview of the research object and materials. The second chapter discusses the theoretical and methodological basis for analysis. The first part of the analysis will deal with the role of data in the Quantified Self narratives and the various semiotic mechanisms involved in turning experience into data and data into something meaningful. The second part will deal more broadly with interpreting certain concepts and dominant topics dealt with self-tracking discourse.

## **1 Research Object and Material**

### **1.1. Wearable Technology and Self-Tracking**

Over the last decade, there has been a massive growth in the production and widespread acceptance of commercially produced wearable devices and software designed to track the individual. For example, a market research report from PricewaterhouseCoopers claims that in 2016, 49% of respondents in their survey owned at least one wearable device, compared to 21% in 2014 (PricewaterhouseCoopers 2016). In that sense, it is important to also see the practice of self-tracking in the context of the overall trends in the development of personal technology, involving the introduction of the smartphone (coincidentally also often tied to the year 2007 when the first iPhone was released), Web 2.0, and the “Internet of Things”. The most important characteristic of this technological revolution is the fact that everyday interaction with technology becomes a 2-way process: when individuals use electronic devices, the devices also gather information about the individual, in a sort of a dual feedback loop. This also involves technology entering the private sphere in ways hardly imaginable before, thus blurring and redefining the borders between the private and the public sphere. In the case of self-tracking, the use of biosensors allows technology to enter the physical body of an individual, in ways that go beyond our senses.

While the practice of self-tracking in the form in which it exists today is largely defined and enabled by contemporary forms of technology, it is not a phenomenon without history. Indeed, one could say that self-tracking is a special case of self-observation and a general human feature (and perhaps more than human). However, what I am interested in is not self-tracking as a general concept signifying an aspect of human or animal behavior, but the very specific conception of self-tracking that appears in contemporary cultural context. At the same time, one cannot deny that certain forms of self-tracking existed also historically. Self-tracking is often

talked about as enabled by novel technologies, but a large part of measurements performed is not revolutionary. For example, the heart rate can be measured without the help of biosensors (and the practice of feeling one's pulse has been around for a long time). We could also think of a body thermometer and various other measurement devices which are certainly not new. The technological devices and their affordances are perhaps not the most relevant aspect here. It is not technology in and of itself that defines the forms of self-tracking, it should rather be seen as a part and a product of the broader social and historical context which involves a very specific conception of health as well as a specific understanding of a human individual as a member of society.

In their book *Imagining Personal Data: Experiences of Self-Tracking*, Fors, Pink, Berg, and O'Dell (2019) try to situate the contemporary self-tracking practice in a historical context by comparing it to older forms of what they call "ubiquitous everyday body technologies" (Fors *et al.* 2019: 30). They chose the mirror, the weight scale, and the X-ray. According to them, all of these can be seen as technologies that changed the way human bodies are seen and imagined, and self-tracking could be seen as such a technology too. (Fors *et al.* 2019). The analogy with the weight scale, also noticed by Crawford, Lingel, and Karppi (2015), is especially interesting. Looking at how the weight scale became popular in the USA during the first half of the twentieth century and how it was advertised, they notice great similarity with the way wearable technology is advertised today: "Beyond the purely physical, a fundamental claim of wearable devices is that data will bestow self-knowledge: the kind of self-knowledge that will create a fitter, happier, more productive person. This is a seductive promise, but not at all a new one" (Crawford, Lingel, Karppi 2015: 480).

From the 1920s onward, the weight scale promised to reduce your weight and "tell the truth about your family's health" (Crawford, Lingel, Karppi 2015: 487). The same thing, almost verbatim, is promised today by Fitbit, Google Health, and myriad other digital solutions for monitoring the self. "The more you know, the better you feel", tells us the promotional material for the Apple's *Health App*<sup>3</sup> while the Fitbit claims to offer "the innovative features you need for a healthier life".<sup>4</sup> The rhetoric of "self-knowledge through numbers" does not seem to have changed much, only the tools are much more sophisticated. "Technologies of self-measurement

---

<sup>3</sup> <https://www.apple.com/ios/health/>, accessed 4.4.2021.

<sup>4</sup> <https://www.fitbit.com/global/eu/home>, accessed 4.4.2021.

rely on rhetorics of agency, where the act of purchasing a device promises a kind of empowerment and control,” conclude Crawford, Lingel and Karppi (2015: 489). As they have noted, such promises are often implied in the way fitness trackers and similar devices are advertised. It is easy to see that a smartwatch makes people healthier in the same way a weight scale makes someone lose weight – the actual work is always performed by the individual himself, all that the device does is provide measurement and information. Still, wearable devices are often framed as if they are, quite literally, tools for enhancement. For example, the PwC market report mentioned above found that “consumers agree that wearable technology helps us exercise smarter (88%), helps parents keep their children safe (87%), relieves stress (81%), and makes us more efficient at home (80%) and at work” (PricewaterhouseCoopers 2016: 5).

Of course, the idea of the weight scale as something which can make individuals look better and be healthier as well as the practice of weighing oneself first in public and then in the private space of one’s home did not emerge in a vacuum. It was part of a wider discourse of always more intensive focus on the self. Crawford, Lingel and Karppi notice that weighing oneself did not come to be seen as a necessary practice until the “Standard Table of Height and Weight for Men and Women”, compiled by Louis Dublin in 1908, started to accompany the penny scales of the time (2015: 483). Similarly, Fors *et al.* note that this was also the time when self-help books started to become commonplace, advocating all sorts of “new forms of self-actualization”, from dieting and fitness to psychoanalysis (2019: 60).

Considering all of the above, it does make sense to see the kind of quest for self-knowledge which is part of self-tracking as the continuation of the trends started with the weight scale. However, it is important to note that self-tracking isn’t always, and not only, about measuring the body. When one uses a device to count one’s steps, or measure one’s heart rate, or blood sugar, or brainwaves, or whatever it may be, what a technological device can do is only create and store information. How this information is interpreted and used is ultimately up to the individual and it has to do with how we construct the images and stories about ourselves. Moreover, although this aspect is most often talked about, self-tracking does not always have anything to do with physical fitness nor biosensors that measure the body in ever more precise ways. Among the stories of the members of the Quantified Self, there are many whose only tools are a clock and a simple spreadsheet. Often, what they look for is lost focus, productivity, or life satisfaction, and some of these self-knowledge quests do not relate to the body at all

(they do, instead, relate to habits). What is common to every self-quantification project is the idea that numbers and exact measurements hold the ultimate truth. Additionally, there is always an implication that this truth-mechanism of numbers should be used to discover the truth about oneself. All the new ways how a body can be turned into data are definitely worth exploring, but what interests me is how (and why) the individuals involved build stories with this data - stories for themselves and for the public. In that sense, it might be more worthwhile to focus on the life-logging aspect, rather than on the self-tracking aspect. The terms are used interchangeably to denote the same thing, but the term self-tracking invokes the aspect of measurement and quantification, and life-logging implies a log, a history of an individual – and it is in this light that wearable technology we have today was first imagined.

Before wearable technology became as commonplace as it is today, it was imagined by early promoters as part of a machine that will allow humans to remember everything. In 2009, Gordon Bell and Jim Gemmel published a book called *Total Recall: How the E-Memory Revolution Will Change Everything* (2009); later republished under the title *Your Life, uploaded. The digital way to better memory, health, and productivity* (2010). In the book, the two researchers working for Microsoft at the time, describe their life-logging project called MyLifeBits. The subject of the experiment was Gordon Bell and the goal was to “digitize as much of his life as possible”. In short, they recorded as many details from Bell’s life as possible to create a sort of external repository of his memories. In the book, they also predicted life-logging would be part of the everyday for most people by 2020:

I hate to lose my memories. I want Total Recall. This isn’t a pipe dream. I know that three streams of technology advancement—recording, storage, and sophisticated recall—have already launched the beginning of the Total Recall era. It is absolutely clear that by 2020 these streams of technology will have matured to give the complete Total Recall experience. (Bell and Gemmel 2010)

Bell was obviously fascinated with the idea of “Total Recall”. He was, of course, aware that “bio-memory” and “e-memory” (his terms) are not the same. However, he was deeply convinced that the way we remember things (at least in terms of semantic and episodic memory) is about to change. Throughout the book, a fascination with being able to remember things exactly as they are, instead of relying on “notoriously fallible human memory” is apparent.

At the time when he started the MyLifeBits project, Bell was approximately 65 years old. Here is how he describes the process of composing a toast for a friend’s birthday with the help of his newly constructed e-memory:

I entered Ivan's name into the search window in MyLifeBits, and to my surprise and relief, I immediately recalled emotionally evocative and intellectually intriguing details I had completely forgotten. (...) My biological memory had reduced my relationship with Ivan down to the humdrum, but my e-memory stepped in to restore the significance of our history, making it possible for me to compose a fitting toast for his birthday.

We all want better recall. (...) As people get older, they start to get paranoid about small memory lapses. When a forty-year-old misplaces his car keys, he feels annoyed. When a sixty-five-year-old loses the keys, he starts Googling about Alzheimer's disease. In his search he might read about another condition known as mild cognitive impairment, which afflicts as much as 5 percent of the population past the age of seventy. It's very real, and very scary. (Bell and Gemmel 2010)

Bell's age might make it more understandable why he was fascinated with the possibility of a machine helping him remember things. But what really happened with the 'life-logging prophecy' for 2020? Today, devices made for recording data are everywhere and widely available. Thanks to cloud computing, storage capacity of hard drives is no longer an issue. We seem to do quite well at gathering pieces of information and storing them somewhere. That part of the life-logging prophecy seems to have worked out quite well. But what about the part where we actually "recall" this information and make it useful for ourselves? Wearable technology promises to make us healthier, fitter, more efficient, and more productive. But does it? Have we hacked life and become superhuman yet? It might be too early to respond to such questions, but wearable technology today does not seem to be directed at recalling "emotionally evocative" details as Bell imagined. It rather seems to be quite effective at controlling the emotional-irrational side of ourselves.

The MyLifeBits project was centered around the idea of 'digitizing life', and this is the same model on which self-tracking is based. It relies on a tacit assumption that digital memory can serve as extension, a sort of prosthesis that makes up for the 'imperfections' of human memory – which is to say that this digitized life somehow remains a part of life, that the digital memory can (or could be) somehow externalized and fed back to the individual unchanged. This is an issue I will return to in chapter 3, but suffice it for now to conclude with a remark from José van Dijck about MyLifeBits that applies just as well to the forms of self-tracking that are the focus of this thesis: "MyLifeBits' design deftly reflects (and smartly caters to) two contemporary anxieties: the anxiety to manage one's life and the anxiety for amnesia. For an upscale western audience, managing data has become an attractive metaphor for controlling life" (Dijck 2005: 323).

## 1.2 Quantified Self and Personal Science

The cultural phenomenon of self-tracking is epitomized by the Quantified Self movement, a global community of “self-trackers” with the credo “self-knowledge through numbers”. The Quantified Self community was founded in 2007 by a couple of enthusiasts interested in what they now term “personal science”. In the words of the founder of the movement, Gary Wolf - “We tolerate the pathologies of quantification — a dry, abstract, mechanical type of knowledge — because the results are so powerful. Numbering things allows tests, comparisons, experiments. Numbers make problems less resonant emotionally but more tractable intellectually” (Wolf 2010). The motivations of users and degrees of engagement with self-tracking technologies vary greatly, but the goal always seems to be optimization and improving the quality of life through better knowledge of oneself.

An article published in the New York Times 2010 by the founder of the QS, Gary Wolf, titled “The Data-Driven Life” explained the logic behind the drive to quantify the ‘self’:

Humans make errors. We make errors of fact and errors of judgment. We have blind spots in our field of vision and gaps in our stream of attention. Sometimes we can’t even answer the simplest questions. Where was I last week at this time? How long have I had this pain in my knee? How much money do I typically spend in a day? These weaknesses put us at a disadvantage. We make decisions with partial information. We are forced to steer by guesswork. We go with our gut. That is, some of us do. Others use data. (Wolf 2010)

It is clear, at least for Wolf, what the purpose of self-tracking is. With technology, and with numbers, we can have objective knowledge and discover the truth. There is no more need for such things as intuition or “going with our gut” - if one gathers enough data, and analyzes it properly, that is.

Behind the allure of the quantified self is a guess that many of our problems come from simply lacking the instruments to understand who we are. Our memories are poor; we are subject to a range of biases; we can focus our attention on only one or two things at a time. We don’t have a pedometer in our feet, or a breathalyzer in our lungs, or a glucose monitor installed into our veins. We lack both the physical and the mental apparatus to take stock of ourselves. We need help from machines. (Wolf 2010)

For Wolf, it seems, the point of quantifying the self is overcoming all the imperfections of being human. QS is thus in line with the ideals of transhumanism, the movement which seeks to overcome the limitations of the human body through ‘applied reason’ and the use of new technologies to improve oneself (see More 2013). In QS, the process involves getting rid of the limitations our ‘poor memories’. By making our memory more exact, we can manage to take

control of our lives, including our bodies and our irrational emotions. These are the promises that have drawn more and more individuals to join the QS. The first meeting of the group was organized in October 2008 in Pacifica, California. In 2012, the Quantified Self Institute was formed at the Hanze University of Applied Sciences in Groningen, thus popularizing the movement in Europe. Over the years, QS ‘meetups’ were organized on a regular basis, the number of interested individuals grew, and in 2019 there were 110 meetings in 30 countries (Wolf and de Groot 2020: 1).

### 1.3 Research Material

The primary research material I will analyze are the presentations of personal self-tracking projects of the members of the Quantified Self community. These presentations were given at various QS meetups and conferences between 2008 and 2018. Many of these first-person accounts have been recorded and/or transcribed to create a public archive of the QS community (available on their website under the rubric “Show & Tell”). 385 of those have been published online (Wolf and de Groot 2020: 2). The majority of these entries include a video recording, a transcript, and a copy of the presentation slides that were used during the talk. Most of these talks were given at gatherings in front of an audience; but a couple of newer examples are recordings of online talks. Usually, the audience is not shown, although it is indicated that some kind of discussion might follow later. The recordings are between 6 and 10 minutes long, and feature accounts on various topics. They are guided by three questions: “What did you do? How did you do it? What did you learn?”

