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Self-Tracking Culture in Turkey
Türkiye’de Self-Tracking (Öz Takip) Kültürü

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PREFACE

Self-Tracking technologies have been playing important role in my life. I was able to change my body, lifestyle, and related habits by inviting more self-tracking technologies into my daily life. But more importantly, I was able to approach self-tracking as a culture thanks to all challenges that I came across while I was trying to reconfigure my habits, daily life practices according to my brand-new body-image.

I really appreciate my beloved family. I have never take any step back to introduce contemporary debates on health, wellness, biomedicalization and Biosociality to them. Their background as brain surgeon, practitioner, biologist and veterinary really extended my perspective on health, mind, and body. Hence, I own a lot to our debates that we had together in our family gatherings.

Second, I am so glad that I met with my advisor; Erkan Saka, who open a new perspective on technologies, society, and culture for me. His contributions supported me to study self-tracking extensively enough to cover all contemporary approaches to this culture.

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ABSTRACT

People have been tracking their own habits, body measurements, expenses, and various parameters for a long time. But recent technologies digitalize the tools that has been used for self-tracking. The digitalization reconfigured what people track and how they used to track. Resulting from that reconfiguration, a new culture called self-tracking emerged. Self-tracking culture defines the society, which is keener to collect body related data, positions self-tracking as social activity rather than personal and takes fitness over health.

More institutions, governmental organizations and industries involved in self-tracking culture by time. Hence, concept of body, health, mind, and citizenship reconfigured. Data become more prioritized and concerns over privacy and surveillance got more serious than ever. New regulations and political strategies configured. New kind of communication involved in clinics. More actors invited into the health arena. A new kind of digital embodiment is rising, new approaches on health revolutionize traditional definitions.

In this regard, Study on Self-Tracking Culture in Turkey investigates mechanisms, developers of the technologies, local biosocial groups, regulations, and policies to analyze self-tracking culture without overlooking the pre-digital establishments to explore the contemporary state from the best possible view.

Keywords: Self-Tracking, Wearable Technologies, Digital Health, Wellness, Digital Coaching

ÖZET

İnsanlar alışkanlıklarını, vücut ölçülerini, harcamalarını ve çeşitli parametreleri uzun bir süredir takip etmektedir. Ancak son teknolojiler, öz takip için kullanılan araçları dijitalleştirmiştir. Bu dijitalleşme, insanların neyi, nasıl takip ettiklerini yeniden yapılandırmıştır. Bu yeni yapılandırma sonucunda “öz takip kültürü” oluşmuştur. Öz takip kültürü, vücut parametreleriyle ilgili verinin toplanmasına daha istekli olan, öz takibi kişisel değil, daha çok sosyal bir aktivite olarak gören ve fit olmayı sağlığın ötesinde gören bir toplumu tanımlar.

Öz takip kültürü içinde zamanla daha çok enstitü, resmi organizasyonlar ve endüstri yer almıştır. Bu sebeple, beden, sağlık, zihin ve yurttaşlık kavramları yeniden yapılanmıştır. Veri, daha öncelikli olmuş, gözetim ve gizlilik konusunda endişeler hiç olmadığı kadar ciddi bir hal almıştır. Yeni regülasyonlar ve politik stratejiler yapılandırılmıştır. Klinikler içinde yeni bir iletişim yer almıştır. Sağlık alanına yeni aktörler dahil olmuştur. Yeni bir dijital vücut bulma popülerleşmekte ve sağlığa yeni yaklaşımlar geleneksel tanımlamaları kökten değiştirmektedir.

Bu sebeple, Türkiye’de öz takip kültürü üzerine yapılan bu çalışma mekanizmaları, teknoloji geliştiricilerini, yerel biyososyal grupları, regülasyonları ve politikaları araştırarak, dijital-öncesi dönemin kurulumlarını da göz ardı etmeden, güncel durumu en iyi gören noktadan öz takip kültürünü analiz eder.

Keywords: Öz Takip, Giyilebilir Teknolojiler, Digital Sağlık, Sıhhat, Dijital Koçluk

INTRODUCTION

We, human always have to keep and track an eye on everything that we live together, as anything that is out of our control can simply become a threat for us. Therefore, surveillance and control are both primitive practices which we inherently learn. Our tendency to control, track and check things is not limited to external resources of nature, instead, body has thought as something that we should control and manage unless it will become a first thing that is threatening us. Hence, as Cartesian dualism implies, body has thought as something which mind have control. In modern societies, we keen to self-control and self-governance, as our very primitive goal to survive requires a working management mechanism on body. The key to self-control is assumed to have self-knowledge. To reach comprehensive and verifiable knowledge on self and body, numerical values are alluring people as numbers tend to refer a neutral language. Therefore, personal analytics and measurements are interpreted as reliable practices for self-control, as numbers are identified trustworthy, and analytics are providing the most objective data for self-knowledge. But as those values have to be comprehensive, consistent, meaningful and, at the same time, verifiable, body should be enacted in its total visible, transparent form. This is where technologies of medicine and visualization are juxtaposed. Like some of the technologies such as MR, ultrasonography, tomography and EKG, health professionals are using those technologies to have body transparent and graphically represented, so they could manage to supply more knowledge on human body rather than what could be seen by naked eye.

But health is not a responsibly of only health institutions and professionals. We have been measuring, logging, archiving, tracking, analyzing our personal data, even with such primitive tools like; pen and pencil. Related to given technologies, parameters that we able to track have been enhanced. Today, we can track differences in body weight and height, pills taken, distances walked, budget balance, mundane events, and unforgettable emotions. Even before the digital tools, we have been using weight scales, diaries, receipts, logbooks, notebooks, and we

are looking more to be tracked and track more, as that is what we learned on how to get a comprehensive self-knowledge.

But then, if self-tracking is not a new practice of human, why we need to reconfigure it?

Self-tracking is not a new practice, but like any practice of human, self-tracking has dramatically evolved with contemporary technologies. As computers are capable to instantly sense, detect and digitalize what is in and around us, situations of what have been trackable, how we have been tracking and how we have been interpreting with data dramatically shifted. Traditional methods, or specifically; analogue way of self-tracking is no longer fulfilling what we are calling for contemporary self-tracking.

Even though medical visualization technologies and whole concept of biomedical technologies are not new, health related data is no longer attached to professional institutions and complex bulky devices. Smartphones, wearables, smart home appliances, smart medical devices, IoT gadgets and self-tracking softwares are serving digital body-related data for contemporary self-trackers in reliability, accessibility, and mobility. There are clever sensors and softwares, which are detecting and digitalizing data and instantly convert any input into digital, visible values. Those data are various, from hearth rate, blood pressure, CO2 Level in blood, quality and length of sleep, steps taken, level of stress, calories burned, activities started, time stand, places travelled, body temperature and a lot more data about nearly everything we exposed and born with.

Trackable data goes beyond what once self-trackers can individually track, but beside of what we are capable to track, measurement frequency dramatically shifted. Self-tracking devices are feeling more organic. They are now sort of disappearing computers. They look much more fashion friendly and attractive, they become more common and become mundane in daily life. They are clever enough to intuitively detect any kind of change in parameters to track. So self-tracking is not only active but passive process, it no longer needs the user's trigger, so frequency of tracking had reached what human was once capable to do so. Self-tracking devices are dynamically measuring, instantly digitizes, clearly visualizes,

and limitlessly store various, juxtaposed data. They are providing so called data flows, which are multilayered, live, simultaneous, and frequently streamed. But due to that that frequency and passiveness of users, growing concerns on tracking activities are intriguing academics. Privacy concerns and skepticism on authorization are positioning contemporary technologies of surveillance and tracking into a suspect. As it is mentioned in Handbook of Surveillance Studies, a huge part of society is now part of ‘*surveillant assemblage*’.¹ (Ball et al., 2012) Society, without its authorization and knowledge is now a subject of surveillance, but unlike the panopticon prison, technologies bounded data, actors, authorities, and power relations in more complexity and like once Foucault declared, self-control, even it emphasizes self, is no longer an individual activity. From this perspective, even people do not voluntarily self-tracking, they could be a subject of tracking. So, by calling self-trackers, it means people who voluntarily self-tracking themselves, who are more interested to self-control, self-balance and self-govern themselves. This underlines an important distinction between what is emphasized on behalf of self-trackers; instead of any human who interacts with social media, computers and online technologies, self-trackers are more involved to expose themselves in form of digital data flows, their enactment with life is more extend to digital spheres and as it mentioned by Ruckenstein, they produce, store and share their data doubles, data twins or digital doppelgängers as their enactment with body is relying more into digital configurations rather than traditional body image.