Gary Wolf summarizes what is expected of the speakers in a post on the QS website:

We like scientific theories, demos of tools and apps, and philosophical speculation. But in the context of a Quantified Self Show&Tell they distract unless they are grounded in actual attempts at self-tracking and self-experiment. When theory or demonstrations are embedded in an account of personal experience, however, they work great. Tell us what you’ve done, how you did it, and what it means to you, before making the leap to speculative assertions or entrepreneurial self-praise.<sup>5</sup>

---

<sup>5</sup> <https://quantifiedself.com/blog/our-three-prime-questions/>, accessed 4.4.2021.

An unwritten rule is that the presentations always include visualizations of quantitative data one has gathered. This involves various measurements tracked over time and their correlation. These include measurements of physical processes in the body of various complexity, from step count and heart rate to “stress levels”, as well as data about habits, moods, food intake, or anything else the participants find significant. Members of the QS are today technology developers and hobbyists and quantification enthusiasts alike, but the format of the Show & Tell talk entices everyone to focus on personal meanings of data which makes them especially interesting.

From these recordings 33 were randomly chosen as a representative sample for deeper analysis. The main themes in each talk will be identified and the content analyzed in search for patterns and variations. The main focus will be on how the narrators relate to data, and how they use it in their accounts. What I want to see is how spoken word and visualizations of data interact in the process of telling a story.

For better understanding and contextualization will be used other materials published on the QS website. These include blog posts with descriptions of personal experiments; methods and techniques on self-tracking; directions on how to participate in the communities; summaries and reports from conferences and meetups; and also commentaries and opinion pieces by prominent members of QS. While the “Show & Tell” talks in QS show us each person’s individual quest for knowledge, these other texts act as a guide for understanding and thinking about self-tracking. While they might not necessarily reflect the opinions of every member of QS, these written materials provide meta-discourse on issues such as the value of data and data ownership as well as ‘personal informatics’ and ‘personal science’.

These talks are were chosen as an interesting research object because they feature a unique combination of telling an autobiographical story and correlating it with data collected on the self. Self-tracking and various forms of intimate relationships with technology are widespread today, but how individuals make sense of these relationships is a difficult topic to access, since it concerns private areas of life. At least from my observation of people in my surroundings, people tend to participate in these kinds of practices; and quantification is almost always a feature of life online; but this is not something that is often discussed at length in everyday discourse. These presentations are naturally occurring examples (in the sense that the researcher is not involved) of how people make sense of personal data, and how it works in discourse. Based on these videos as a starting point, I try to make connections with broader public

discourse about health and self-tracking with the goal of providing a better understanding of the meanings and the cultural logic that underly 'personal informatics'.

## 2 Methodological Framework

### 2.1 Discourse Analysis

The approach to be used in this thesis will be discourse analysis. Discourse analysis (henceforth DA), however, is anything but a straightforward method. The history of the approach is beyond the scope of this thesis, but perhaps it is sufficient to say that discourse analysis (and critical discourse analysis)<sup>6</sup> has been called a “contested disciplinary terrain” (Potter 2009: 608) or a ‘shared perspective’ (Wodak 2001) due to multiplicity of influences as well as different theories and approaches collected under the name. Potter notes that “In the mid-1980s it was possible to find different books called ‘Discourse Analysis’ with almost no overlap in subject matter; the situation at the start of the 2000s is, if anything, even more fragmented” (Potter 2009: 607); and what counts as discourse hasn’t gotten any less diverse today. However, of course, there are some common characteristics: a focus on discourse as part of social practices, the relevance of context, and a pervasive interest in the relation of language and power.

What is meant by method is usually a procedure to be followed, but discourse analysis fails to offer any such help to a student. For example, Norman Fairclough starts his introduction to “Critical discourse analysis as a method in social scientific research” with a peculiar warning:

I should declare at once that I have certain reservations about the concept of ‘method’. It can too easily be taken as a sort of ‘transferable skill’ if one understands ‘method’ to be a technique, a tool in a box of tools, which can be resorted to when needed and then returned to the box. CDA is in my view as much theory as method - or rather, a theoretical perspective on language and, more generally semiosis [...] as one element or ‘moment’ of the material social process, which gives rise to ways of analysing language or semiosis within broader analyses of the social process. (Fairclough 2001: 122)

---

<sup>6</sup> I use terms ‘discourse analysis’ and ‘critical discourse analysis’ rather interchangeably here. This is because I have referred to sources that introduce both discourse analysis and critical discourse analysis, but it should be clear from what follows that I understand discourse as inseparable from context and power relations, therefore an analysis of discourse inevitably involves critique.

This is in part due to the nature of questions asked in DA which often need interpretative answers that cannot be justified by following a procedure. In this paper, I will take a pragmatic approach to method, combining concepts from DA and cultural semiotics that seem to open areas for analysis in relation to the chosen object. I will follow the basic position of discourse analysis which takes that object in the world as well as the human self as it is understood by members of society are constructed through discourse, paying special attention to descriptive language and the way dominant descriptions of reality are established.

## 2.2 Defining Discourse

The main focus of this thesis will be how quantitative data figures in the discourse of the members of QS. Since the main research object is discourse, it is necessary to define what is meant by the concept, and there are many possible ways to define discourse. “The simplest way to answer is to say that the study of discourse is the study of language in use. (...) Another relatively straightforward response is to say that the study of discourse is the study of human meaning-making”, notes Margaret Wetherell (2001: 3). In a similar way, Potter defines discourse as “talk and text as part of social practices” (Potter 1996; 2004). Defining discourse as talk or language in use narrows down the notion to the domain of speech. On the other hand, defining the object of research as human meaning-making might be so wide that it doesn’t clearly define the object of analysis.

Since my approach is inspired by the theory Michel Foucault, and especially his conception of power, it is worth considering how he defined discourse. Foucault’s notion of discourse was focused on the linguistic domain. For him discourse is “an historical system of statements and the relations between these statements that is constituted as providing or establishing a certain type of knowledge” (Puumeister 2016: 125). When Foucault became more interested in forms of power (rather than just the limits of knowledge), however, he introduced the concept of *dispositif* in order to make the unsaid, the beyond discourse, included in the object of analysis. “What we now have to turn to is the unsaid: the relations between heterogenous elements that cannot be reduced to discursive statements” (Puumeister 2016: 126). Foucault defines the *dispositif* as:

Firstly, a thoroughly heterogenous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, moral and philanthropic propositions — in short, the said as much as the unsaid. Such are the elements of the apparatus. The apparatus itself is the system of relations that can be established between these heterogeneous elements. (Foucault 1980: 194)

Moreover, according to him “the apparatus is thus always inscribed into a play of power, but it is also always linked to certain limits of knowledge that arise from it and, to an equal degree, condition it” (Foucault 1980: 196).

For the sake of my study; though; I consider it sufficient to define discourse as “language in use”, or more specifically language used to speak about an object in a particular manner, as it is precisely language in use that is the object of my research. Defining discourse in this way makes the research object more specific and therefore analyzable than referring to the definition provided by Foucault. However, since I am concerned with language in use, language as means of social interaction; and not language in itself, it is impossible to separate it from context and meaning-making in general. In that sense I am interested as well in the ‘beyond discourse’; in the historical context that leads to the appearance of a specific discourse, the technology that enables it, as well as social practices it is embedded in. In conclusion, this summary of what (Foucauldian) discourse is from Stuart Hall seems appropriate: “Discourse is about the production of knowledge through language. But, since all social practices entail meaning, and meanings shape and influence what we do - our conduct - all practices have a discursive aspect” (Hall 2001: 72).

### **2.3 Discourse and Construction**

An important feature of DA is the position of social constructionism. As opposed to realism, where language simply relates to objects, in constructionism language (or discourse) brings into existence the representations talked about. “The ‘constructionist’ approach sees meaning neither in the control of the producer nor the thing being represented; instead, it identifies the thoroughly social nature of the construction of meaning, the fact that representational systems, rather than their users and objects, allow meaning to occur”, explains Cobley (2014: 3). In this way, language is constitutive of social life. This, of course, is not the same as claiming there is

no physical reality outside discourse, but it is through discourse that meaning is constituted; and thus, the world, as understood by humans, is constructed through discourse.

In the book *Representing reality: Discourse, Rhetoric and Social Construction*, Potter proposes a detailed scheme for studying how the construction of meaning works in practice which I believe will be helpful for understanding the discourse of QS. Potter claims that “discourse analysis works with two levels of discourse construction. The first level concerns the way discourse is constructed out of words, idioms, rhetorical devices and so on. The second level concerns the ways discourse constructs and stabilizes versions of the world” (Potter 2009: 610). According to him, “the way versions are constructed and stabilized as independent of the speaker is treated as an analysable feature of the production of discourse.” (Potter 2009: 610)

Potter builds the main argument of his book in relation to this two-fold orientation of discourse assuming “that all descriptions have a double orientation: action orientation and epistemological orientation”:

On the one hand, a description will be orientated to action. That is, it will be used to accomplish an action, and it can be analysed to see how it is constructed so as to accomplish that action. On the other, a description will build its own status as a factual version. For the most part, the concern is to produce descriptions which will be treated as mere descriptions, reports which tell it how it is. (Potter 1996: 108)

By creating this division, he draws attention not only to the idea that discourse is always part of social practices (action orientation), but also, that constructing reality is, in a sense, a form of practice, or at least a feature of discourse. It is one thing to say reality is socially constructed, and another completely to ask how exactly it is constructed. For Potter, the epistemological orientation of accounts is “itself a form of action; it is something built by speakers or writers - although it does not assume that this building is necessarily, even often, conscious or strategic” (Potter 1996: 18). Potter talks here about descriptive and factual discourse, but it could be argued that epistemological orientation is a feature of discourse in general. In any case, the QS talks I will analyze consist largely of descriptions of reality which is why it appears useful to attempt to apply this concept in analysis.

## 2.4 Rhetoric

Following the work of Michael Billig, Potter claims that “rhetoric should not be confined to obviously argumentative or explicitly persuasive communication. Rather, rhetoric should be seen as a pervasive feature of the way people interact and arrive at understanding” (Potter 1996: 153). As such, rhetoric is not the same as persuasion, “but a feature of antagonistic relationship between versions: how a description counters an alternative description, and how it is organized, in turn, to resist being countered” (Potter 1996: 108). This is based on the assumption that multiple accounts describing the same objects or events have the potential to be equally literal or objective - the question is how one account comes to be more effective than another. To describe the relationship between different possible descriptions of reality, Potter ascribes to factual accounts the powers of reification and ironization. According to him, “The process of fact construction is one of attempting to reify descriptions as solid or literal. The opposite process is one of attempting to ironize descriptions as partial, interested, or defective in some ways. Often, of course, these things are combined as one version is established at the expense of another” (Potter 1996: 112).

An important feature of QS talks is that they often include, at least implicitly, two contrasting versions, two accounts of the state of the self. One is arrived at intuitively, while the other one is provided by measurement, technology, and ‘personal science’. The second account, without a doubt, is taken as more factual - but how it comes to be seen as such seems like a relevant question to ask.

For example, Kouris Kalligas explains the results of his mood-tracking project in this way:

“So what did I learn, the most important question. I’m a happy person. When I think of myself and self-reflect, I see myself as more grumpy than I am. (...) And so it was nice to see that I actually feel joyful most of the time.”<sup>7</sup>

It is easy to see that the definition of a happy person as one “feeling joyful most of the time” (therefore 51% happy = happy person) is being reified as a reasonable and unquestionable description; while the alternative claim “I see myself as grumpy” is simultaneously ironized.

---

<sup>7</sup> Kouris Kalligas, “Re-Living My Life with Mood Tracking”, <https://quantifiedself.com/blog/mood-tracking-by-kouris-kalligas/>, accessed 7.4.2021.

An important consequence of treating the construction of reality as a sort of a competition between versions is paying attention to what is not said and also what is implicitly or explicitly constructed as erroneous; or simply not factual. This is, again, in line with Foucault-inspired discourse analysis (although Potter refuses to talk about power relations):

Discourse, Foucault argues, constructs the topic. It defines and produces the objects of our knowledge. It governs the way that a topic can be meaningfully talked about and reasoned about. It also influences how ideas are put into practice and used to regulate the conduct of others. Just as a discourse ‘rules in’ certain ways of talking about a topic, defining an acceptable and intelligible way to talk, write, or conduct oneself, so also, by definition, it ‘rules out’, limits and restricts other ways of talking, of conducting ourselves in relation to the topic or constructing knowledge about it. (Hall 2001: 72)

Discourse of self-tracking actively constructs human memory as defective, human nature as something to be worked on, and at the same time establishes the reality of numbers to be the unquestionable answer. “Numbers don’t lie” means this version is reified but any other judgements and feelings are automatically ironized since self-tracking has the power to override them (and this is simply reasonable).

## **2.5 Self, Narrative, Memory**

What is meant by ‘self’ in Quantified Self? Inside the organization, it simply implies that the individual is always the subject and the narrator of their own experiment. However, the result of this process are autobiographical narratives which I believe are interesting objects for cultural analysis. I view these narratives as stories “by which we make ourselves intelligible within the social world” (Gergen 2001: 247). In that sense, narrative is central to the performance of identity. Therefore, my object of analysis is the self as constructed in discourse and made intelligible to other members of society. With this, I do not wish to make any claims about the nature of the human self, rather I am interested in the way persons individuate themselves in discourse in relation to quantifiable data.

But, again, how can these self-narratives be approached from the perspective described above? First of all, a feature of factual descriptions mentioned before also applies to narrative - that is that a selection of what will be said and what will inevitably be left out is always made. For example, Cobley notes that “the act of selecting what is depicted [...] is also crucial in the

process of narrative and provides a demonstration of a general fact about representation: that representation allows some things to be depicted and not others” (Cobley 2014: 6). Autobiographical narratives told in QS are stories about the reality of the self, and they tend to present themselves as objective. However, the process of constructing a narrative is necessarily a creative act – choices need to be made of where to start, where to finish, what will be placed next to what, how the events will be connected and so on. In QS, this same the same process is performed in two ways. On one hand, such selections are made regarding quantification and measurement. An individual must first choose what to measure (as the number of things that can be measured is theoretically infinite); after this comes the stage of doing something with this data – making correlations and creating visual representations; in the final stage this data is shared in some way where it becomes a part of a coherent narrative structure. Choices made by individuals are present every step of the way; but the level of intentionality and purposefulness of these choices varies - sometimes the apps are used that provide ready-made results; but sometimes the individual performs the work with data.