This by no means, this is totally new and unexplored practice of human. Studies on human computer interaction (HCI) targeting self-tracking process as a mutual process of human and tracking devices, but as Lupton argues it is social practice more than ever:

“Even at the individual level, the reasons why a person may choose to take up self-tracking and the meanings she or he gives to the practice are socially enculturated.” (Lupton, 2014, p. 78)

¹ Haggerty’s Surveillant assemblage concept will be revisited in study to conceptualize the contemporary level of surveillance in self-tracking culture and its mechanisms.

While self-trackers produce their data twins, data doubles and digital doppelgängers through self-tracking devices, their engagement is not limited to those data flows. They share, compare, argue, balance their data with other people and other people's data doubles, and their effort for self-governance is not free from bio politics and power relations. This complex network in Self-Tracking underlined by Williams:

“An analysis on self-tracking should incorporate and question how our personhood and our work is increasingly being defined not by ourselves but by a complex of others” (Williams, 2013, cited by Lupton, 2014, p. 80)

Contemporary self-tracking is a social practice and socially encultured. Self-tracking is no longer referable as beside self-tracking culture. Self-tracking is inextricable from culture and in the same time self-tracking culture is inextricable from social life of human, data and computers. Therefore, an analysis on self-tracking will be overlooked if it do not emphasize complex social relations and do not determine network of actors that underline self-tracking culture.

Popularity of studies on self-tracking culture mostly grows on emerging online / offline social groups of self-trackers. One of the most significant group is QuantifiedSelf,¹ a joint network of self-trackers all around the world who are sharing their data, experiences, stories, activities, guides. They compare self-tracking processes between other self-trackers. The social activities of those groups carry a significant potential for academics to rise up new questions on relationship of power organizations, bio politics, entanglement of bodies and technology in Self-Tracking culture.

Important phenomenons and concerns in contemporary self-tracking culture mostly stem from practices of those social groups. But this by no means that every study is pointing out same actors and indicating similar networks in Self-Tracking

¹ Online community of Self-Trackers which influenced many academics who are studying self-tracking culture. Their community could be reviewed from: <https://quantifiedself.com>
QuantifiedSelf will be mentioned several times in Study.

culture. If we look through from the wider perspective, it would be clearer to see perplexities settled in self-tracking. In this regard, I would like to focus on four main points that I would consider in my inquiry; Privacy concerns through data valorization, digitally extended bodies, and motivations behind self-governance.

Privacy Concerns through Data Valorization

Self-tracking technologies are relying more on to online technologies that stores and processes body-driven and health related data on online platforms such as; social media, web and cloud services. Sensitive and very personal data of users are given to the hands of big businesses of technology, health promoters, insurance companies, related power organizations and third-party companions. Idea of liberalization through digital technologies is turning more into myth and self-tracking culture could not stand apart from this critical situation. Numerical body is exposed to various organization simultaneously and it is not clear that if those data flows provide profitable, economic values for some. Importantly, self-tracking culture emphasizes organizational motivation. Beside of shallower data which flow through each individual self-tracker, data taken through the social configurations and complex networks are providing seamless advantage for compare, predict, localize and identify health and body related issues by those power organizations as those flows are quite well examples of social life of data. There are organizations working to keep personal data secure which I will inquiry in this study.

Digitally Extended Bodies

Technologies of self-tracking devices imply passively, actively, and even remotely track and digitally carbon copy human bodies, practices and patterns simultaneously. Self-trackers have their body's numerical values digitally copied and visually reproduced. Studies on self-tracking culture address different concepts to analyze particular reception of self and digital bodies.

Human body has been invaded by technologies for medical monitoring, healing, visualizing and tracking purposes for a long time. Those technologies are mostly organized to work individually. But in Self-Tracking culture motivations are more social and technologies are designed to work that way. There plenty of social media like platforms for self-trackers to engage with other self-trackers and become a part of community. Today's digital bodies are involved in more social practices in self-tracking platforms. By those platforms, self-trackers can compare their results, expose their analytical bodies to others, share and responds to activities and challenge communities. Self-tracking culture simply implies similar activities on social media. Self-trackers are now engaging their measurements socially and they self-balance themselves according to others and their engagement with bodies are not individual anymore. In my study, digital body concept will be explored, and I will try to go beyond what we can't digitalize yet.

The Motivational Mechanisms

Self-tracking culture implies social practices. But motivations behind tracking habits can be both personal and social. For personal motivation, each story refers different use cases; such as; enthusiasm for understanding more from their tracking results, idea of healthism, external forces by institutions, government, corporations, schools or healthcare promoters, obsession, and related disorders, gamification and pleasure of challenge with other trackers, self-balancing for fitness, effort of objectification on body, and health related issues require proper check such as blood sugar, pressure and heart rate. But rather than reviewing personal stories, especially for taking culture from wider perspective, I will explore cultural motivations and mechanisms to understand where contemporary self-tracking culture and technological approaches stem from. For rising up more precise questions, I would like to explore recent approaches of regulations, governmental mechanisms, official strategies and related institutes to local self-tracking culture. In this regard, I believe, inquiring the society's contemporary

approach to health, wellness, body and mind will provide a pathway for me to discover essentials which forms today's self-tracking culture. In this sense, I will visit Turkey's official institutions, health-strategies and civic organizations. But to retrieve approaches within field, I preferred to direct my inquiry to people who actually Engineered both hardware and software, choose a marketing discourse, regulate their devices, designed a platform for communities to gather around. By this way, we have fruitful data to understand how each actor approaches important concepts in self-tracking culture.

This way, I believe, I will able to explore cultural motivations and foundations that emerge contemporary self-tracking culture in Turkey.

Self-tracking Culture; In Turkey's Term

Self-tracking Culture mediates globally especially with the essence of social media technologies. Self-trackers are exposing their self-tracking activities, sharing their experiences on tools, requesting help to define puzzling results or complicated interfaces, comparing each process and gathering together wherever they are. There are online platforms specialized for self-trackers, such as most popular one, Quantified Self, a community of self-trackers. Recent studies on self-tracking is focusing more on to Quantified Self platform, as it is where self-trackers gathering together and became a part of self-tracking culture. But recent self-tracking softwares are all offering social media-like tools to gather their community and socialize each user's self-tracking processes.

Therefore, instead of platform-based research like those studies on self-tracking culture it would be more interesting to focus on local mechanisms, discourses and institutional configurations. I believe, those are the most fundamental configurations that forms contemporary self-tracking culture. Personal perspectives and experiences with technologies, culture and society will expose fundamentals that shapes modern self-tracking.

Here, one of the most questioning problem regarding the cultural establishments is that; there is no such a community such as QuantifiedSelf in

Turkish Self-tracking Culture. QuantifiedSelf have members from Turkey, but that doesn't refer a wider aspect. But there are biosocial groups like Diyabetimben, communities of Self-Tracking Applications like PepApp.

The lack of Quantified Self like community do not mean a misfortune for study. Instead, it directed me to search for deeper, extended, dynamic aspects. As today, a developer might be a experienced self-tracker; a founder might have a background in marketing, or an engineer with chronic disease. I think, multiplex roles of actors will extend my study for comprehensive analysis.

In-Depth Culture

I found In-depth Interviews as working solutions against a problem of comprehension in a study which focus on extended cultural phenomenons. In depth interviews can expose individual perspectives to register details in communitive constitutions which otherwise potentially be overlooked. This study was not an exception at all. I explored such personal studies which the effects of the cultural establishments are reflected.