However, these choices are not free in the sense that they are random or even voluntary, what is meant by choosing is simply that humans participate actively through acts of communication in the construction of their own stories and realities. While in self tracking the individual appears to construct his own story, the ‘rules’ for constructing the story are already predetermined in discourse. The construction of a datafied self is a way of turning the human being into a subject. Through the relation with quantified data, the individual conceives of himself as a member of society. This is why self-tracking should be understood in the context of neoliberal strategies of subjectification where the individual conceives of himself in terms of human capital compelled to constantly perform cost-benefit analysis of the self as an enterprise (Foucault 2008, Read 2009).

The process of self-tracking is the process of recording and interpreting data; and it can be seen as remembering. The way memory and self-narratives are connected is perhaps best explained by T. Sebeok when talking about the semiotic self:

Memory in "man, proud man" makes up, as it were, a multisensory private documentary archive, severally composed of nonverbal signs with a verbal overlay. It is the *articulatio secunda*, or the syntactic aspect of language, which provides the machinery whereby memory organizes, continually remodels as a child playing with a tinkertoy, and finally imposes a coherent and personal narrative schema upon each of us. Since writing tends to conserve the semiotic self far beyond any oral tradition, literate peoples have invented the diary or intimate journal (and, later, the family photo album, home movies, and comparable technological accoutrements) to delineate for themselves, in the form of supplementary *aides-mémoire*,

a kind of dramatic "I" to furnish, in Peirce's memorable phrase (MS 318-355, 1907), their "theater of consciousness". (Sebeok 1991:42)

This kind of perspective on memory and self implies two important points that relate to QS narratives. First of all, Sebeok accentuates the active process of remembering that leads to a 'personal narrative schema'. Second, it points to various elements that are involved in the process of remembering and creating a personal narrative. In self-tracking, quantitative data becomes part of this 'private documentary archive', so we can see quantitative data as nonverbal signs that are made sense of in the narrative with 'verbal overlay'. The nonverbal part also, of course, involves sensory experiences that are then given meaning and made intelligible to other members of society through self-narratives. In 'quantified' narratives, an interplay of data and sensory experiences is at work in constructing a story.

The idea of viewing self-tracking as a part of the process of remembering is inspired by the work of Jose van Dijck. She argues for examining "personal memory as a cultural phenomenon that encompasses both the activities and products of remembering" (Dijck 2004: 262). For van Dijck, personal memories are interesting as objects of cultural analysis because "both memory and media constitute intermediaries between individual and society" (2004: 261). The point is that both the activity and final products of remembering are influenced at first by narrative forms as well as tools that are available in a given culture. Tools we use to create and store memory products, be it a written diary, a photo album, or in the context of Quantified Self, measurement devices and data visualizations, all influence the way we create personal memories and give form to the products of memory. The tools we use to create and store memories have an active role in the process of remembering, and these tools that we usually take for granted are already a part of culture – and influenced by discourse.

The tools and forms for collecting, storing, and sharing memories have changed over time - from a shoebox to a digital collection, from a diary to a blog, from a physical photo album to a social media account... In any case, all of these involved what is essentially a cultural practice of recording pieces of our daily lives, and what is seen as worthy of saving depends on cultural context. In that sense, memory is always mediated. Seen in this way, the activity of creating personal memories becomes a space where it is possible to see the interplay of human and technology, and the individual and society.

In short, by doing a self-experiment and telling a story about the process, one creates a narrative where one defines one's past, present and future, the orientation of the individual in

time and in the social world. This narrative takes the form of personal memory that delineates the semiotic self of individuals and furnishes the ‘theaters of consciousness’ to refer back to Sebeok. And if we take the way those memories are created is influenced and structured by the forms of knowledge available as well as the affordances of the technological devices used in the process then the creation of personal memories becomes the exact point where the dominant discourse becomes involved in the social construction of the self.

Based on this, we can ask what is it that compels the QS members to use such tools as measurement techniques and data visualisations to talk about themselves; and what are the consequences of choosing this way of talking about and making sense of the self. What kind of effect does quantification have on the way an individual talks about his own past, present, and future?

## 2.6. Self-Description

Another way to approach the issue of self-quantification is by using the conceptual framework of semiotics of culture as developed in the Tartu-Moscow school of semiotics. From this point of view, culture is understood as a hierarchy of different cultural languages, the object of study being the correlation between them (Uspenskij *et al.* 1973: 1). The Lotmanian conception of culture makes it possible to gain a new perspective and a deeper understanding the role of the language of description in culture.:

The most universal feature of human cultures is the need for self-description. Every culture has its own specific means for it, its languages of description. Languages of description facilitate cultural communication, perpetuate cultural experience, and model cultural memory” [...] Consequently, every culture can be described as a hierarchy of object languages and descriptive languages. There are certain languages of culture that can serve the function of both object language and metalanguage from the point of view of everyday cultural experience. (Salupere, Torop 2013: 25)

The topic of this thesis is self-tracking where data is used for better understanding of the self – data here being understood as information coded in a standardized numerical code. As such, ‘data’ can be seen as a specific language for the description of the self (simultaneously also used to describe seemingly all aspects of reality), and hence viewing it as a language of cultural self-description seems appropriate.

In my opinion, semiotics of culture is compatible with discourse analysis, especially if we define discourse as 'language in use'. Discourse thus refers to the totality of actual human interactions and semiotics of culture provides a model and metalanguage to talk about culture on metalevel – the structure of the system that shapes discourse

### **3 Analysis**

As stated in the introduction, the primary aim of this research is to explore the role of data in the construction of self-descriptions of individuals through the practice of self-tracking. To this end, the first part of analysis will explore the meaning of the concept of data and the way it functions in personal experiments in QS. The second goal is to explore how human nature is understood and constituted in the self-tracking discourse. This will be done in the second part of this chapter by focusing on one of the many aspects of the self that self-trackers seek to quantify - stress, coupled with mindfulness as a dominant technique for controlling it.

#### **3.1 Data in Discourse**

In this section, I try to, first of all, explore the meanings and connotations of the term 'data'. What is (or are) data in the context of self-tracking? I will try to explicate the meaning of the term in contemporary use as well as to better understand the object that is referred to by the word 'data'. The second section will try to make explicit the role of data in constructing self-narratives and self-representations, specifically on the example of QS talks. The second question is: how is human nature understood and constituted in the self-tracking discourse?

### 3.1.1 Concept of Data

“At first glance data are apparently before the fact: they are the starting point for what we know, who we are, and how we communicate. This shared sense of starting with data often leads to an unnoticed assumption that data are transparent, that information is self-evident, the fundamental stuff of truth itself.” (Gitelman, Jackson 2013: 2)

The concept of data is, of course, itself historical. The emergence of the term can be tied to a specific historical context. Not only this, but the object that is referred to with the term ‘data’ has changed over time and only recently acquired its current meaning. This is inevitably due to the changing social practices that use the object that is data. Nikolas Rose sees statistics emerging as “one of the key modalities for the production of knowledge necessary to govern” (Rose 1991: 675) starting from the eighteenth century. While examining the emergence of the term ‘data’ in English, Rosenberg locates a shift in the meaning in the same period (Rosenberg 2013: 33) Data comes from the Latin verb *dare* (Rosenberg 2013: 18), implying something given, but the nature of this given has definitely changed over time:

“At the beginning of the [eighteenth] century, “data” was especially used to refer either to principles accepted as a basis of argument or to facts gleaned from scripture that were unavailable to questioning. By the end of the century, the term was most commonly used to refer to facts in evidence determined by experiment, experience, or collection.” (Rosenberg 2013: 33)

From the eighteenth century until today, the term ‘data’ acquired a range of new connotations, but it seems to have kept something of both of these original meanings. In vernacular discourse, data seems to signify something ‘given’, something that comes before any sort of questioning on one hand, and on the other hand it is something that is arrived at via scientific method or something that can be collected. During the twentieth century the word data also acquired a connection with computers and digital technologies. As such it can refer to any sort of information that can be stored on and used by a computer. There are here at least three connotations of the word data that are not identical, but they seem to all be invoked when one uses the word ‘data’. This obscurity is what gives power to the concept – data is difficult to define but at the same time it appears in everyday discourse as something almost palpable, as real and ontologically stable as a rock. We live in an era of big data, what was once statistics is now data science, we can talk about raw data (Gitelman 2013), data mining, data extraction, which is only logical if there is a data economy.

An important moment in the evolution of the meaning of data is that in 21<sup>st</sup> century it became something that can be extracted from individuals, and along with that a resource with value. This, in turn, started discussion of data ownership, discussions that could hardly be imaginable without the contemporary discourse on ‘big data’. In the earlier days of the internet, what might have been thought of as personal data was personal information of value which could be abused such as a credit card number. The imaginations of privacy and potential theft of data cantered on these topics. In the meantime, personal data become behavioural data extracted through surveillance practices with complicated relations to consent. From the point of view of an average individual, having data gathered on oneself became painless and without immediate consequences. What this data is, how it looks like, and how exactly it turns into something of economic value might be unclear, but an idea arises that individuals ought to have rights to their own data.

The problems of data ownership permeate all areas of life where ‘data’ is present, but owning personal data seems to be especially powerful in the context of healthcare. Fiore-Gartland and Neff (2016) describe, on the example of the personal genomic platform 23andMe how “putting medical information, data, and technology in the hands of laypeople, not healthcare workers” (Fiore-Gartland, Neff 2016: 108) is represented as democratization of power and access to healthcare:

“In the consumer narrative of democratization in health, individuals’ access to information and tools of digital production empowers them to act in the service of their own health and wellness and to challenge and evaluate expert knowledge. In the process this access is predicted to disrupt the status quo configurations of institutional power.” (Gartland and Neff 2016: 108)

The discourse on democratization of health<sup>8</sup> effectively turns patients into consumers, and, more importantly, access to data is equated to access to knowledge and healthcare. In the words of Gartland and Neff, “discourses discount the multiple intermediaries that data need and the work that is required for data to be meaningful in different settings.”

This kind of logic is definitely present in the meta-discourse of QS – data is something taken from the individual without compensation and the individual ought to have the right to access this data. In 2014, Gary Wolf argued in a blogpost that:

---

<sup>8</sup> This kind of discourse on healthcare originates in the USA for obvious reasons, but it is inherent in the development of direct-to-consumer genetics as well as various digital health platforms and technologies that provide data directly to consumer-patients.

Now is the time to work hard to insure that the data we collect about ourselves using any kind of commercial, noncommercial, medical, or social service ought to be accessible to ourselves, as well as to our families, caregivers, and collaborators, in common formats using convenient protocols.<sup>9</sup>

Interesting here is that ‘data’ as in medical records and ‘data’ as behavioural data collected by private companies are assigned essentially the same value. Since then, this idea evolved into a much more articulated advocacy campaign. In USA the *Quantified Self Labs* is now partially funded by a nonprofit organization called “Article 27”.<sup>10</sup> The name refers to the Universal Declaration of Human Rights and the article under this number:

Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits. Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.

To Wolf and his team of collaborators, the second clause of Article 27 means “that everybody has a right to science”. What they mean by that, in a sense, is that we ought to take control over our own data and ourselves as scientific subjects.

Much of the human sciences today is founded upon data collected from individual people in the course of their daily life, or “harvested” from individuals through enrollment in scientific studies. When our own data is used for scientific production by others, shouldn’t we also have a right to use it ourselves? If we have a right to the moral and material interests of any scientific production of which we are the author, don’t we also have a right to use materials of authorship derived from our own bodies and experiences?

The question of (overt and covert) gathering of data concerning everyone and everything and the ‘moral and material’ interests entangled with such practices is, of course, far more complicated, and not restricted to science in any way. The loudspeakers of the QS are a relatively small group of, as Deborah Lupton has noted, “privileged white men from Silicon Valley” (Lupton 2015) and it is their own personal view on science and data – but it is, in my opinion, illustrative of a wider narrative on the democratization of access to data, which is deeply flawed because, in essence, data on the level of the individual and data on the level of the population have a very different value and functionality. These different aspects of data, however, seem to be mixed inside QS:

Within QS, the perils of mixed motives are acknowledged and actively managed. Participants recognize their fellow QSers as a potential market, but also generally believe in the merits of both their personal experiments and products. This puts the QS movement in-line with the broader phenomenon within the technology industry of mixing labor with notions of creative worth and pleasure (Nafus and Sherman 2014: 1788)

---

<sup>9</sup> <https://quantifiedself.com/blog/access-matters/>, accessed 6.4.2021.

<sup>10</sup> <https://quantifiedself.com/about/article27/>, accessed 6.4.2021.

But what then, is the individual to do with this data? On one hand, various self-tracking apps are interpreted by critical eyes as tools for discipline, tools for getting individuals to internalize responsibility to establish habits that lead to optimally healthy and productive individuals. In QS, however, there is a belief in the value on ‘single-subject research’ and ‘n-of-1 methods’, which ought not to provide universal conclusions but useful insights valuable only to the individual who is the subject and the conductor of research. Here, personal relationships to data are encouraged and celebrated. This leads Meißner to conclude that “the self-tracking movement does not constitute a normative discipline approach but rather encourages its protagonists to act sovereignly” (Meißner 2016: 243). Nafus and Sherman take a more moderate position in calling the personal data practices a form of ‘soft resistance’. They rightfully notice that “while the amount of data collected by individual users is limited, an ‘n = 1,’ the kinds of data collected reflect the same explosion of measurement that is at the root of big data” (Nafus, Sherman 2014: 1790), however through individual uses of data “self-trackers are making a disciplined body, but one that is idiosyncratically so” (Nafus, Sherman 2014: 1792). The point being, data as ‘big data’ that is processed by algorithms and data as used by individuals have completely different characteristics when seen as parts of social practices. Self-tracking appears as a reflection of broad cultural models, but the way data operates in the case when it is used by individuals is different.

### **3.1.2 Data and Meaning Making in Personal Experiments**

Self-tracking is often described in terms of making the human body more visible, and hence something that can be acted upon. Mina Ruckenstein, for example, frames it in terms of transparency:

Smartphone applications and other monitoring devices act as mediators and translators that contribute to opening a widening field of everyday life to scrutiny and intervention, connecting with the theme of self-optimization. Personal analytics is thus firmly rooted in the externalization of “nature” as something that people are able to transform: when bodies and lives are made more transparent, they can be better acknowledged and acted upon. (Ruckenstein 2014: 69)

But what exactly does it mean to make a body or a life more transparent? At a basic level, to make something transparent means to see something that is already there, only not visible. If

we were to take the idea of transparency seriously, we would have to assume that information is simply transmitted from the body of the individual, into a monitoring device, and back to the individual<sup>11</sup>, hence assuming the existence of a common code and identity between the message transmitted and the message received.

However, if we look at the phenomenon from the point of view of semiotics of culture as conceptualized by Lotman the picture starts to change. According to Lotman, “on the level of semiotic structure of the human collective, where the direct exchange of messages and texts takes place, the opposite case is normal: those exchanging information use not one common code, but two different ones, to some extent intersecting” (Lotman 1974: 302). In self-tracking, the main interaction does not happen between two human individuals, but human and a machine – therefore the existence of multiple codes is a prominent characteristic. From this follows that “the communicative act is not a passive transmission of information but a TRANSLATION, a re-encoding of the message” (Lotman 1974: 302)”. If communication is understood in this way, “non-understanding, incomplete understanding, or mis-understanding are not side-products of the exchange of information but belong to its very essence” (Lotman 1974: 302).

From this point of view, we can agree with Ruckenstein’s statement above – that “monitoring devices act as mediators and translators”; however, the statement that they make bodies and lives more transparent is contradictory with the first part – since this act of translation cannot lead to transparency but rather to the creation of new meanings (inasmuch as misunderstanding is inherent in (human) communicative processes).<sup>12</sup>

In this way we can see self-tracking as a meaning-generating mechanism; but to further explain the point, it is necessary to take a step back. It needs to be noted that there is a variety of communicational phenomena housed under the term self-quantification. I will attempt a brief overview by distinguishing between three main phases in the communicative process of self-tracking.

---

<sup>11</sup> Is the receiver of this message this same body or the mind of the individual and are they the same thing - that is, where the self is located - is another question (but in self-tracking it appears as if there are two separate entities)

<sup>12</sup> In all fairness, Ruckenstein in the above-mentioned text probably wasn’t saying that bodies are made literally more transparent. When she speaks of “externalization of ‘nature’ as something: – she clearly implies it is a constructed representation – and we could say that this leads to ‘transparency’ only in the experience, perhaps, of the person engaged in self-tracking. Still, I will consider this idea of transparency seriously for the sake of the argument.

First of all, any self-tracking project must start with some form of data collection. The narratives in QS often start by the decision of an individual to gather data.<sup>13</sup> In the examples I examined, there are many different kinds of motivations to commence the data gathering. While some QSers want to find specific answers through tracking, others start by simply gathering all possible data in order to analyse it later. In any case, the data gathered can fall into 3 broad categories:

- bodily symptoms (examples include heart rate, blood pressure, body temperature, glucose levels in blood)
- behavior (examples include number of steps, location of the individual, food consumed, use of time)
- self-defined internal states or feelings (examples include mood tracking, mindfulness etc. - cases where the individual needs define the input - based on conventionally defined options)

In the second phase, the monitoring device, in most cases, processes this information on the basis of digital code to create a visual representation (based on convention) - and hence a new message is encoded by the device. The message encoded could be of varying complexity. We could think of numerical representations of the events recorded (heart rate over time, number of steps) - hence the interpretation is to a greater extent open for the individual, but there are frequent cases where the device already interprets the data based on pre-defined but often obscure rules - such as a stress score. In this example the device not only indicates heart rate variability but already infers that the person was stressed, hence the possibilities of interpretation of the given message are reduced. Still, the understanding of stress can mean any number of things to different people. In any case, once the monitoring device produces some output a new act of communication begins where the device becomes the addresser of a message where the addressee is the individual. We could in some cases imagine the body of the individual as the sender of this message; it has alternatively been proposed that the applications 'read the reader' (Jones 2015); or the device could be conceived of as an observer.

---

<sup>13</sup> This, however, is not always a decision in the contemporary world as data is often simply thrown at individuals. I recently had the opportunity to interact with a new iPod, and it was set up, by default, to inform me about the number of steps I made each day and present me with progress graphs. The feature needs to be switched off on purpose, rather than choosing to use it. Likewise, users of *Google Maps* on any smartphone are likely to receive emails with activity summaries unless they purposefully disable the feature.

In the third phase, the individual receives the message, and this message is further interpreted by the individual on the basis of natural language (as well as any number of sign systems that make up the semiosphere). In QS “Show & Tell”, this understanding is further consolidated into a narrative (the construction of which is based on implicit rules existing in culture). That natural language and not the digital code of the device forms the basis of human understanding can also be seen from the remark of G. Wolf that insight comes from telling a story:

And yet, again and again, with a predictability approaching universality, we hear that the most valuable insights in a self-tracking project came at the stage of preparing or delivering the QS Show&Tell. Somehow the act of saying what you did and what you learned operates retrospectively on the learning to crystalize or consolidate it. (Wolf 2020)

Regardless of whether a story to be told is constructed or the insights are kept to oneself, the individual will then likely adjust their future behaviour based on the message received; if self-tracking is continuous the device gathers more data and hence the two sides enter a feedback loop.

Self-tracking situations exhibit a wide range of complexity when it comes to messages encoded – and situations of misunderstanding that lead to creation of new meanings arise at different points. To explore some examples it could be worth looking at the classification of self-tracking practices that QSers themselves use. They distinguish between active and passive tracking.

In passive tracking, the data is recorded without conscious help from the individual. While such tracking does not necessarily have to involve biosensors, this is, indeed, the most common, and the most talked about practice. Developments in wearable technology now give the opportunity to receive constant, or very frequent, feedback on a variety ‘biomarkers’. Getting precise (to an extent) measurements visualized in various forms is relatively easy, but problems arise more often than not when making sense of such data. Nafus, for example, notes that:

Biosensing practices also share a difficult relationship to indexical forms of meaning making. Sensors are designed to indicate. They are designed to point to a phenomenon as if data were like smoke to a fire [...] In practice, indications are hardly straightforward or clear. A single sensor can indicate many things. For example, activity monitors often use accelerometers to detect both steps taken and sleep quality, while elevated body temperature can indicate anything from ovulation to stress to influenza to Ebola. (Nafus 2016: xx)

The ‘difficult relationships to indexical forms’ come from the fact that a symbolic layer is involved, arbitrariness being a basic feature of digital codes. Some formulations might appear

less problematic like a simple count of steps, but one could think of the stress score mentioned above or ‘driver drowsiness detection’ systems used in cars which are both based on conventions. In that sense, measurements provided by biosensors do not appear to be much easier to interpret than bodily symptoms. However, they do create external referents that allow the bodily symptoms to become part of calculations and speculations as well as to become consolidated in memory as part of internal and external self-narratives.

In active forms of tracking, it is the individual himself that decides what will be recorded.<sup>14</sup> In theory, the same process could be performed manually in writing, the technology simply makes the process easier. For example, an individual might decide to engage in time tracking and write down what exactly they are doing at any point in time.

Especially interesting examples are mood tracking or mindfulness tracking – situations where individuals are prompted to record their own mental states. In such cases, quantification is a very deliberate process where individual must first define their own mental state or feeling.

In an early paper on ‘quantification rhetoric’ Potter, Wetherell and Chitty emphasized “the role of basic, but often inexplicit, definitional decisions to both constitute phenomena in a manner that makes them countable, and also to select arenas for the effective advancing of quantification argument.” (Potter et al. 1991: 333). Their arguments do not directly apply to self-tracking, but it is interesting to pay attention to the ‘definitional decisions’ individuals inevitably must make in order to make certain phenomena countable. The first issue comes with recording data, as here the action performed in order to achieve quantification is definition rather than measurement. When one wants to perform mood tracking, whether with a ready-made app or on their own, they must define their current state at any given moment with one word or another symbol. The word ‘happy’ or ‘sad’ might not completely encompass the experience of a given moment, but it becomes recorded as such. What happens is that the message is encoded in an artificial language. When the individual selects what the device will record from pre-given options, they encode the message in an abstract language with the addressee being the monitoring device. Thus when a device (or more broadly digital code) is allowed to mediate in such a way - it inevitably ‘expels’ various aspects of the felt reality - due to the very nature of the artificial language used which has a low modeling capacity due to the

---

<sup>14</sup> The choice is, however, always conditional as the possibilities are shaped in the first instance by pre-existing cultural conventions and in some cases it is simply a matter of choosing between options offered by the device.

high level of abstraction. This re-encoding nevertheless tends to be understood in later instances as reality of the self. Once the behavior of the individual in time has been encoded in datafied forms, one tends to look at these results as simple descriptions of the past which are not only true but also unquestionable. In this way, the self acquires a rational, ordered form that can be managed and calculated with. As Van Dijck has noted, “if we consider media technologies to be tools for selecting, framing and encapsulating – rather than mechanical devices for recording and storing – they play a constitutive role in the production of memories and hence in the continuous (re)construction of our selves” (Dijck 2005:324).

## **3.2 Construction of Nature**

In the previous section I have touched on the issue of the lack of equivalence between lived experience and data and the complications that arise at the level of interpretation no matter if the individuals or biosensors are choosing what will be recorded. In this section I will further explore these issues on the example of tracking mindfulness and stress. These objects of tracking are especially interesting because they are a common point of interest among trackers, but also not easy to quantify. They also connect self-tracking with the broader discourses of self-improvement and self-management and can, I believe, illuminate the conception of human nature that makes quantifying the self so attractive.

### **3.2.1. Cultural Construction of the Mindfulness-Stress Dialectic**

One of the recurring topics in QS talks is mindfulness. It explicitly appears in 4 QS talks out of 33 of those I analysed in detail, but it is a common theme in the discourse on self-tracking, biohacking, and wellness in general too. Even when mindfulness is not explicitly mentioned, it is, I think, representative of a more general tendency towards emphasizing self-awareness and self-control of individuals. In the discourse of self-improvement through self-monitoring, mindfulness is presented as the counterpart of stress, as the perfect tool for stress management.

Discourse of mindfulness as a self-pacifying tool predates the prevalence of quantification, but it has merged with self-quantification seamlessly. To illustrate how this concept, vaguely related to Buddhism or the East came to be part of the self-tracking discourse, a short history of the development of the Western type of mindfulness is in order.

The concept of mindfulness has gone through a process of transformation by which it came incorporated into the cultural landscape of the West. While it is not possible to identify a specific source for the original understanding of mindfulness in the (ancient) East nor a uniform understanding of the concept in the West, there are certain personalities that acted as mediators in this process. In order for the idea of mindfulness to be widely accept in a distant (in space and time) cultural context, transformation was arguably inevitable, but exactly the way mindfulness came to be understood and widely accepted in the West (or more specifically in contemporary self-actualization with the help of technology discourse) can tell us something about the dominant ways of seeing the world.

Where did mindfulness come from? Mindfulness is a significant element in various Buddhist traditions. One of the most often cited source of early understandings of mindfulness is the Pali Canon, where “right mindfulness” is the seventh element of the eightfold path of cessation of suffering. Sometimes Zen Buddhism is also mentioned as a source, as could be any of the other numerous schools of Buddhistic practice. The nuances of those are not so important, as modern Western mindfulness has very little to do with any of them. What is left is mostly a vague definition of the term.

The adoption of mindfulness along with various other forms of spirituality in the West has a relatively long history. Carrete and King (2005), for example, trace the start of commodification of spirituality back to the 18<sup>th</sup> century. The interest in Buddhism and meditation in the West has gone through various phases especially during the 20<sup>th</sup> century, and it lives on today in various religious and secular forms. However, a dominant discourse that relates directly to the discourse of self-tracking can be easily identified and it starts with the intermingling of Buddhism and psychology. This tendency was present since the beginning of 20<sup>th</sup> century<sup>15</sup>, but the interpretation that is relevant for my topic appeared in the 1980s and became widely accepted by the beginning of the 21<sup>st</sup> century. Lee, Kim, Webster and Henning

---

<sup>15</sup> Carl Jung, for example, took interest in mindfulness in 1930s (Lee et al. 2021). Another notable personality who brought Buddhism closer to the West and saw a connection with psychotherapy was Alan Watts, but his understanding was still far from the subsequent conceptualization of mindfulness in terms of measurable outcomes.

(2021) have examined the evolution of the concept of mindfulness in academic literature between 1916 and 2019, a process that clearly illustrates a change in language and ways of researching and understanding mindfulness. They identify “a sharp increase in mindfulness research since 2000” (Lee et al. 2021), pointing to the fact that the nature of researching mindfulness has changed at this point. While in the beginning of the 20th century ‘mindfulness’ could have been interesting to scholars researching religious traditions or perhaps Buddhist philosophy, at the beginning of the 21<sup>st</sup> century mindfulness becomes a subject of numerous studies in fields of psychology and medicine - studies that largely look to quantify and find empirical scientific proof for the effectiveness of the practice.

The ‘boom’ in mindfulness research largely comes from innovations brought by Jon Kabat-Zinn at the end of last century. Roland Purser, one of the many critics of the instrumentalization of mindfulness, summarizes the role of Kabat-Zinn in this way: "Kabat-Zinn, a dedicated meditator, had a vision in the midst of a retreat: he could adapt Buddhist teachings and practices to help hospital patients deal with physical pain, stress and anxiety. His masterstroke was the branding of mindfulness as a secular spirituality” (Purser 2019). According to him, this process led to mindfulness being “stripped of the teachings on ethics that accompanied it, as well as the liberating aim of dissolving attachment to a false sense of self while enacting compassion for all other beings” (Purser 2019). Kabat-Zinn would likely disagree with such bitterness of critics, as according to him he has brought the essence of mindfulness to the contemporary American by translating it into acceptable cultural language. Kabat-Zinn does, in fact, talk about a revelation he had that Purser mentions (Kabat-Zinn 2011: 287), a vision that was brought to reality by “the launch of more accessible programs, such as Kabat-Zinn’s Center for Mindfulness in 1979, and the seminal development of Kabat-Zinn’s mindfulness-based stress reduction (MBSR) program in the 1990s” (Lee *et al.* 2021). Kabat-Zinn defines mindfulness as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn 2003: 145), a definition conveniently usable in any context and one that is adopted by mindfulness-enthusiasts in QS.