Instead of solely applying quantitative data such as statistical approaches, surveys and such which is common in studies focusing on HCI, my study reached beyond to a cultural phenomenon instead of mutual interaction between human and computers. While I found HCI studies quite influential and valuable to perceive recent condition, social phenomenon of self-tracking invites in more sociocultural study for widening the presenting the contemporary stage.

Study which relies barely in numbers would simply be lacking personal stories, differences in processes and unique backgrounds. Numbers would only serve a fixed picture of dynamic and mutable form of a culture which is emerging with latest technologies. That kind of study would only be superficial, and details will be missing out of details. I always believed details are important to perceive culture extensively. Here, my effort was focusing more on to study self-tracking

culture in Turkey as extensive as possible. As while there are quite well studies¹ on mHealth² on behalf of local perspective of Turkey, I found those studies such empirical and quite limited to position self-tracking cultures in wider perspective.

Another point, as an interviewer and researcher, I have to expose my backstory too. Self-Tracking practices carries another level importance for me, as I believe them quite like the lifesavers. I have been using smart watches and related tracking softwares for 5 years. Thanks to the experience that they provided, I lost 85 kilograms in this timeframe. Since then, I believe how self-tracking technologies are crucial. But I also know that my backstory carries clues on how technologies and biopolitics effected my embodiment. In very auto-ethnographical way, I will not try to keep out those experiences, instead, I will accept that they carry an unique value.

The Flow

I believe one of the most important part of this study is archiving. In a historical narrative of self-tracking, we are in the milestone of this common practice. As I mentioned, and will repetitively be mentioned, Self-Tracking is not a new practice. Instead, it was part of politics, it has cultural motivations behind, and it carries such an economic value. But it is no more barely individual. It is a social phenomenon and significant cultural practice. Hence, self-tracking culture is deserving its own historical narrative and I believe this study will contribute it by staging a local perspective. I wish it will shed a light on upcoming generations to understand recent configurations regarding the culture. While it sounds quite specific area to study self-tracking culture, it covers such extensive practices. It keeps complex concepts such as body, mind, health, technologies, citizenship and

¹ Current and Emerging mHealth Technologies Adoption, Implementation, and Use by Emre Sezgin, Soner Yildirim, Sevgi Özkan Yildirim and Evren Sumuer should be reviewed as they offer comprehensive review within the field, from such an empirical point of view. I will mention the analysis again in my study,too.

² mHealth is an early term used to define mobile self-tracking technologies (mobile health)

biopolitics under the same roof. Hence, self-tracking culture has such niche perspectives to understand wide cultural configurations.

I think it is always better to be a skeptical in terms of technologies and society's adoption to those. But it is known that healthy life is our most everlasting desire. Today, self-awareness and self-caring is claimed to be a key of it, it is not that hard to estimate, day by day, how self-tracking technologies would become more popular and common in our modern society. Visualizing, tracking and diagnosing are important practices in which health technologies ease and next chapter of biomedicalization is released by high frequency of digitalization of those practices. I believe self-tracking culture is a key social sphere to support, adopt and inject those technologies collaboratively into a each person's individual daily life practices and therefore I believe its right time to scrutiny of this emerging culture from in every local perspective. I believe this study will work as a referable archive for later researcher on historic narrative of self-tracking culture but also it will shade a light to deeper connections between bodies, cultures, technologies, politics and society. I think ontological concerns of health is deeply connected to epistemological references of body. Therefore, hype of studies on self-tracking is not just an expected popularity of culture emerging around cool digital technologies and gadgetry, instead it is implementing a long and everlasting philosophy of human, life and his body.

I design clear and effective outline for comprehensive analysis. I raised simple question regarding the self-tracking culture; What has been evolved? Answer provided me an effective framework for categorization. Under that categories, I listed milestones regarding the given categorizes. In this regard, three main categorized evolved which I then divided in three chapters:

Self-Tracking Technologies:

For analyzing recent hardware and software-based technologies that evolve self-tracking practices and reconfigures our main interaction. Here, most effective technologies are listed, and local examples are provided regarding the given features. List is extended to those technologies; sensors, mobility, ubiquity, datafication.

Self-Tracking Concepts:

For analyzing new approaches to the most primitive paradigms. Body, Mind and Health are defined as main concepts which heavily reconfigured thanks to the adaptation of the new technologies. Reconfigurations are quite dramatic as they cover a new kind of embodiment, the digitally trackable mind and new approaches to the health that prioritize fitness.

Self-Tracking Society;

For analyzing self-tracking in terms of rather social configurations and social spheres. Here governmental actions, marketing organizations and political considerations are all investigated by looking through their regulative acts. Here, I divided this chapter to three main acts. First, Regulating Self-Tracking; for examine how governments are defining, regulating and categorizing self-tracking technologies, services and practices. Second; Self-Tracking Market to see approaches and given limits of the organizations in marketing self-tracking services and third; Self-Tracking Citizens to see the role of self-tracking in Turkey's modernization as an effective tool in biopolitics.

1. SELF-TRACKING TECHNOLOGIES

We have been using any daily life objects such as pen, paper, diaries, notebooks, account books for self-tracking for a long time. Technologies don't have to be digital either, as measure type, blood pressure monitors, and bathroom scales are here for a long time. Even we still use analog tools for self-tracking in the digital age.

But nothing has evolved self-tracking activities as dramatic as digital technologies. Digitalization refers to transforming any kind of data into a language of bits, a language whose main letters are 0/1. In terms of self-tracking, when people log their vital parameters, personal accountings, and feelings, they are all captured, stored, processed, and shared digitally by bits. The consequences of digitalization are not any other different than other practices. It is now easier to do constant tracking, anywhere, anytime, with less effort. Tracking can happen fast, simple, and autonomy. You can track any kind of parameter in mobility. Share your results just with one button, and even you don't have to it through all time connected networks. You can store your archive in the cloud, reach whenever you need it. Digital self-tracking devices work as black boxes (a commonly referred analogy) of humans—they extend human memory by their continuous lifelogging features. (Selke, 2016)

Digital self-tracking devices resemble their analog ancestors. Instead of drawing a line on the wall, people now use AR apps to measure their child's height. Instead of an account book, they prefer Excel sheets. They use smartwatches for counting steps. They instead use apps for dieting. They have virtual coaches at home. These technologies offer fast, nearly passive use methods, mobile, and affordable self-tracking solutions. Instead, through the data libraries and networks, a list of what could be trackable is getting richer as devices equipped with sensors, mobility, connectivity, analytical software infrastructure, and algorithms are introduced day by day.

After the ages of the desktop computer, tiny computers equipped with smart, energy-efficient chips relate to those developments, digital self-tracking devices have been taken to the next level by design, connectivity, and mobility. They form in various types. It can be a smart bottle that can count glasses of water drunk. It can be glasses like the Snapchat Spectacles, which captures whole scenes in life. It can be like the Apple Watch, which all time measures your Heart Rate and activities. Or it can be a simple banking app either, which keeps an eye on spending.

Those devices are multifunctional; they measure any kind parameter as body-related; skin temperature, heart rate, blood pressure, or activities such as; swimming, running, cycling, swimming, sleeping. They can connect with the environment; therefore, they can detect travel, humidity, air quality, and room temperature. They can connect other devices such as glasses, smart bottles, and cars. Even social media is a tool for self-tracking, and they simply thought as diaries as Lee Humphreys suggests. Those devices are donated with multitasking capabilities to bring together different measurements to compare and coalescence in some cases. Instead, they can even connect users' data to other users' data, so self-tracking activities excess self as an activity.

Examples of devices in digital self-tracking are increasing day by day. Even though there are differences, I would like to briefly break down on what devices share in common and refer to as a local example from Turkey.

Some shared features are drawing a picture of today's digital self-tracking and revolutionizing their technologies in terms of design, data process, and sensory experiences. I would like to suggest those standard features for further investigation; *sensors, mobility, ubiquity, datafication*.

1.1. Sensors

In the 90s era, computers were limited devices. They were bulky by their design. Their mobility is limited. In terms of connectivity, there weren't many Bluetooth devices supported. Internet before web 2.0 was more about data download. The connection speed was slow. Data uploading speed was limited. Web-Cameras, microphones, scanners, and printers were standard sensors. They were computer accessories. They weren't independent mobile devices. They weren't tiny as today's digital sensors. They were relying on computer connection for power supply and data transfers.