The strategy Kabat-Zinn employed involved separating mindfulness from unnecessary contextual encumbrances in order to make the dharma more acceptable to America which ought to increase the potential for reduction of suffering:

From the beginning of MBSR, I bent over backward to structure it and find ways to speak about [mindfulness] that avoided as much as possible the risk of it being seen as Buddhist, ‘New Age,’ ‘Eastern Mysticism’ or just plain ‘flakey.’ To my mind this was a constant and serious risk that would have undermined our attempts to present it as commonsensical, evidence-based, and ordinary, and ultimately a legitimate element of mainstream medical care. (Kabat-Zinn 2011: 282)

This passage explains quite well how Western common-sense works – and it is a theme that is repeated over and over again in the discourse on self-tracking. Evidence-based, legitimate, ordinary, and commonsensical appear to be the same thing.

The MBSR program gained in popularity with Kabat-Zinn’s first published book *Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness* (1990) in which he detailed the new ‘mindfulness intervention’. It was a standardized, eight-week long program that anyone could participate in and instantly improve their well-being. The concept quickly gained supporters and also spawned an interest in looking for empirical scientific evidence of the effectiveness of mindfulness as well as various mindfulness-based programs and interventions. The analysis of academic papers about mindfulness by Lee *et al.* shows that besides the raising volume of work, the keywords and topics these works deal with have also changed after the year 2000. The word ‘stress’ starts appearing frequently in works on mindfulness in this period, along with words ‘treatment’ and ‘intervention’; after 2010 ‘anxiety’ and ‘depression’ also become common. After the year 2000, “the words cognitive and mindfulness-based cognitive behavioral therapy (MBCT) were among the top-ranked phrases along with other terms denoting similar therapies, such as mindful attention awareness (MAA) and acceptance commitment therapy (ACT)” (Lee et al 2021). In the first decade of the 21<sup>st</sup> century, various forms of interventions and therapies became common currency. By 2010, these were already established, and researchers then moved on to “rigorous scientific validation of program efficacy and the legitimacy of mindfulness as a professional therapeutic enterprise” (Lee et al. 2021).

In short, the project Kabat-Zinn envisioned really did work – to an extent. It was successful in the sense that mindfulness got framed as a scientifically proven technique for self-care which has nothing to do with the beliefs or religious orientation of the individual. In terms of reduction of suffering, the success seems only superficial. Mindfulness got separated from any kind of ‘mysticism’ and became commonsensical, defined and legitimized in terms of its effectiveness in combating stress of everyday life. However, empowering the individual to deal with stress through this new conception of mindfulness also shifted the responsibility for dealing with stress onto the individual. Stress, in this narrative, is the result of our wrong

interpretation of the world around us and the problems we face. If we can simply tame our own reactions to stressors of life by being mindful, we will become resilient and find happiness within. While this might help individuals feel less stressed, it also shifts the attention away from the external sources of those stressors. The phrase ‘mindfulness in the workplace’, for example, became something that doesn’t sound odd at all, and, in fact, many large companies started offering mindfulness programs, presumably to alleviate stress and make workers more efficient. Mindfulness training thus appears all too easily as an alternative to ensuring working conditions where workers are not constantly under stress.

At this point mindfulness training still required in-person contact with a teacher, something that will soon become an unnecessary obstacle. The next stage in the development of mindfulness is related to the development of the ever more ubiquitous and wearable technology, specifically the smartphone which enabled the use of various third-party apps<sup>16</sup>. Today, there are hundreds of ‘mindfulness apps’ anyone who owns a smartphone can start using with a click and perhaps a subscription fee. The leader on the lucrative market of smartphone mindfulness, and one of the first such apps to appear is Headspace. Headspace was founded in 2010<sup>17</sup> as an events company, but already in 2012, the Headspace App could be found in the Apple AppStore. This was only four years after third-party apps on smartphones (as we see today) became commonplace.

Headspace quickly became popular, and according to the company, it had 30 million members in 2018, a number growing to 62 million in 2020. A prospective user who wants to try being mindful with Headspace will be met with a smiling orange dot, cartoon-like visuals, and q gentle voices to guide the user through meditation sessions. “The Headspace app teaches you how to meditate and live mindfully, with guided sessions on stress management, happiness, resilience, physical health, and more. Even if you’ve never meditated before, the free Basics course teaches you the essentials.”, says their website.<sup>18</sup> Headspace includes guided meditations, relaxing sleep music, as well as exercise routines. The app offers ‘courses’ that deal with topics such as managing anxiety, letting go of stress, work and productivity mediation, mindful eating,

---

<sup>16</sup> ‘App’ is short for ‘application’ and is commonly used to describe software that can be installed on a smartphone.

<sup>17</sup> Headspace Fact Sheet, Retrieved from: <https://www.headspace.com/science/meditation-research>, 31.3.2021.

<sup>18</sup> <https://www.headspace.com/science/meditation-research>, Accessed 31.3.2021.

coping with cancer, or dealing with distractions. Just like advertisements for wearable technology suggest, Headspace has a cure for everything – even “financial stress”.

A story rather similar to that of Kabat-Zinn seems to repeat. After spending “10 years training in some of the great Buddhist centers of learning across Asia”<sup>19</sup>, Andy Puddicombe returns to the West with the “goal of teaching meditation and mindfulness to as many people as possible.” According to the Headspace website, “to demystify the mystical, Andy set up a meditation consultancy and began working with politicians, athletes (...), and business leaders.”<sup>20</sup> Not only the vision of Kabat-Zinn seems to repeat here, but also the mode of legitimation – the language of making meditation accessible to the West, and to the global market, involves scientific studies, empirical proof, and, preferably, percentages. The promotional material for Headspace never misses a chance to refer back to a study or research:

At Headspace we see meditation as both a practice rooted in ancient history and a topic of modern science. This is why we are as equally committed to providing authentic expertise in meditation and also studying the science of meditation. Science has been an integral part of the Headspace business since day one. We recognize that the only way to know if we are achieving our goal of improving the health and happiness of the world is to measure it. That's where the research comes in.<sup>21</sup>

Mindfulness is, thus, defined in terms of positive outcomes on health or happiness. These outcomes must be also measurable in some standardized way that is supposed to be generalizable and applies to everyone. This tool for happiness is now available for anyone to consume, and it is mediated by technology. Mindfulness appears now as so neutral and self-explanatory that every smartphone or similar device of newer generation made by Apple, for example, offers it to users no matter if they ask for it or not - it is one of the four categories in the built-in “Health” app. Buying a phone and discovering that it has a ‘Buddhism’ section installed would probably appear rather strange, but ‘mindfulness’ seems not so. Participating in a mindfulness programs, whether in person or via technology, does not, most of the time, require self-tracking and data analysis. However, the quantification is just one step further in this logic which can be seen in the examples from QS that I will show in the next section. And in any case, the underlying logic of mindfulness interventions is already based on quantification that

---

<sup>19</sup> Headspace Fact Sheet, Retrieved from: <https://www.headspace.com/science/meditation-research>, 31.3.2021.

<sup>20</sup> <https://www.headspace.com/>, Accessed 31.3.2021.

<sup>21</sup> <https://www.headspace.com/science>, Accessed 20.3.2021.

leads to measurability, only it is not performed by the users but by the researchers that provide the studies to legitimate the effectiveness of mindfulness apps and other products.

### 3.3.2. How Does One Quantify Mindfulness and Stress?

How exactly does one measure the positive outcomes of mindfulness training? ‘Paying attention to the unfolding of experience in the present moment’ is not something that can be measured in a straightforward way. How many attentions have been paid to the unfolding of experience? Or, more seriously, how many non-mindful thoughts one has thought during a period where mindfulness is measured? How many distractions? But aren’t our thoughts anyway our experience and how can we be sure whether we have paid attention or not? How can this be measured externally? These are some of the questions that the members of QS have also struggled with when attempting to quantify mindfulness. The scientific studies that aim to prove the effectiveness of mindfulness interventions already presuppose that the intervention causes mindfulness and look rather to measure the outcome, or the difference between the subjects that have been intervened upon and a control group.

Headspace seems to have it figured out. So far, they claim to have proven that mindfulness (and Headspace specifically) “has been shown to have favorable outcomes of interventions including reduced stress, improved focus, increased compassion, and decreased aggression”.<sup>22</sup> “An internal study that was published in the top mindfulness journal found that only 10 days of Headspace reduced stress by 14%.”, says the Headspace website<sup>23</sup>. But how is the decrease in stress measured? This study, sponsored by Headspace, and titled “Improvements in Stress, Affect, and Irritability Following Brief Use of a Mindfulness-based Smartphone App: A Randomized Controlled Trial” uses psychometric tests to prove the effectiveness of the app. Stress, specifically, was measured with the ‘Stress Overload Scale’ (SOS). The ‘stress overload’<sup>24</sup> is measured with a questionnaire designed to record “subjective feelings and

---

<sup>22</sup> Headspace Fact Sheet

<sup>23</sup> <https://www.headspace.com/science/meditation-research>, Accessed 31.3.2021.

<sup>24</sup> Stress overload is defined as “a state described in stress theories as occurring when demands overwhelm resources” (Economides *et al.* 2018: 1587).

thoughts” (Economides et al. 2018: 1587) experienced by the subjects. The questions ask subjects to assess whether they have felt calm, overextended, confident, swamped by responsibilities, and so on in the previous week, on a scale from 1 to 5. The usefulness of the scale is confirmed by its ability to predict who “would become sick following a common stressor” (Amirkhan 2011: 55). The scale thus assesses the self-reported feelings of individuals that could be related to stress and their likewise self-reported intensities. An important characteristic of the understanding of stress in mindfulness discourse is present here, and that is that stress has response has very little to do with external factors and everything to do with our perception of external reality. It is on this assumption that the idea that mindfulness can simply reduce stress is based.

On a similar note, the Headspace website can tell us that the use of the app increases compassion by 23%. How does one apply percentages to compassion? With a chair test. This “naturalistic and ecologically valid behavioral measure” (Lim *et al.* 2015: 4) involves placing the subject under investigation in a waiting room with three chairs, two of the chairs are occupied by men. Exactly one minute later an apparently injured female enters walking with the help of crutches, sighs, and leans on a wall. A subject who offers his seat to the suffering person is considered compassionate; a subject who does not offer the seat for two minutes is not compassionate.

The point I am trying to make with these examples is that referring to percentages and scientific studies can impart a dose of reliability and trust into virtually anything; it helps present things ‘as commonsensical, evidence-based, and ordinary’. What’s behind such claims is usually a series of standardized procedures that render ideas, concepts, and measurable and the validity of procedures testable. However, at the basis of such measurements are standardized definitions of phenomena which are often difficult to define in a measurable way.

Inside QS, we can see an opposite tactic for measuring stress – one that does not involve asking questions about feelings, but rather a search for an instant a stress indicator, external to the individual’s consciousness. This is only logical because in the studies like the ones confirming the effectiveness of Headspace the proof is based on statistical correlations while in the QS ‘single-subject research’ such a procedure is not possible. In both cases the goal is an objective description of reality.

### Example 1: “Measuring the Moment”

A good example is the talk given by Ajay Chander. Ajay has been working on developing Fujitsu Sprout, a “real time mobile data aggregation and analysis platform”, but in this talk he presents to the audience the experiments he performed on himself in relation to mindfulness and stress. At first, he used his smart watch to record every time he felt “mindlessly lost in the past”, “mindlessly in the future”, or “mindfully present”. The watch is set up so that there is a different button to press for each of these states, the device recording each time a button was pressed. This is what is called in QS active tracking and involves individuals labelling events (in this case mental states) so they can be quantified later. With this kind of self-tracking, Ajay discovers he strays from the moment more than he believed he would, and this discovery alone leads to improvements in self-recorded mindfulness. However, what he is more interested in are the “stress numbers”.

“So at the end of day two I was really motivated to try some mindfulness strategies, and to my surprise they worked more than I thought they would, and at least my self-recorded sense of mindlessness decreased and my mindfulness increased. More important than these self-reported measures were changes in heartrate and stress. (...) The next day, that’s when I started applying these strategies [the heartrate] went down very significantly. And more meaning to me, the stress numbers went down as well.”<sup>25</sup>

Self-reported instances of mindfulness are one thing, but what confirms the effects of mindfulness strategies as real are numbers. The exact way stress levels are calculated is not mentioned here, but it is explained in a paper detailing the workings of Fujitsu Sprout (Chander et al. 2014) – stress scores are based on heart rate variability. This is a commonly used basis for ‘stress scores’ indicated by smart watches and health apps. To further show off the stress score, Ajay shares with the audience a story of ‘tracking bad’ where he presents the finale of the TV series *Breaking Bad* as an occasion “in which we invite time-bounded stress into our lives”. What follows is a visualisation of frames from the *Breaking Bad* episode followed by a neat-looking line that indicates the ‘stress score’ during the episode. Uncertain moments in the episode cause the line to rise indicating stressfulness, while resolutions of the plot causes relaxation. The already vague meaning of stress is here generalized to presumably any kind of excitement that is reflected in the heart rate. In that case, what should a mindful person who strives for optimal health do with this information? Is watching *Breaking Bad* to be avoided? Should we exercise stressing ourselves as long as we are aware of it? Self-tracking devices

---

<sup>25</sup> Ajay Chander. Measuring the Moment, <https://quantifiedself.com/show-and-tell/?project=314>, accessed 12.4.2021.

commonly show users such stress scores, but they do not give answers to these kinds of questions. To figure out the meaning of the scores we get – we ought to either refer to our own memories for context – or gather more data so devices can do it for us. “Context is everything. If you see yourself with the same stress patterns while watching *Breaking Bad* and while driving to work, you really need the context to figure out which is bad and which is good,” concludes the narrator and subject of this self-experiment. The later development of Fujitsu Sprout, however, suggests that technology can provide us with such contextualization, if only there is enough data collected:

With a robust, real-time ambulatory stress metric implemented on the Sprout platform, we can measure and visualize stress in the context of other variables that are also captured on the platform. In general, these variables can include the entire spectrum of biovariables such as weight, activity, and blood sugar level as well as environmental variables such as location, calendar event, and desktop and mobile device activity. Because such data streams are time synchronized when stored on the Sprout platform, we can compute accurate correlations between real-time ambulatory stress and other variables. These correlations can then be mined further to contextualize stress patterns, to anticipate stress occurrences, and to generate personalized plans for stress management. (Chander et al. 2014: 88)

The need for context to accompany the measurements seems to be a universal issue. Among technology developers and believers in technology, an ideal would be a device that can gather enough data in order to provide the correct interpretation. This is similar to the idea of ‘total recall’ where human memory ought to be optimized with the processing power of computers. However, these problems seem to always resurface, and this is due to the impossibility of equivalence between the experience of the individual and digital representations.