Mobility and connectivity are essential features of the next generation of computing. In the late 2000s, smart Phones became popular. They feature various sensors such as GPS, barometer and compass for location, a gyroscope for motion, proximity sensor, and which sense an object and device in front. Today, sensors are small enough to fit in tiny devices. They are energy efficient as they are mobile.

As well as their design changed, sensors became quite common for body and health-related measurements. There are sensors for different human body parameters, such as; heart rate, oxygen saturation level, blood pressure, blood glucose, skin temperature, body weight, and fat ratio. Self-tracking evolved with those capable sensors. Today, self-tracking practices are building upon those technologies. Sensors enabled constant measurements. It is now possible to quantify different parameters simultaneously. Quantification became independent from human agency. Therefore, the frequency of measurements is incompatible with manual practices as it won't be possible for people with diabetes to measure their blood glucose level while they are sleeping. Or, Heart rate monitor was not a mobile device; it was something that only professionals could use. Today, near all smartwatches feature a heart rate monitoring. Thanks to the sensors,

quantifications, which once only done by professionals, are now independent of clinics.

One of the most influential self-trackers, Esra Avcı, a founder of the social community, Diyabetimben (*I am diabetic*), emphasizes how those sensors enable constant quantification, which is crucial for people with diabetes. (Esra Avcı, Personal Communication, July 4, 2020) As those sensors are becoming smaller enough to hiding well in a wearable form, it is getting easier to make proper and constant measurements. She explains that: (Esra Avcı, Personal Communication, July 4, 2020)

"I should manually check my blood glucose level on glucometer by pricking my finger, as it is still the most reliable quantification system for today. It is a serious issue because I have to prick my finger by the hour whenever I am awake. Moreover, if the blood glucose level is imbalanced, it could be going up to 20 times a day. My fingers are turning into a sieve with brown dots. Both pain and cosmetic look are miserable concerns. With the sensors' technologies, I do not have to prick my finger for nearly 12 times in a day as they are tracking blood glucose levels every 5 minutes, which is not a possibility with manual systems. After the technologies of sensors, I prick my finger maximum 3 or 4 times in a day."

Thanks to algorithms, machine learning, and artificial intelligence, sensors are more capable today. The software can detect more even with the same sensory hardware. To do this, they connect to big data libraries. There, multiple user's Data put in comparison, enabling software to learn how to give more outputs with the same amount of sensory data. For example, with only a microphone and a motion detector, the device can understand if the user sleeps well according to his motions and snoring sound. Heart rate monitoring devices are using photodiode sensors and electrodes. But those sensors might be able to detect atrial fibrillation if the tool provides software that knows how to what a regular heartbeat is. When more comparison to be made, more knowledge could be produced. Therefore, as more

significant as big data libraries get, possibilities are rising for the software behind sensors to identify meaningful signals rather than noises.

1.2. Mobility

Mobility is crucial for self-tracking. Mobile technologies are constantly tracking solutions. Therefore, smartphones are the most popular devices for self-tracking. Their energy-efficient chips and wireless connectivity features enable self-tracking anywhere, anytime.

Software-wise, both Android and iOS operating systems are offering tons of third-party applications. Those offer various tracking features, such as activity tracking, dieting, health-related tracking, menstrual cycle, habit tracking, and budget. These apps are using the device's motion, light, sound, heart rate, and such sensors. Therefore, apps can recognize when users sleep, take a deep breath, exercise, spend money, and travel. Mobile applications are popular, but with the Bluetooth, smartphone accessories can connect more devices with sensors specially designed for trackers. For example, when the app connects with a wearable device, it becomes possible to retrieve heart rate data through the smart watch's sensors.

In addition to smartphones, the Internet of Things is presented as mobile phone-independent internet connectivity, sensors, and sometimes user interfaces. Those devices digitalize data constantly. They all time process data within big data libraries. Unlike their analog versions, those devices can track users' habits and learn from their patterns. For example, a smart bottle can detect how many glasses of waters you drank, and according to that information, an app can suggest how many you should have. There are various smart devices. While some of them wearables by design, some are more intelligent versions of everyday daily objects. In both cases, each can track different habits. Like smart cleaning, the robot could learn users' cleaning habits and configure the next cleaning session's best time.

Smartwatches can track steps taken, detect a heart rate, count steps, track sleep. Smart bottles can follow how many glasses of water that user drinks. Smart

pillows and mattresses can measure bedtime and detect sleep apnea. Smart weight-scalers can inform you of fat and muscle ratio. Health-related devices become "smart," too. Smart blood pressure monitors, Spirometers, glucose-meters, electrocardiographs, mental health-related devices, and more are listed.

There are two rather essential consequences of mobile technologies in Self-Tracking. First, when each of those devices become connected data gateways, users can make simple correlations. For example, the user can track if there might be a correlation between sleep quality and water consumed. Second, it revolutionizes the physical limitations of clinics. Those devices can quantify nearly vital parameters and immediately share with professionals or relevant authorities. For example, a doctor can detect an emergency remotely and instantly. Or a smartwatch with a fall detection feature can make an emergency call if it sees a user fallen. For some chronic diseases, mobile connectivity and constant measurements are crucial.

In her interview, Esra Avcı emphasized how mobility is essential for children with diabetes, especially for their families. She said:

"Before the technologies of mobile sensors and mobile connectivity, parents should make numerous trips to school to check going situation of their child's glucose level. Similar scenarios are possible for elderly peoples too. But after the mobile connectivity of sensors, it is possible to monitor the ongoing situation of blood glucose level wherever and whenever you want. It was a critical moment when technologies of sensors met with mobility and mobile connectivity. "

When scrutinized on the App Store, it could be seen how mobility features are emphasized in application descriptions. An application doesn't have to be designed for people with chronic diseases. Mobility is a crucial feature for different use cases too.

For example, from Turkey's App Store, dieting apps are quite common. The most popular ones are promoting mobility features in applications' description. fit365, a diet tracking app is promoted for being able to whenever you want to

record your daily weight, regime, exercise, and water consumption. Diyet 365 promoting a feature that enables users to take a photo of their meals and then instantly share with dietitians. An official app from the Turkish Ministry of Health, Formda Kal Türkiye! (Stay Fit Turkey!), promotes iPhone's M7 chip, which frequently counts steps taken, which requires mobility. Nutria app declares dietitian in your pocket suggesting a dietitian always with you wherever you need assistance, which for people who are taking strict diets, mobile tracking is essential. It gets confusing to manage meals sometimes, especially if the diner is taken outside. Therefore, Diyetkolik promotes that detailed reports of a steady diet could be available whenever you need them. The Diyetisyenim app offers mobile, trackable, online diet control rather than physical appointments for busy people in mobility.

Medical advisory and telemedicine apps are no any other different at all. As well as dieting apps, they are offering virtually mobile clinics. Prafilly app gives users 7/24 remote access to dietitians, doctors, and psychologists. So, users can contact professionals, even in mobility.

Albert Health is a virtual health assistant who is always with the user. It offers an online doctor consultation where ever and whenever needed. Remote controlling is essential for people who cannot take their pills regularly or couldn't realize how critical their situation is. Therefore, even they are mobile, relatives and doctors could be informed by Albert Health if unexpected conditions occurred.

Dakik (instant) is another app, which offers a mobile connection between doctors, patients, and relatives. Patients can make online appointments whenever they need a consultation. Or doctors can reach their patients if they recognize an extraordinary situation in their parameters. It is a possibility to check the ongoing condition of patients remotely, even for relatives. Dakik (instant) offers the next generation of patient and doctor communication. Dakik's mobile technologies are challenging limits for doctors to diagnose extreme conditions instantly. In an interview with developer Mehmet Şeref Kayalı, he said they are trying to connect more mobile health devices to the Dakik system. (Mehmet Şeref Kayalı, Personal Communication, 4 July 2020)

He explained two benefits of those technologies. First, it is possible to retrieve different kinds of clinical-level data from patients remotely if they integrate more devices into the system. Second, most of those mobile devices can upload data autonomously. Therefore, it is possible to automatically retrieve data even for patients who cannot self-track their measurements, don't know how to use those technologies, and cannot visit clinics. In those circumstances, Doctors' diagnosis is getting more instant with the help of Dakik's mobile technologies.

Another use case of the mobile medical advisory app is early self-diagnosis. One of those is SelfCheck, an app designed for early recognition of breast cancer. Self-Check guides users to make an accurate breast examination even at home, without professional expertise. (SelfCheck, 2015)

Activity tracking apps are also popular in mobile self-tracking technologies. People can take their virtual coaches wherever they are doing exercises. It is possible to detect heart rate and related quantifications through mobile sensor technologies even you are not in a sports center or a clinic. Smartwatches can check your performance according to heart rate data. Or, in another example, an App can detect how accurate you are performing while playing tennis. SwingVision, an app designed for tennis tracking, uses a smartphone camera and a smart watch's gyroscope to analyze your shot. (SwingVision, 2020) HomeCourt is a similar app designed for basketball. App also offers competitions to motivate users. It hosts virtual video classes too for users who want to learn more. (HomeCourt, 2020) Slopes is another app for skiing. Even you are at the top of a skiing resort, the app can track your skiing, analyze your pace, and count calories you burned. In The Slopes app, terrain data is also presented. It is possible to detect how many times you spend on the lift or at the piste after skiing. (Slopes, 2020)

Some of the activity apps offer professional-level fitness at home. Those apps became popular, especially in the COVID-19 era. Exercise Apps become more popular that are carrying "exercise at home" branding in their naming. Nike Training Club, for example, offers exercise sessions and social activities as similar to the gym. A virtual coach can assist you with your exercise program while friends can comment on your performances. Most of the activity apps are offering social

media features. Those features represent how well exercising apps simulate real gym conditions, even in mobility, as it is impossible to run away from social interactions even in a physical gym.

Every day a new self-tracking device and mobile applications are introduced. Whether their use cases are, most of those technologies are offering mobile solutions. Mobile self-tracking is a physical disengagement. It is a spatial reform. It challenges the physical limitations of clinics, gyms, and hospitals. Self-tracking technologies ease complex quantification processes. They regularly do not require professional expertise for quantification. They are portable. They are autonomous. Design-wise, Mobility features of self-tracking technologies are sustainable even they manage to quantify critically important vital parameters.

Consequently, concerns are emerging due to the mobility features of self-tracking devices. The extent of different topics on modern health, medicine, and. Such as; empowerment of patients, regulations, doctor's workload, patient's compliance, marketing of medicine, and doctor-patient relations. Mobile self-tracking means continuous quantification. Mobile self-tracking technologies constantly digitalize body-related parameters. For example, whether you are at the office, gym, or home, it is possible to monitor heart rate, blood oxygen level, and clinical parameters. Mobile quantification continuously builds a new digital body image, giving a further aspect of the human/body perspective.

Mobile Self-Tracking data is digitally archived; therefore, it is the human memory extension tool. Moreover, it adds a new layer to human memory. For example, there were no possible ways to find out how your heart was beating at a particular event since mobile and digital self-tracking technologies. Therefore, as I mentioned, the "black-box" analogy is commonly referred to describe memory-oriented technology solutions in digital self-tracking. (Selke, 2016)

As seen in those examples, self-tracking technologies are produced by popular medicine, sports, and health companies. Therefore, marketing also finds an alternative way through mobile self-tracking. From an economic, political level, marketing of those mobile self-tracking technologies require new regulations.

Moreover, new ethical concerns are rising as medicine, and the health industry undertake the distribution of those technologies

1.3. Ubiquitous Computing

In 1991, Mark Weiser defined a disappearing computer. He wrote to Scientific American that:

“The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.” (Weiser, 1991, p94)

He thought 21st Century's computers as a ubiquitous one, which will specialize elements of hardware and software, connected by wires, radio waves, and infrared, will be so ubiquitous that no one will notice their presence.

The ubiquitous computer disappears. It carries a form that graces the unnatural look of mechanics. It hides well behind everyday objects. It fills spaces where once filled with mechanics and fabrics. It is a computer that no longer has a cyborg-ish look. Ubiquitous computers are designed to have a natural look. They do not look like an artificial object. They blend with organic forms. Or, they intended to act as if they are organic entities. Therefore, in some cases, they even lack a graphical user interface.

Digital self-tracking devices are generally designed as ubiquitous computers. They are designed with different forms. They sometimes hide behind the human voice too. There are self-tracking specific smart assistants. They are like Siri, Cortana, and Alexa. They have artificial intelligence. They can learn. But the specially designed for self-tracking activities. For example, VI from Lifebeam, specially designed as a running coach. (Vi Trainer by Vi Labs, 2020) Tonal is a

virtual coach and personal trainer. It looks like traditional weightlifting equipment. But it is an artificially intelligent assistant. Retrieved from its website:

"Tonal learns from your body and tracks your progress in real-time to take the guesswork out of strength training." (The World's Most Intelligent Home Gym and Personal Trainer,2020)

There are local examples from Turkey, like Albert, a first voice smart health assistant who gives personalized health assistance. Albert can remind you of pills to be taken. He can share your vital parameters with doctors and family members. He can prevent you from allergic reactions. He can track your health measurements. As like most of the virtual assistants today, he has a personality. He has artificial intelligence. He is a "perfect nurse" with infinity memory. For all those features, he only uses voice commands. (Albert Heath, 2020)

Another local example is Lenia. She is a chatbot. Users can write down their quantifications and symptoms for instant assistance through a mobile app. Pep-app is another smart assistant with artificial intelligence. She designed for tracking the menstrual cycle. She can assist users with her personality. She can suggest healing activities according to the menstrual cycles of the user. (Lenia - Sağlık Chatbotu, 2018)

In some cases, self-tracking devices are designed as wearables. They intended to look like a fashionable garment. Contemporary Designs are less cyborg-ish. You look less spooky when you wear contemporary ones. You won't feel like the Robocop. There are tracking devices hiding behind everyday garments—for example, Muse Band. Muse offers technology-enhanced meditation and sleep. It can restore your sleep quality. It claimed that keep you focused. It could make you feel calm. Retrieved from Muse's website, Muse translates your brain and body activity into the weather's guiding sounds to help you find focused calm. But even Muse looks like any other cotton cloth headband; it is a research-grade EEG device that passively senses your brain activity. Battery, Bluetooth chip, and EEG sensors are hiding behind the cloth.

Smartwatches and smart bands are other standard self-tracking devices. They are sharing the same design language as ubiquitous computers. The Withings

Steel series might be a good example. They look like any other analog wristwatch. But they feature an ECG sensor and gyroscope. They can track activity, sleep, and heart rate. There is no way to recognize Withings digital self-tracking features from outside. Instead, Withings defines their design as an analog activity tracking watch. Watches carry an analog hour and minute hands like an analog wristwatch. Those hands are customizable. They can show any digital data in an analog way. Watch hands can show an activity level or a Heart rate, depending on the user's preferences. (Smart Scales, Watches and Health Monitors, 2020)

Another example is the Oura. It is a smart ring. It features advanced sensors. Retrieved from Oura's website; It is; Packed with infrared LEDs, NTC temperature sensors, an accelerometer, and a gyroscope all wrapped around your finger — the most precise and convenient place to capture body measurements like heart rate, HRV, temperature, steps, and more. Oura doesn't look any different than any other ring even it features advanced tracking features. It looks like a traditional jewelry accessory. (Accurate Health Information Accessible to Everyone, 2021)

There are further examples of wearable self-tracking devices. Today anything wearable could be redesigned to feature a digital tracking technology. The list goes on with sneakers, jackets, and such garments. From one local example, Özgür Çobanoğlu and his team designed a jean with tracking capabilities. Özgür Çobanoğlu is a microchip designer who worked for one of the biggest textile company's R&D department in Turkey (name not given), explained patents he and his team applied on wearables. They applied for several patents in wearable technologies:¹ (Özgür Çobanoğlu, Personal Communication, May 20, 2020)

Özgür Çobanoğlu defines regular computers as "loud computers." They were eyesores, he explains:

¹ Several Patents of Özgür Çobanoğlu and his team, such as; "Wearable Touch Sensitive Garment," "Composite Yarn for the Position Sensitive Capacitive Touch Sensing," and "Wearable Device and a Method For Determining Induced Voltage Exposure of a Human Body to RF Radiation and Static Electricity Variation" detailed information can be retrieved online; <https://patents.justia.com/inventor/ozgur-cobanoglu?page=1>

"They were hardware didn't hold back to hide themselves as a quantification device."