### **Example 2: “What I’m Learning from My Meditation App”**

The second example from QS is Alec Rogers who does not deal with stress but is instead concerned with quantifying directly his mindfulness practice. He begins his quest with a question:

So first of all, what I wanted to do was sort of answer a question which was, okay, if I’m sitting on a cushion, if I’m looking at a wall, am I actually making progress? Because sometimes it doesn’t feel that I am. [...] so I have this dilemma basically and I wanted to quantify that in order to get an answer.<sup>26</sup>

---

<sup>26</sup> Alec Rogers. What I’m Learning From My Meditation App, <https://quantifiedself.com/show-and-tell/?project=1104>, accessed 12.4.2021.

He started off by measuring the length of his meditation session with a stopwatch, but that wasn't satisfying enough. The length of sessions was not enough to confirm the progress. This is because mindfulness here is not defined in terms of the length of time spent meditating, but in terms of measurable improvement.

So at this point I'm just logging time, but again that doesn't really answer my question of is it making an improvement in my meditation, in my personal wellbeing.

After that, Alec comes up with a truly gamified way to measure 'mindfulness'. In this case, mindfulness is measured by the ability to count breaths<sup>27</sup>. The person who wants to test their mindfulness uses the smartphone to press a button every time they breath out. The goal is to count to a certain number (usually 10). When the subject believes they have reached 10 breaths, another button is pressed. The accuracy of counting can then be checked within the app. While this is an interesting test, it is far from encompassing all the possible meanings of mindfulness. To make the concept measurable it is necessarily narrowed down and reduced to detectable behavioral signs. That the test might not be so effective is noticed also by the narrator:

Initially I was very bad keeping track of count and then I was able to increase the target count to like 20, and I got almost perfect results. So, it kind of became boring after a while so I stopped doing it.

Training a human to count breaths or button presses is relatively easy, but is it that easy to teach one to be 'mindful'? The final attempt at quantification involves sending random queries prompting the user of the app to define the current state as mindful or not mindful. Then, the app allows the user to compare all 3 mindfulness scores in the form of a graph that depicts the progress in mindfulness

### **Example 3: "Technology for Mindfulness"**

The talk given by Nancy Daugherty also deals with mindfulness - but her experiment does not involve quantification in the sense of data gathering and analysis, at least this does not appear to be the primary purpose. In a talk titled "Technology for Mindfulness". She shares two contrasting stories that point to two different forms in which self-quantification can appear. At

---

<sup>27</sup> Idea he reportedly got from Richie Davidson, another scientific mindfulness guru arguing that happiness is a skill that can be learned, and which furthermore can induce 'plastic changes in the brain' (Davidson, Lutz 2008)

first, she gathered biometric data and tried to analyze it. However, she found herself losing interest in this data:

I would try everything, put them all into devices, get to the top of the leader board and then a couple of weeks later something stressful would happen. I would leave it at home and I would never touch it again. It was a wasteland of empty online biometric profiles.<sup>28</sup>

Eventually, she tried to track every negative emotion she had, recording also biometric data via biosensors. This step leads her actually to an important part that occurs in self-tracking, especially when it's related to things like mindfulness, mood, and mental health, - and that is that the act of 'datafication' becomes more important than the data itself.

But the interesting thing I found was the longer I went on with the experiment, the less the data meant to me. So when at the end I didn't really care about the data at all. I wasn't looking at it. I was just looking at it for validation, but that wasn't where the discovery was. Because I realized that just by tracking my emotions I was completely changing them. Because just by tracking my emotions I was able to stabilize them better. My moods were much more stable. I could prevent myself from spiraling into negative emotions. I was no longer a victim to my mindset, just through this awareness that was required through the self-tracking."

It turns out what is effective is not quantification in a strict sense but the simple act of labelling, of categorizing one's state at any given moment. The main obstacle to achieving healthier habits is our emotional state, she concludes, and the key to being the better version of ourselves is controlling the emotional states by, first of all, being aware of them. And this is how life can be hacked by mindfulness. However, at least for Nancy, meditating all the time was too difficult and unpleasant, and simply, it seems, not fitting to the modern world. For her, it is the "hugely noisy environment" we live in that makes it difficult to be mindful, but this is where Quantified Self can step in and help:

So I want to extend my mindfulness experimentation in the same thread, because I find it so hard to listen to myself. I want a technology that would kind of give me feedback as to where I was mentally. [26]

As a solution, she constructs here instant feedback device: a garland of sparkling lights around her head that lights up every time a biosensor attached to her face detects that she is smiling. The lights also turn on when she is not smiling for too long. Although the contraption has the possibility to count the number of smiles, this is not the main point. It is the constant reminder to be happy and keep emotions under control. And here we can see a common theme that is also present in two examples before: that self-tracking is not always about quantification in the strict

---

<sup>28</sup> Nancy Daugherty. Technology for Mindfulness, <https://quantifiedself.com/show-and-tell/?project=43>, accessed 7.4.2021.

sense. It is about the subject being prompted to reflect about the self and to define the current state.

\*\*\*

How can mindfulness and stress be quantified? What I have tried to show that this is a process that requires a considerable number of choices from the one who is designing the quantification mechanism. There are two main ways the tracking is performed: with active or passive tracking.

Active tracking usually involves certain qualitative decisions on the side of the subject being tracked. In example 1 the subject has to choose whether he is mindfully in the present or mindlessly lost in the past or future, in example 2 there was a similar question prompting the subject to decide whether he is mindful or not mindful. These are just 2 closest examples to the topic I discussed, but such procedures are quite common, especially in the area of mood tracking where subject usually needs to label and name the emotion one is feeling. In standardized psychometric tests that predate self-tracking such questions are routinely used (like the Stress Overload Scale mentioned above). The subject is asked a question such as “have you felt overwhelmed in the past week?” and prompted to give answers on a scale from 1 to 5, for example. However, when the individuals answering the question and the one analyzing data are different people, the difficulty of answering objectively doesn’t cause too much conflict or second thoughts. In QS, the same person is performing both actions which leads the self-trackers to often express uneasiness at such definitional procedures. For example, in example 2 the narrator concludes that the options ‘mindful’ and ‘not mindful’ might not be enough to accurately describe one’s state. Of course, there is always a possibility to introduce more options and variables – which is sometimes attempted by digital solutions – but the ideal of perfect quantification can never be achieved. As long as the continuous experience is transcribed into a digital language, there can never be perfect equivalence. When self-tracking is performed in this way, we can see these definitions as “acts of truth” (Foucault 1997: 81) where the individual needs to *state what he is* in order to reap the promised benefits of self-tracking (which are usually either health or productivity).

In addition, such assessments are considered in QS usually as informative but not as proof of something being real (if it would be a randomized controlled trial with quantifiable and predictive outcomes the effect would be different), hence the need to turn to passive forms of measurement, mainly biosensors that measure various bodily processes. These measurements are independent of the individual’s judgement, but as it turns out, interpreting such numbers

and acting on them requires a number of definitional decisions. In order for these numbers to act as descriptions of reality, they need to be reconnected with lived experience. Mindfulness and stress were chosen as examples because they are quite obviously difficult to count, but in self-tracking the same problems are always present if the results are going to be meaningful to the ‘self’ in question. The number of heart beats per minute or the number of calories consumed in a day are rather meaningless unless they are connected to some uncountable concept which represents the ideal to strive for such as health or fitness. That is to say, the numbers would not be meaningless, but they would not perform the same function if they were not connected to values one strives for.

### **3.2.3 The Irrational Nature and the Noisy World**

“An app a day keeps the doctor away”, informs us the website of the Apple health app.<sup>29</sup> A key part of self-tracking, whether it involves mindfulness or not, is the relation to health and the way the body is understood and governed by the individuals themselves. In QS and with self-tracking in general, sleep, diet, and the most mundane habits are under examination and susceptible to calculations. This is not some revolutionary discovery, but it appears in these practices as the most reasonable thing one could do. However, the reason that it appears in this way is a consequence of broader historical processes and ultimately it has to do with how health and the human body are imagined and understood. Health is a feature of the physical body, therefore something that inevitably has to do with human nature.

The changes in understanding of the body and health have been discussed at length by Nikolas Rose. Over the course of the 20<sup>th</sup> century, and especially toward its end, health came to be viewed as ethical value in itself, as the responsibility of citizens, as something to be worked on and worked towards. The ‘molecularization of vitality’ and the development of preventive medicine have shifted the focus of health care from treating illness in the present towards treating potential problems in the future (Rose 2001, 2007): “The binary distinctions of normal and pathological, which were central to earlier biopolitical analyses, are now organized within these strategies for the government of risk”, argues Rose (2001: 7).

---

<sup>29</sup> <https://www.apple.com/ios/health/> , accessed 7.4.2021.

Rose explains how developments in genomics and genetic medicine have shifted the focus from the management of risky groups to risky individuals. ‘Personal genomics’ services such as 23andMe were the ones who brought the management of (genetic) risk to the individuals themselves. In this discourse, nature is seen as a resource to work with – we are predominantly determined by our genetics, and we need to understand it in order to better manage the personal drawbacks and advantages every human being must have and ensure optimal performance. Two examples from QS can illustrate the point:

So this is my 23andme report which says I have no fast switch muscle fibers which means I’m not going to be a good runner and also I have no pain sensitivity so that means I’ll probably injure myself<sup>30</sup>

So, I started looking at DNA data, basically Ancestry, 23andme, and running it through some of the free engines and some of the expensive. I actually ran through 12 different third parties just to try to look for different nutrient deficiencies, or genes that I might have and take advantage of. [...]

They all kind of came back to the same thing, like your electrolytes are really off. You need a lot more. You have B vitamin deficiencies genetically, and you need a supplement and you know, stay away from dairy and pretty much anything that’s sweet. So, that’s fine. I’ll incorporate that.<sup>31</sup>

In QS preventive medicine takes a new form – it’s not just about preventing specific illness. The argument is, everyone has the right to use biomedical knowledge on themselves in order to prevent – anything. An important keyword in this discourse is awareness – a quantified citizen tries to be aware of any number of potential problems which should lead to better health and overall well-being. An individual must, it seems, constantly perform risk-benefit analysis in order to make decisions in own interest. A passage from the paper describing the benefits of the Sprout platform for personal informatics describes nicely this ideal state of awareness with help of technology:

As a phone call comes in, the call application makes you aware of your current stress in a helpful manner so that you are better prepared to take the call or possibly ignore it. You have also set your smartphone radio app to dynamically select content that is most appropriate given your current bio-state. You arrive at work refreshed and ready for the day. During the day, an application running on your desktop provides a continuous customizable visualization of biomarkers of interest to you. It tracks your posture, as computed by your chest patch, and suggests personalized interventions. (Chandler et al. 2014: 84)

---

<sup>30</sup> Anand Sharma. From April Zero to Gyroscope. <https://quantifiedself.com/show-and-tell/?project=870>. accessed 7.4.2021

<sup>31</sup> Mikey Sklar. Three Marathons on Zero Calories”, <https://quantifiedself.com/show-and-tell/?project=870>. accessed 7.4.2021.

The individual is, after all, completely free to choose what to do with this information provided by genetic tests and biomarkers. The prospective user only has to choose values to strive forward, however, what is out of the question is choosing not to manage one's life through this information. Once the awareness is there, it automatically leads to calculations and interventions. The self conceived in the context of internalized genetic susceptibility can be called a somatic self, but the discourse on stress management goes, in a sense, a step further in this direction. There is one specific part of the body that is more important than anything else – the brain. It was Nikolas Rose that noticed and accurately described this progress of 'somatization':

But over the past half century, we human beings have become somatic individuals, people who increasingly come to understand ourselves, speak about ourselves, and act upon ourselves—and others—as beings shaped by our biology. And this somaticization is beginning to extend to the way in which we understand variations in our thoughts, wishes, emotions and behavior, that is to say, to our minds. While our desires, moods, and discontents might previously have been mapped onto a psychological space, they are now mapped upon the body itself, or one particular organ of the body—the brain (Rose 2007: 188)

Rose notes, "psychiatry gradually mapped out what it considered to be the neuronal and neurochemical bases of human mental life" (Rose 2007: 188) creating what he calls "neurochemical selves". He identifies the decade from the mid-1980s to the mid-1990s as the turning point where the understanding of the mind in relation to the body began to change, and where various forms of neurochemical explanations became the basis truth. The neurochemical brain becomes the site of interventions and on which work is to be done, emotions and thoughts, and ultimately behavior are seen as belonging to the area of the brain. But then, one could ask, what is this entity that is trying to tame the emotions and control the behavior from within?