But unlike those "loud computers," he and his team designed a jean look exactly like any other regular jean. One of the products was carrying a touch-controlled interface within a surface of denim:

"Filaments are sensors. Those sensors were enabling users to control his smartphone through gesturing on jeans' surface".

Özgür Çobanoğlu explained their solution to design jean smart but in the same look as fashionable as they can:

"Nearly 45 sensors were placed in that jean, and there was no way for the user to see those by the naked eye. All those electronic devices hide behind a jean's button or in a back tag where branding is generally embroidered. The back pocket was usually embroidered bigger than usual by fashionable brands. In this way, that allows me to fill a lot of sensors in back tag, and at the same time, jeans looked as fashionable as those brands' products."

When a wearable device shares a look of any other regular garment, personalization becomes a vital feature to become fashionable instead of cyborgs. Therefore, personalization is an essential feature of wearable self-tracking devices. Most of the smartwatches have dozens of personalization features. For example, customizable watch faces, colorful watch bands, and cases are all offered. Or like the Oura, a smart ring offers different material coating, even one with diamonds, like traditional jewelry. (Accurate Health Information Accessible to Everyone, 2021) But personalization is not only crucial for a fashionable design. Some of the quantification technologies require personalization according to the human body to

work correctly. Özgür Çobanoğlu mentioned that sort of personalization feature of smart jean:

"This product could also be personalized, as some bodies are more sensitive to different frequencies as an antenna."

Jean allows users to quantify electromagnetic radiation to which the body is exposed. Features are not limited to tracking. Jean can also secure credit cards with NFC chips and, in the same, could be used for contactless payments. Those patents are configurable by design, as Özgür Çobanoğlu explains. He gave an example of a competition that his team organized in Italy:

"Participants designed a garment for pregnant women. It can record the baby's first kicks, and at the same time, keep the body secure from high levels of electromagnetic radiation. There was a yoga mat that trains users by checking if their movements are correct. "

He said how wearables are like servicing layers:

"Different services and products could be designed with the same patents of disappearing computers to quantify the physical world."

So, the same patents and designs could service for different use cases. But If self-tracking devices are ubiquitous by design and the same technologies of tracking could be used for other use cases, what are the consequences?

User authorization and privacy become a concerning issue when tracking technologies become visible. Invisibility aroused the attention of academics. In the Handbook of Surveillance Studies self-tracking and surveillance technologies are defined as similar concepts due to their technologies' invisibility. Both have taken with same concerns on control and human agency, as suggested:

"With their invisibility and the absence of subject consent, computers as electronic informants are similar in some ways to police informers and infiltrators, if more passive" (Marx and Reich, 1984 Cited by Ball et al., 2012, p.14)"

One of the examples that Özgür Çobanoğlu explained clarifies in which ways the same self-tracking technologies could be reconfigurable for corporate surveillance rather than the self-authorization:

"One of the patents were used by hospitals and hotels to check if bedsheets are washed properly as they are faced with a problem due to the ignorance of workers who are skipping washing routines. Sensors were able to detect if bedsheet washed properly".

As Mark Andrejevic suggested:

"...ubiquitous surveillance refers to the prospect of a world in which it becomes increasingly difficult to escape the proliferating technologies for data collection, storage, and sorting". (Andrejevic, M, 2012)

Invisibility is the main reason for questioning self-authorization; even self-tracking emphasizes self in its naming. It becomes harder to notice when, where, and what a ubiquitous computer track. Ubiquitous computers are technologies which evoke a critical question, which requires a further examination in self-tracking technologies frame, as Handbook of Surveillance Studies suggested:

"Questions also remain over the extent to which collective action can be energized around media surveillance, which is embedded to the point of its invisibility and ubiquity. What are the possibilities to resist and not surrender information, on a micro everyday level?" (Ball et al., 2012, p. 8)

Ontology is another concern. Ubiquitous computers are homogeneous by their design, so it is important to emphasize that invisibility could be a confusing term in some cases. While invisibility refers to the well-hiding system of computers, ubiquitous computers are not invisible but organic-looking computers, as seen in those examples above. In some instances, ubiquitous computers do not hold off to be represented in a human form. Like Pep-app, acts like a companion, the BFF of a woman. Rather than mechanical sense, Pep has its character and personality. Or popular smart assistances like Siri and Google Assistant, who also offer tracking features.

In some cases, those technologies do not require graphical user interfaces. They are just hiding behind a device that also does not have to be nearby. They act when you need them. They work in the background, retrieving and processing data, in some cases, without further notice. They look organic as long as they have autonomy. They are vital. They are alive. They kind of have their destiny. They have intelligence. They learn, sense, create, remember, predict, and dream. Therefore, their autonomy triggers one of the main questions of computing since The Turing test; *How is computer different from human?*

In this manner, ubiquitous computers are alive. With the Data they retrieved, they unapologetically have no purpose besides itself. Therefore, ubiquitous computers for self-tracking practices mostly rely on the data presumption process. More data have to be consumed in favor of produce more. It is an infinite loop, a recurrently blooming flower. It is a data-sharing process from one "organism" to another. Life and life of data are in this dialogue, which eliciting a virtual wall between natural and artificial. Lars Gertenbach and Sarah Mönkeberg had taken granted from Deleuze, Liebsch and Tarde, they emphasize that; the mutual relationship between life and data enables computers to become invisible, autonomous, and heterogeneous as organic. Artificial become more or less indistinguishable when both taken as data¹; and still, maybe there is little less distinction at all:

¹This leads us to Eugene Thacker's concept of Biomedica; "not simply as a technological instrumentalization of the (natural, biological) body, but as a unique domain in which biology is a

“The clearest expression of this logic can be found in the idea that life itself is information and data so that “nowadays we have to approach the DNA if we want to know what life means” (Liebsch 2012, Cited by Gertenbach and Mönkeberg, 2016, p. 31)

That point of view is summoning one of the most critical shifts in Self-Tracking Technologies: datafication.

1.4. Datafication

Digitalization was the first step to build digital spheres building upon data. Datafication refers to the next step, where collected digital Data is processed for new meaning-making instead of building up non-functional archives. Data stored in big data libraries are dynamically processed for as new purposes are given to it through technologies of algorithms, such as machine learning, artificial intelligence. These new meaning-making processes comprehend calculation, comparison, and sorting of data. In this way, more information could be retrieved from what has been gathered. Datafication is everlasting processes as data could be more meaningful when bigger the data library gets. In that sense, datafication implies technologies that can learn, understand, and identify the surrounded environment autonomously.

Therefore, developers do their bests to collect any data where available. To succeed, they try to implement more data resources into their platforms, such as smart devices and software. The challenge of building up a comprehensive ecosystem, where all software and hardware are connected, is working as a network to provide uninterrupted service. In the age of datafication, when more data collected, more flawless users are served. Service becomes a product itself, where

technology (in fact, a better technology than any we can build). It is not just that the medium is the message, but that biology is the new medium: the medium is a message, and that message is a molecule.” (Thacker, 2003, p.48)

different actors of technology are working flawlessly for a seamless experience. More seamless experience in the datafication age means more users, as more users mean more seamless service than vice versa. There are various services in which algorithms and big data technologies work in the background, such as media, news, and health. An algorithm can choose an up-coming song regarding what has been listened to in a music streaming service, or in online shopping, an algorithm can suggest goods depending on your shopping cart.

Digital self-tracking is builded up on data. Most of the academics locates data in to very core of modern self-tracking. (Lupton, 2014, Neff and Nafus,2016, Selke,2016) On his study, Nils Heyen, mostly cited from those academics, emphasises the role of data on constructing digital self-tracking:

"The permanent gathering and evaluation of self-related data in one's daily life."
(Heyen, 2019, p1)

As it claimed, the bigger the data libraries get, the more proper the service users get. Therefore, developers of self-tracking technologies are focusing more on becoming the data HUB for better experiences.

The Dakik health platform developer, Mehmet Şeref Kayalı, gave a particular example of the consequences to become a data HUB. Better predictions could be achieved by integrating more tracking devices into their Dakik system. In one example, with an integration of an electrocardiogram (EKG) device into a system, it became possible to identify and predict specific conditions for individual users who are potentially riskier than others for having a heart attack. Thus, the system is precautious and be alarmed in advance. This was only possible by integrating the EKG device into the system. It enables data to flow into Dakik's servers from users, as long as the device is attached to the body continually. When EKG data becomes rich enough to create patterns, comparison within those patterns reveals individual differences that are distinguishable sufficient to represent certain conditions. (Mehmet Şeref Kayalı, Personal Communication, 4 July 2020)

Another example is more related to COVID-19, a similar system used to detect hydroxychloroquine's side effects if the patient experienced. System supported doctors by providing them q-t interval through electrocardiography data, which shows abnormal graphs in EKG patterns when the patient experiences side effects of hydroxychloroquine, which is a high possibility for patients with particular heart-related conditions. Doctors manage to choose somewhat different treatments earlier without risking the patient's life by looking at those data patterns continually flowing through the system.

Also, the system is configurable as optimal patterns are somewhat different for specific patients regarding health-related issues. Health professionals can configure graphically what exactly extraordinary conditions are. Therefore, the integration of various quantification devices for body temperature, heart rate, or blood pressure means more predictive and precise the service gets. Big data represents a statistical reference; therefore, he explains Dakik's vision (Mehmet Şeref Kayalı, Personal Communication, 4 July 2020):

"We make a system carries certain codes for treatments and diseases for further investigations with artificial intelligence if meaningful correlations achieved or meaningful statistics retrieved, at the same time, protecting user anonymity. Dakik's approach is the same with bigger platforms like Apple Healthkit, which serves big data libraries to health professionals where data collected from each user put in comparison to identify and predict certain conditions or diseases."

Those efforts reflect what datafication mean for new health culture when it meets with self-tracking technologies. Self-experiments, N of 1 trial, citizen science, and grassroots sciences are challenging traditional regulations and make every available Data privileged for approval in sciences.

It's not only significant developments in health but related practices that are shifting. For example, measurement of the blood glucose level requires type 1 diabetes to prick more on their finger. But with the datafication technologies, it is a

lot easier to check blood glucose levels continuously. In her interview, Esra Avcı emphasized that:

"...for people with type 1 diabetes, algorithms support their community as they provide a decent number of measurements to be made by capillary blood. As an inherent condition, blood glucose level increases after 15 to 20 minutes by food eaten. Therefore, there is a 15–20-minute delay between sensory quantification and capillary blood. However, the software supports their measurements by closing that gap between pricking for capillary blood and digital sensors. Proper calibrations could be made with few pricking on fingers, thanks to the technologies of machine learning and artificial intelligence."

In both cases, relevant to societies and individual practices, data have a leading role in the evolution of self-tracking at each level. Both examples suggest the same idea mentioned before; the more significant the data libraries get, the more proper the service users get. Whether those services are designed for communal or individual use cases, developers develop those technologies around services that were becoming a data HUB is crucial to users for seamless experiences. Therefore, it is possible to mention plenty of self-tracking platforms such as Strava, Garmin, Fitbit, Withings, Google Health, and Apple Health. Those platforms are supporting multiple devices from 3rd parties. They usually offer an App which is working as data HUB. Users can check various data collected from multiple devices within the platform. For example, a smart scale produced by any other company can upload collected data to Apple Health service. In another example, the same heart rate data gathered by Apple Watch could mean something else in the Cardiogram app. (What's your heart telling you?, 2020) For serving more meaningful data to users, there is no other way than to collect considerable amount of data. All those facilitated through the technologies of API (Application Programming Interface), which stands for:

“ "Application Programming Interface." An API is a set of commands, functions, protocols, and objects that programmers can use to create software or interact with an external system. ” (Techterms. 2020)

Platforms are using APIs to become a data HUB. It allows Data eventually to be imported or exported through the platform. Therefore, APIs could enable companies to gather data they did not produce, for better services and economical purposes:

"...the new oil" that might one day serve multiple, potential purposes." (Neff and Nafus, 2016, p.113)

As seen in the examples above, the extent to which Data is processed is unpredictable as every day, new algorithms are introduced simultaneously, more Data is collected. In which ways meanings to be made through Data is limitless.

There are different local examples in the age of services to that kind of self-tracking platform that tries to become a data HUB with varying ways by design. While I have already mentioned Dakik and such services, there are other different building examples on different motivations. Vestel's Vfit platform is where users can track down their sleep quality, calories burned, steps taken, or water consumed. While it is possible to input relevant Data manually Vfit app can collect data related to sleep and activity tracking through smartphone's any available sensors such as gyroscope, GPS, and accelerometer. This experience becomes more efficient as measurements become more constant and precise when other hardware is integrated. Vestel offers Vfit Smart Band and Vfit Smart Watch, each donated with heart-rate monitoring, activity and sleep tracking sensors, and software that frequently uploads data to the Vfit platform. Instead, integrating the Vfit Smart Weight Scale, body fat, body water, body bone analysis, and body mass index could also be implemented into a smart weight scale to introduce those sensors to Vfit users. Within Vfit branding Vestel introduces a comprehensive platform for self-

tracking, which enables both activity tracking and body monitoring. (Vfit Ürünleri, 2020)

While the Vfit platform shares the same features with other competitors in the self-tracking industry to become a hub, another local initiative presents an exciting service to the industry. DiyetSaatim, a dieting platform from Istanbul, offers a monthly subscription service where users are given a smartwatch. Besides that, device users are served both remotely and physically by professional doctors, coaches, and dietitians. Users' activities could be monitored through that watch and companion smartphone application. So instant optimizations could be managed by official dietitians and coaches remotely, whenever needed. Users can check their dieting lists or exercise programs whenever they need or contact officials if further personalization is required through an app. Smartwatch autonomously uploads users' sleep tracking, meditation, exercise, and activity Data, so instant control is established if the problem with compliance occurs. Therefore, both users and service professionals can evaluate progress, and dynamic configurations could be made. While DiyetSaatim is giving both hardware and software tools for quantification of vital parameters, it offers the assistance of professional dietitians and trainers as a hybrid solution. While it has always been a common feature to export data gathered from any other self-tracking tool for later to be shared, integrating real professionals into a digital system is a distinguishing feature of the DiyetSaatim platform. DiyetSaatim is a data HUB where professional support meets with live gathered digital data. İrem Adıgüzel, a Platform founder, explains their working method, which implies a notion that doesn't aim to extract real professionals' role and to give those roles into the machines. (İrem Adıgüzel, Personal Communication, August 19, 2020) She exemplified that:

"For some conditions, like patients with high blood pressure, doctor's instant advice is crucial. They are merely dieting advice that is not enough in those conditions. Insulin resistance, fasting, and postprandial glucose levels are important levels where professional doctors' advice is necessary while dieting. Like dieting programs, online and telemedicine sometimes ignore

the doctor's role, but our system obviates that tendency. One example was my mom, who is also a patient with high blood pressure, she lost 23 kilograms of weight with our crew, but each day, she uploaded her blood pressure level for professional medical advice. When the doctor sees a problem, he can offer extra medical advice or other configurations if necessary."