The discourse on mindfulness and stress, specifically, goes a step further than identifying individuals at risk or even risky traits. In this discourse, everyone is constantly at risk, at risk of our own – natural – stress response. The human being is an abnormal mammal, although this abnormality is caused by our natural mammalian response to stress. An understanding of stress that gives an underlying logic to mindfulness apps as well as self-tracking can be easily identified in popular psychological-scientific discourse.<sup>32</sup> I have already introduced the development of mindfulness as healing-control mechanism for stress management. This discourse coincides and is largely a part – or a consequence – of the discourse that creates the 'neurochemical selves'. However, the popular interpretations of the new

---

<sup>32</sup> I take Robert Sapolsky and Richard Davidson as representatives of this discourse as they were both mentioned in passes in the QS talks I have analyzed.

scientific understandings of stress had an especially visible impact on the development of QS and self-tracking. The idea developed is, mainly, that stress is something that individuals can control. Yes, stress is caused by external factors, but it affects us negatively simply due to our wrong interpretation of these events. This is how Robert Sapolsky explains the new scientific findings on stress to the Dalai Lama:

The central concept in the study of stress is this: If you are a zebra, and a lion leaps out and rips your flesh open and you are in pain, running for your life, the things your body does then are wonderful. They are exactly what you need in order to survive. But if you are a human suffering from adventitious pain, your body does exactly the same thing, and if it does that for a long time, disease will arise. (Sapolsky 2011: 77)

That is to say, as humans, we respond to all kinds of unpleasant events as life-threatening. The threat might not even be there – we cause ourselves to be stressed by thinking of events that have passed or that will happen in the future. This stress, in turn, causes all sorts of illness - stress is a killer; and if it's not killing us; it's at least putting us at a disadvantage and keeping us away from our goals. To this story is added now the idea of neuroplasticity<sup>33</sup>, ultimately that by training to be happy, and to respond to stress in the right way we can induce changes in our brain and therefore change our biology. How mindfulness leads to better health by controlling our emotions is summarized well in a Headspace-sponsored study:

A central tenet of mindfulness is that it does not aim to suppress or change direct experience, but rather the way in which present-moment experience is interpreted. By observing thoughts and feelings as mental events, rather than as reality or truths about the self, one can retrain negative thought patterns and reduce reactivity, thus fostering a greater sense of calm and well-being. (Economides *et al.* 2018: 1584)

Thus, we can see, that the discourse on stress-management does not only bring good health advice, but it also shows some fundamental claims about what counts as the truth (which are demonstrated too in the QS talks I have analyzed). But what then, counts as the truth? Anything that is standardized, quantifiable, testable, explainable in molecular and biomedical terms – in short, data. When it is truthfully established that our perception of the world around us is not real (not only is it not real, but also harmful for ourselves and our own wellbeing), there is opened a space for self-tracking as the only solution that ought to save us from the trouble we are all in, caused by our irrational brains – hence our nature. The criteria for this external construction of the truth, however, remain vague, just as the goal of interventions of nature

---

<sup>33</sup> Neuroplasticity is a term that is used to describe the brain changes that occur in response to experience. There are many different mechanisms of neuroplasticity ranging from the growth of new connections to the creation of new neurons. (Davidson and Lutz 2010: 1)

remains open. In general, everyone tries to be healthier and more productive, but what if these don't coincide? In the discourse on stress, human nature is constructed as not only something that needs to be worked on, it is something that is actively dangerous for us and 'the brain' is often referred to as an entity that is working against us, our goals, and desires.

You know, we live in a really noisy world. We have all sorts of distractions. There are all sorts of places our brain can be, and our brains are kind of working against us here too. Always latching on to stress or fear or worry, or looking into the past or the future, and they do this so much that we can literally make ourselves physically sick by all these things that our brain is creating.<sup>34</sup>

The quote above illustrates the relation to the brain that is inherent in stress-management practices, but it also introduces another common theme: individuals seem to be caught between two fires. On the one hand, it is our physical bodies and our natural reactions that are causing harm and putting us at a disadvantage. However, this is not the only danger one needs to defend from – on the other hand, there is the noisy world we live in, the world of distractions. Although QS is often connected with things like biosensors and high-tech solutions, a topic that appears often is time management. Even outside of talks dealing with mindfulness and stress, there is a big interest in maximizing attention and focus. In this fight, technology delivers at the same time the distractions and the mechanism of control. In this way, the human brain, the part of the body that houses our affective and irrational thoughts and actions becomes a site of struggle, a battleground. The “noisy world” we live in is full of entities trying to grasp our attention; new marketing tactics search to appeal to this irrational brain while the individuals strive to defend it and control it. When technology seems to offer opportunities to be anywhere and do anything at any time, individuals are left to draw their own boundaries of time and space, and self-tracking is a tool to achieve that. The discoveries of a young self-tracker illustrate the point:

So what I learned was yeah, in modern life we do really have to reclaim our boundaries because work bleeds into life and like with the Internet and everything like that I think it's really hard to not feel like you're always sort of on a line somewhere. Like you might be at home, but you could check your email, or you might be at home, but maybe you should be doing this, maybe you should be doing that. And I feel like it's really hard to figure out where exactly those boundaries are between what we are doing and where, because it feels like we're sort of doing everything all the time.<sup>35</sup>

It is this need to draw boundaries, to delimit and define the everyday experience in response to the constant influx of information that creates the space for self-tracking and self-quantification

---

<sup>34</sup> Nancy Daugherty. Technology for Mindfulness, <https://quantifiedself.com/show-and-tell/?project=43>, accessed 7.4.2021.

<sup>35</sup> Lydia Lutsyshyna. Separating Work from Home, <https://quantifiedself.com/show-and-tell/?project=1115>, accessed 7.4.2021.

to emerge as a cultural mechanism of self-construction. When considering the concept of the semiotic self, Sebeok noted that “anxiety [...] constitutes a kind of induction device the special purpose of which is to increase the probability of continuance of the Self” (Sebeok 1991: 39). In the self-tracking discourse, constant awareness of the infinite world of potential and risk in an hyperconnected world gives birth to anxiety as a characteristic of cultural self-formation that drives the need to stabilize the self via measurement and quantification in an attempt to reduce uncertainty.

\*\*\*

In this analysis, I have tried to outline the discursive formations that give form to the practice of self-tracking in the present moment, without referring to a greater extent to historical context. In order to answer the question on how self-tracking appears as a tool for work on human individuals, I have tried to show that for the practice of self-tracking to appear as an appropriate and necessary tool for improving human individuals, a very specific representation of what it means to be a human by nature needs to exist. However, it is necessary also to emphasize that the specific conception and attitude towards the self are not a universal feature but a product of specific historical traditions.

We have already seen that self-tracking relies on a trust in data as a language for description of reality (in this case the reality of the individual himself). Moreover, this data is then used for reasoning about the self and as a tool for improvement. In QS discourse, these ideas appear as rather self-explanatory and undeniable. The roots of these ideas we can find in the Enlightenment conception of reason and of the place of the individual in society.

A contemporary emanation of these tendencies is the transhumanist movement, which consciously defines itself as a product of the Enlightenment tradition, which seeks for the improvement of the human condition by means of applied reason (More 2013). In practice, this involves lifestyle changes and the use of new technologies – which is quite similar and might appear the same as self-tracking. In QS, however, the main tool for improvement is predominantly technology focused on tracking, and this self-tracking individual does not primarily look for enhancement, but for optimization. He does not seek to go beyond the

limitations of being human – he simply seeks to be a functional member of society. And this we can see as a consequence of a very specific discursive formation: the neoliberal image of the human subject. For Foucault, there are two processes leading to this.

First of all, an extension of economic analysis into a previously unexplored domain where neoliberal definition of the object of economics “adopts the task of analyzing a form of human behavior and the internal rationality of this human behavior” (Foucault 2008: 222). On the basis of this, there arises “the possibility of giving a strictly economic interpretation of a whole domain previously thought to be non-economic” (Foucault 2008: 291). That this has not remained a possibility but rather it progressed to a “hegemonic mode of discourse” which “has pervasive effects on ways of thought to the point where it has become incorporated into the common-sense way many of us interpret, live in, and understand the world”, has been noted by David Harvey (Harvey 2007: 3). On a similar note, Jason Read concludes following Foucault that “the fundamental understanding of individuals as governed by interest and competition is not just an ideology that can be refused and debunked, but is an intimate part of how our lives and subjectivity are structured” (Read 2009: 34).

The self-tracking individual is not just a product of the society of risk. The neoliberal self-tracking subject does not think of risk only in terms of susceptibility to illness, he is also aware that himself as human capital - genetic ‘baggage’, habits, skills, physical fitness, use of time – all of these aspects of the person are seen as potential financial assets that therefore must be managed in the optimal manner. Even sleep and free time are conceptualized in this way, as contributing to overall productivity. Thus, the self-tracking individual does not so much look for enchantment but to manage ‘scarce means’ within himself to achieve certain ends. An individual who sees himself as human capital must think himself in calculable terms, and hence the optimization through self-tracking appears as the solution to all sorts of problems. And it is, after all, why tracking devices are, from all other possibilities, seen as the form of technology capable of improving human well-being, such thinking is necessary in order to function in the neoliberal reality.

In such a situation, the imperative of data seems only logical, all the more because it is a broader phenomenon already existing in society in various forms. Hoffmeyer called the broader tendency ‘digitalism’ – “the more or less automatic preference for explanations that ascribe primacy to digitally coded information or see such information as an explanatory bottom line” (2002: 3) and van Dijck talked about dataism – “a widespread belief in the objective

quantification and potential tracking of all kinds of human behavior and sociality through online media technologies” (Dijck 2014: 198). We can see ‘dataism’ as a special case of the ‘digitalism’ deeply ingrained in modern culture which assumes the role of the dominant language of description and self-description. As noted by Ojamaa and Torop “it is a distinctive feature of Lotmanian cultural semiotics, that the criteria for analysing culture include the typology of cultural languages in which the boundary between object language and meta-language is mobile” (Torop, Ojamaa 2015: 66). In that sense, we can see data as a part of the lived reality – data appears for self-trackers as an object, it is so to say a part of life, it can be reflected upon and it forms the basis for future action. At the same time, it is a language of description, an ‘interpreter of everyday life’ (Torop, Ojamaa 2015: 66), in that sense it acts already as a metalanguage.

The problem with the datafied way of describing reality is that the language of quantification has hegemonic tendencies, it attempts to raise in the hierarchy of sign systems to the level of self-description of culture itself and assume for itself the ability to describe everything, to subsume under itself the elements of periphery, and to even discredit alternative views. Thus, while it's often easy to see upon examination (as I have tried to show on some examples) that quantified description can be imprecise and even irrelevant - quantified descriptions still tend to appear as simply unquestionable, the fabric of reality itself, a 'given'. When applied to the self and own thoughts and feelings as the ultimate frontier the trust in the objectivity of data also requires a distrust in the lived experience, an alienation from the living, feeling, and thinking body. As such the datafication of the self might appear to have a totalizing function, robbing life of life itself, and reducing the image of the self to a calculable productive system, but as long as living beings are involved in communication there exists the element of untranslatability between life and data and hence the potential for new meanings.

## **Conclusion**

The main aim of the thesis was to elucidate self-tracking (self-quantification, datafication of the self) as a cultural practice and a communicative process. The topic was approached from the theoretical framework of discourse analysis and the Tartu-Moscow school of cultural semiotics. Starting from the stories of the members of Quantified Self, I tried to establish a connection to broader discourses and narratives that make it possible for self-tracking to appear as a tool for the improvement of the overall well-being of the individual.

Self-tracking relies primarily on the idea of data as ultimate truth and measure of objectivity, an idea deeply rooted in contemporary society. Self-tracking devices were cast as tools for representation that offer a specific language for self-description of individuals – the language of quantitative data. Through examples from my research, I have demonstrated that far from being transparent and unquestionable, in practice data always reflects only some aspects of the lived experience, and the differences that make a difference in data collection are always based on cultural conventions. From this follows that quantification (of the self or otherwise) is a process of constructing and consolidating specific descriptions of reality.

At the same time, simply showing the inconsistencies of turning living beings into data is not enough to undermine its position as a dominant descriptive language in contemporary society. The reasoning that leads to belief in data might be said to stem from the Enlightenment, but we also cannot ignore the relevance of neoliberal economy and the structure of contemporary globalized society. This conglomeration could be seen as an established nuclear structure in the Western semiosphere, one that tends to absorb into itself by means of self-description even the elements of the periphery. The final frontier that resists the translation into data is life itself and in the second part of my analysis I have tried to show how the data-imperative-paradigm tries to establish control over the living human's bodily sensations, thoughts, and feelings by discrediting them and establishing instead data as a measurement of truth. This was done by focusing on mindfulness and stress understood in quantitative terms.

The main conclusion is that the language of data is just one of the cultural languages that only represents what it was designed to represent. Data tends to present itself as above the influences of culture, but one must remember that “none of the sign systems possesses a mechanism which would enable it to function culturally in isolation” (Uspenskij et al. 1973: 1). One cannot deny that abstract languages of mathematical reasoning have their advantages and uses. It is not the quantification (or digital codes, or 'reason') itself that is the problem, but the way it is incorporated in culture as a whole, the way in which it functions in the broader social and economic system in which it is embedded. There is a mythical image of pure rationality that stands outside of culture, but this is no more than a myth. We must agree, then, with Marshall Sahlins when he claimed that "In the West as in the Rest, rationality is an expression of the culture [...] not the antithesis" (Sahlins 2017: xxiv).

On a final note, I focused specifically on the interaction of individuals with technology in voluntary self-tracking in this work. As a consequence, I focused only on personal data. However, the power of data in society largely comes from 'big data', data gathered on the level of populations (often by private companies), aggregated and processed by algorithms, and used to predict and influence human behavior. I pointed out some issues pertaining to the 'datafication' or 'digitization' of life on a small scale, but this only scratches the surface of the larger problem. Exploring the function of data in society from the point of view of semiotics of culture on a broader level could be a fruitful approach for future research.

## References

- Amirkhan, James H. 2011. Stress Overload: A New Approach to the Assessment of Stress. *American Journal of Community Psychology*, 49(1–2): 55–71.
- Bell, Gordon; Gemmell, Jim 2010. *Your Life, uploaded. The digital way to better memory, health, and productivity*. New York: Penguin.
- Carrette, Jeremy R.; King, Richard 2005. *Selling spirituality: The silent takeover of religion*. New York: Routledge
- Chander, Ajay; Braun, Albert; Balakrishnan, Rajalakshmi; Gilman, Alex; Stergiou, Stergios; Marvit, Dave 2014. A Mobile Platform for Real-time Continuous Monitoring. *Fujitsu Scientific & Technical Journal* 50 (1): 84-92.
- Cobley, Paul 2013. *Narrative*. New York: Routledge
- Crawford, Kate; Lingel, Jessa; Karppi, Tero 2015. Our Metrics, Ourselves: A Hundred Years of Self-Tracking from the Weight Scale to the Wrist Wearable Device. *European Journal of Cultural Studies* 18 (4–5): 479–96.
- Dijck, José van 2004. Mediated Memories: Personal Cultural Memory as Object of Cultural Analysis. *Continuum* 18 (2): 261–77.
- 2005. From Shoebox to Performative Agent: The Computer as Personal Memory Machine. *New Media & Society* 7 (3): 311–32
- 2014. Datafication, dataism and dataveillance: Big data between scientific paradigm and ideology. *Surveillance & Society* 12 (2): 197–208.
- Davidson, Richard J.; Lutz, Antoine 2008. Buddha's brain: Neuroplasticity and Meditation. *IEEE signal processing magazine* 25 (1): 176-174.
- Economides, Marcos; Martman, Janis; Bell, Megan; Sanderson, Brad 2018. Improvements in Stress, Affect, and Irritability Following Brief Use of a Mindfulness-based Smartphone App: A Randomized Controlled Trial. *Mindfulness* 9: 1584–1593
- Fairclough, Norman 2001. Critical discourse analysis as a method in social scientific research. In: Wodak, Ruth; Meyer, Michael (eds.) *Methods of Critical Discourse Analysis*. London, Thousand Oaks, New Delhi: Sage Publications, 121 -128.
- Fiore-Gartland, Brittany; Neff, Gina 2015. Disruption and the Political Economy of Biosensor Data. In: Nafus, Dawn (ed.), *Quantified: Biosensing technologies in everyday life*. Cambridge, London: MIT Press., 101-122.

Fors, Vaike; Pink, Sarah; Berg, Martin; O'Dell, Tom 2020. *Imagining Personal Data: Experiences of Self-Tracking*. London, New York: Routledge.

Foucault, Michel 1997. On the Government of the Living. In: Rabinow, Paul (ed.), *Ethics: Subjectivity and Truth. Essential Works of Foucault 1954–1984, Volume 1*. New York: The New Press, 81-87.

— 1980. The Confession of the Flesh. In: Gordon, Colin (ed.), *Power/Knowledge. Selected Interviews and Other Writings 1972–77*. New York: Pantheon Books, 194–228.

— 2008. *The Birth of Biopolitics. Lectures at the Collège de France 1978–79*. New York: Palgrave Macmillan.

Gergen, Kenneth 2001. Self-Narration in Social Life. In: Wetherell, Margaret; Taylor, Stephanie; Yates, Simeon J. (eds.), *Discourse Theory and Practice: A Reader*. London, Thousand Oaks, New Delhi: Sage Publications

Gitelman, Lisa; Jackson, Virginia 2013. Introduction. In: Gitelman, Lisa (ed.), *Raw data is an oxymoron*. Cambridge, London: MIT press, 1-14.

Hall, Stewart 2001. Foucault: Power, Knowledge and Discourse. In: Wetherell, Margaret; Taylor, Stephanie; Yates, Simeon J. (eds.), *Discourse Theory and Practice: A Reader*. London, Thousand Oaks, New Delhi: Sage Publications

Harvey, David 2007. *A Brief History of Neoliberalism*. Oxford: Oxford University Press

Hoffmeyer, Jesper 2002. The Central Dogma: A Joke That Became Real. *Semiotica* 138(1): 1-13.

Jones, Rodney H. 2015. Discourse, cybernetics, and the entextualisation of the self. In: Jones, Rodney H.; Chik, Alice; Hafner, Christoph A. (eds.), *Discourse and digital practices: Doing discourse analysis in the digital age*. London, New York: Routledge, 28-47.

Kabat-Zinn, Jon 2003. Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice* 10(2): 144–156.

Kabat-Zinn, Jon 2011. Some reflections on the origins of MBSR, skillful means, and the trouble with maps *Contemporary Buddhism*, 12(1): 281-306.

Lee, Jihyun; Kwan Hoon Kim; Webster, Craig S; Henning, Marcus A 2021. The Evolution of Mindfulness from 1916 to 2019. *Mindfulness*, <https://doi.org/10.1007/s12671-021-01603-x>.

Lim, Daniel; Condon, Paul; DeSteno, David 2015. Mindfulness and Compassion: An Examination of Mechanism and Scalability. *PLOS ONE* 10 (2), <https://doi.org/10.1371/journal.pone.0118221>.

- Lomborg, Stine; Frandsen, Kirsten 2016. Self-Tracking as Communication. *Information, Communication & Society* 19 (7): 1015–27.
- Lotman, Juri M. 1974. The sign mechanism of culture. (Shukman, Ann, trans.). *Semiotica* 12(4): 301–305
- Lotman, Juri M. 1990. *Universe of the Mind: A Semiotic Theory of Culture*. London: I. B. Tauris
- Lupton, Deborah 2014. Self-tracking cultures: Towards a sociology of personal informatics. *Proceedings of the 26th Australian Computer-Human Interaction Conference on Designing Futures the Future of Design - OzCHI '14*. Sydney, New South Wales, Australia: ACM Press, 77–86.
- Lupton, Deborah 2016. *The quantified self*. Cambridge: Polity press.
- Meißner, Stefan 2016. Effects of Quantified Self Beyond Self-Optimization. In: Selke, Stefan, (ed.), *Lifelogging*. New York: Springer, 235-248.
- More, Max 2013. The Philosophy of Transhumanism. In: More, Max; Vita-More, Natasha (eds.) *The transhumanist reader: Classical and contemporary essays on the science, technology, and philosophy of the human future*. Chichester: John Wiley & Sons, 3-17.
- Nafus, Dawn 2015. Introduction. In: Nafus, Dawn, (ed.), *Quantified: Biosensing technologies in everyday life*. Cambridge, London: MIT Press.
- Nafus, Dawn; Sherman, Jamie 2014. This One Does Not Go Up to 11: The Quantified Self Movement as an Alternative Big Data Practice. *International journal of communication* 8, 1794-1894.
- Ojamaa, Maarja; Torop, Peeter 2015. Transmediality of cultural autocommunication. *International Journal of Cultural Studies* 18(1): 61–78.
- Potter, Jonathan 1996. *Representing reality: Discourse, rhetoric and social construction*. London, Thousand Oaks, New Delhi: Sage Publications
- Potter, Jonathan 2009. Discourse Analysis In: Hardy, Melissa; Bryman, Alan (eds.), *Handbook of Data Analysis*. SAGE Publications
- Potter, Jonathan; Wetherell, Margaret; Chitty, Andrew 1991. Quantification rhetoric—cancer on television. *Discourse & Society* 2(3): 333-365.
- PricewaterhouseCoopers 2016. The wearable life 2.0: Connected living in a wearable world. Retrieved from: <https://www.pwc.com/CISwearables>, 18.10.2020.

Purser, Roland 2019. The mindfulness conspiracy. *The Guardian*. Retrieved from: <https://www.theguardian.com/lifeandstyle/2019/jun/14/the-mindfulness-conspiracy-capitalist-spirituality>, 5.4.2021.

Puumeister, Ott 2016. Why does ‘normalization’ matter to political semiotics? *Concepts for Semiotics*. Tartu: Tartu University Press, 123-132.

Read, Jason 2009. A Genealogy of Homo-Economicus: Neoliberalism and the Production of Subjectivity. *Foucault Studies* 6: 25-36.

Rose, Nikolas 1991. Governing by numbers: Figuring out democracy. *Accounting, organizations and society*, 16 (7): 673-692.

— 2001. The Politics of Life Itself. *Theory, culture & society* 18.6: 1-30.

— 2007. *The Politics of Life Itself*. Princeton and Oxford: Princeton University Press

Rosenberg, Daniel 2013. Data before the fact. In: Gitelman, Lisa (ed.), *Raw data is an oxymoron*. Cambridge, London: MIT Press, 15-40.

Ruckenstein, Minna 2014. Visualized and Interacted Life: Personal Analytics and Engagements with Data Doubles. *Societies*, 4 (1): 68–84.

Sahlins, Marshall 2017 [2003]. Preface to new edition. In: Sahlins, Marshall. *Stone Age Economics*. London, New York: Routledge

Salupere, Silvi; Torop, Peeter 2013. On the beginnings of the semiotics of culture in the light of the Theses of Tartu–Moscow School. In: Salupere, Silvi; Torop, Peeter; Kull, Kalevi (eds.), *Beginnings of the Semiotics of Culture*. Tartu: Tartu University Press, 15 – 37.

Sapolsky, Robert 2011. The Neurobiology of the Adaptive and Deleterious Features of Stress. In: Kabat-Zinn, Jon; Davidson, Richard J. (eds.), *The Mind’s Own Physician: A Scientific Dialogue With the Dalai Lama on the Healing Power of Meditation*. Oakland: New Harbinger Publications, 76 – 80

Sebeok, Thomas Albert 1992. ‘Tell Me, where is Fancy Bred?’: The Biosemiotic Self. In: Sebeok, Thomas Albert; Umiker-Sebeok, Jean (eds.) *Biosemiotics*. (Approaches to Semiotics 106.) Berlin, New York: Mouton de Gruyter, 333-343.

Sebeok, Thomas Albert. 1991. *A sign is just a sign*. Bloomington: Indiana University Press.

Uspenskij, Boris A.; Ivanov, Vjacheslav V.; Toporov, V. N.; Pjatigorskij, Aleksandr M.; Lotman, Juri M. 1973. Theses on the semiotic study of cultures (as applied to Slavic texts). In: Eng, Jan van der; Grygar, Mojmír (eds.), *Structure of Texts and Semiotics of Culture*. The Hague: Mouton, 1–28.

Wetherell, Margaret 2001. Introduction. In: Wetherell, Margaret; Taylor, Stephanie; Yates, Simeon J. (eds.), *Discourse Theory and Practice: A Reader*. London, Thousand Oaks, New Delhi: Sage Publications

Wodak, Ruth 2001. What CDA is about - a summary of its history, important concepts and its development. In: Wodak, Ruth and Meyer, Michael (eds.) *Methods of Critical Discourse Analysis*. London, Thousand Oaks, New Delhi: Sage Publications, 1-13.

Wolf, Gary; De Groot, Martijn 2020. "A Conceptual Framework for Personal Science." *Frontiers in Computer Science* 2 (June). <https://doi.org/10.3389/fcomp.2020.00021>.

Wolf, Gary 2010. The Data-Driven Life. *The New York Times Magazine*. Retrieved from: <https://www.nytimes.com/2010/05/02/magazine/02self-measurement-t.html>, 18.10.2020.

Wolf, Gary 2020. The Unreasonable Effectiveness of the QS Show&Tell. *Quantified Self*. Retrieved from: <https://quantifiedself.com/blog/the-unreasonable-effectiveness-of-the-qs-showtell/>, 8.4.2021.

## Kokkuvõte

### Enesejälgimine tähendusloome praktikana ning selle roll 'ise' sotsiaalses konstruktsioonis

Magistritöö uurimisobjekt on enesejälgimine ehk uute tehnoloogiate (nt nutitelefoni, vormijälgija, biosensorid jne) kasutamine eesmärgiga luua, salvestada ja analüüsida enesekohaseid andmeid. Enesejälgimist mõistetakse kommunikatiivse protsessi ja tähendusloome praktikana, mis toimub inimese ja masina vahel. Peamised uurimisküsimused on järgmised:

- Millist rolli mängivad andmed indiviidide enesekirjelduste konstrueerimises?
- Kuidas mõistetakse ja konstitueeritakse inimloomust enesejälgimise diskursuses?

Uurimismaterjal on liikumise Quantified Self – ülemaailmne kogukond, mis praktiseerib ja propageerib enesejälgimist – liikmete lood; analüüs kasutab ka lisanäitematerjali inimkehade ja vaimsete seisundite mõõtmisest ja kontrollimisest, täpsemalt stressi ja meeletheadlikkusega seonduvat. Teoreetiline raamistik ühendab diskursuseanalüüsi ja kultuurisemiootikat. Analüüs koosneb kahest osast. Esimeses analüüsitakse termini 'andmed' tähendust rahvalikus diskursuses ning pakutakse välja semiootiline arusaam enesejälgimisest, mis rõhutab eri märgisüsteemide osalust suhtluses inimese ja masina vahel. Teine osa keskendub stressile, ühele sagedasemale probleemile, mida üritatakse enesejälgimisega lahendada, ja meeletheadlikkusele, paralleelsele stressiga hakkamasaamise mehhanismile. Siin osas mõtestatakse säärase nähtuste kvantifitseerimise tõhusust ja eksplitseeritakse seda eripärast inimloomusest arusaamise viisi, mis põhistab enesekvantifitseerimise praktikat. Peamine järeldus, milleni jõutakse, on järgmine: ehkki andmeid mõistetakse tavapäraselt tööriistana, mille abil on võimalik jõuda objektiivse tõeni, siis ei ole andmeid kasutavad enesekirjeldused kunagi diskursusest väljaspoold ega vabad kultuurisõltelisest arusaamast inimloomusest.

**Non-exclusive licence to reproduce thesis and make thesis public**

I, Vedrana Nikolic,

---

*(author's name)*

1. herewith grant the University of Tartu a free permit (non-exclusive licence) to reproduce, for the purpose of preservation, including for adding to the DSpace digital archives until the expiry of the term of copyright,

“Self-tracking as a meaning making practice and its role in the social construction of the self”

---

*(title of thesis)*

Supervised by Ott Puumeister

---

*(supervisor's name)*

2. I grant the University of Tartu a permit to make the work specified in p. 1 available to the public via the web environment of the University of Tartu, including via the DSpace digital archives, under the Creative Commons licence CC BY NC ND 3.0, which allows, by giving appropriate credit to the author, to reproduce, distribute the work and communicate it to the public, and prohibits the creation of derivative works and any commercial use of the work until the expiry of the term of copyright.
3. I am aware of the fact that the author retains the rights specified in p. 1 and 2.
4. I certify that granting the non-exclusive licence does not infringe other persons' intellectual property rights or rights arising from the personal data protection legislation.

Vedrana Nikolic

**17/05/2021**