I can provide you one exact example, she adds:

"One of our clients, (when it comes to dieting services, professionals commonly do not refer to users, they instead use the word; client, as a part of discourse) 55 years old man who is with a heart condition, is served with more light exercises and specific diet. But the other, day when he uploaded his blood pressure level, we detect a problem. It was super-high. Our trainer also saw an extraordinary heart rate as data continually streaming. Then, instantly, our doctor reached him to say that; reports are out of expected levels. Later, it turns out that his regular meds changed, and new meds caused a side effect. "

While the example here some similarities to the Dakik platform, she adds another point of the datafication process that relies more on co-operation with social media.

While self-tracking is intertwined with social media practices, datafication is another critical case of this relationship. İrem Adıgüzel provided one important aspect through DiyetSaatim's "Instagram draw":

"When you try to promote your platform through hashtags on Instagram, it can provide you clues on particular interest for a fitter and healthier lifestyle depending on geography, age, and gender-specific conditions. When we make an Instagram draw, we can even analyze that Data to analyze interest."

But datafication processes are not limited to social media in Diyetsaatim, she says:

"But even in our system, analytically, we process data, so later on, for example, we can specifically understand how different eating habits, exercise routines and such differs or similar within people in different cities. We are building up an infrastructure for more precise analysis."

She gave an example on how datafication technologies are aligned with ubiquitous computer design:

"We try to integrate Universities and hospitals into our data infrastructure. But to gather more and consistent data through users, we try to implement a Holter device that looks exactly like any other fashionable wristlet or a necklace. Those devices will transfer data directly to the doctors. The next step will be integrating smart-home appliances, she adds. I assume that will work especially for older adults for remote monitoring their health and conditions at home. When the watch detects a fall, a camera could start streaming, or a smart bulb can turn on for assistance. But it does not mean that system will not be integrated with more smart devices. We are trying to integrate a smart scale into the system. Until now, people were uploading their measurements by taking photographs of scales, but with a smart scale, that practice will become an autonomous process."

All those technologies exemplified rely on datafication signify one crucial instance on self-tracking; In all those examples, comparison and sorting are critical activities for data to be evaluated for new meaning-making. For instance, other's data needed to find out optimal values for resting heart rate or trying to figure out the side effects of a specific medicine. In some cases, data should be interpreted by other actors for new meaning makings. Therefore, data is a sociocultural phenomenon. Collective data is more effective then personal. All cloud computing

technologies, big data libraries and relevant technologies such as artificial intelligence and machine learning are relying upon this collective power. Datafication demands collaboration. It is what data-driven societies are built upon.

Therefore, datafication refers to the roles of "others" in Self-Tracking technologies. It allows us to reconfigure self-tracking as a cultural phenomenon. It is a technology that is catalyzing ‘self-tracking cultures’ as Lupton argues:

‘Self-tracking as a phenomenon has no meaning in itself. It is endowed with meaning by wider discourses on technology, selfhood, the body, and social relations that circulate within the cultural context in which the practice is carried out.’ (Lupton, 2014, p. 78)

Hence, Data has more power over society. It controls, defines, decide, and categorize, it is a privileged decision maker:

"Datafication means that societies privilege data, and data-driven outcomes, over other kinds of knowing. When data mediates so many things, control over the meanings of Data is a type of power." (Neff and Nafus, 2016, p.186)

2. SELF-TRACKING CONCEPTS

I determined the Concepts of Self-Tracking by simply rising a simple question; What do modern self-trackers prefer to track? Here, there are two parameters that direct a modern self-tracker to focus on those concepts.

First, Technologies. Self-Tracking technologies, by its capacities or -claimed capacities- offers several ways to enrich self-tracking experiences. They offer new sensors to detect new bodily parameters. New hard-ware offer tracking in-mobility. Algorithms are designed to detect different correlations. They guess. They suggest. They predict. A new kind digital embodiment emerged on software. Machines are capable to predict and detect more. They enhance the way we approach to our body, mind and health. Those traditional concepts now forced to be reconfigured. Traditional approaches are now insufficient to address the digital condition. Datafication, in this regard, challenges the traditional, it undermines how we used to conceptualize our bodies, mind and health.

Second, Culture. Modern culture influences more people self-care. Politics, media, and economy prioritized to have efficient bodies, with physical strength, clear mind and good look. Body carries such value for power relations. Bio-politics forces body to fit in ‘normative’ parameters. The modern discourse promotes the sense that there will always be better version of yourself. Fitness, in this regard, takes place of a health for *a modern in liquidity*, who appropriates data’s flexible form¹. Stable status of health undermined by the fitness’ everlasting journey to

¹ In Lars Gertenbach and Sarah Mönkenberg’s Study, this approach defined by the vital normalism, from health to fitness, which they explained by the; Bauman’s study on fitness. Here, I am citing the part that even influenced Lars Gertenbach and Sarah Mönkenberg: “...the idea of health is characterized by a quasi-external reference, building up an external guide to consult, evaluate and define conditions of the self and the body. Fitness, however, is characterized by the absence of this sort of orientation. As such, ‘fitness’ knows no upper limit; it is, in fact, defined by the absence of limit; more to the point, by its inadmissibility. However, fit your body is—you could make it fitter. [...]. In the search for fitness, unlike in the case of health, there is no point at which you can say: now that I’ve reached it I may as well stop and hold on to and enjoy what I have. There is no ‘norm’ of fitness you can aim at and eventually attain) (Bauman, 2005, cited by Gertenbach and Mönkelberg, 2016, p.35)

catch the most fit of yourself. Health 2.0, Biomedicalization and m-Health, all might be gathered under the one simple idea; health is not a fixed-condition anymore. They are all asserting the flexibility, personality and mobility of health mostly guided by the data.

As once Lupton also declared, and here I cited, I believe we can't simply inquiry the self-tracking concepts by relating all to the HCI studies. (Lupton,2014) Instead, self-tracking culture is more related to Science and Technology Studies since the concepts are both culturally and technologically motivated.

In this regard, we are confronting with our body, mind, and health in their new conceptualization according to contemporary self-tracking culture as they believed culturally constructed (from a post-structuralist perspective). We are re-introduced with them as self-tracking culture grace the new configurations, embodiments, identifications, and quantifications within their conceptualization. The traditional approaches are insufficient to configure contemporary body, health, and mind concepts. Paradigms, which once constitute those concepts, are now shifting. Simply, self-tracking culture undermines traditional ways that we conceptualize body, mind and their health condition. Hence, In this chapter, Body, health and mind will be explored in individual chapter for each one as they are the most altered concepts under the Self-Tracking Culture.

2.1. Self-Tracking the Body

Self-tracking culture presents a significant shift in how we identify the body. Representation of the body gains new forms through contemporary technologies of self-tracking. Those representations support a dramatic level of self-awareness. The awareness that challenges body identity and encourages the modern to revise his discourse on his body-image. Data drove body image, which defines that process exemplifies how self-tracking technologies are reforming our dialogue with the body.

To retrieve all the remarkable details of this reformed dialogue, I would like to use lifetime experiences of my own and the experiences of self-tracking technology

developers. Those experiences will be analyzed already drawn frameworks by rising accompanying questions:

- What happens when we first meet the data double?
- What is the role of the data double?
- What makes us know our bodies?
- What constitutes the body image?
- What if we dare to love our bodies again?

2.1.1. Meeting with the Data Double

Self-tracking technologies provide self-awareness on body image, which has never been possible before. Digital body image retrieved by those technologies enables another body image purified from sensations. The body divided into two parts. Digital and physical one. The digital body takes control over the physical one as it takes a critical role in self-awareness. That effect was conceptualized by different academics' study on self-tracking. One important concept is Minna Ruckenstein's data doubles, Ruckenstein explains the concept of data doubles through that '*abstraction*':

“ abstract and slice (the self) into various kinds of data flows, self-monitoring enables the making of unique data doubles.” (Ruckenstein, 2014, p. 69)

I would like to serve my own experience when I first met with my data double. I found it such a significant moment that I was neglecting my body's physical deficiencies until then. Any image of my body has never seemed so real like data double, even an image reflecting on the mirror has never been looked real to force me to lose weight.

In 2015, when Samsung announced the Samsung Galaxy Watch, we rushed to the electronics shop to try on the smartwatch as we don't want to leave behind by that new experience as “the geeks.” The first thing that everyone did was testing

the watch's heart rate detection feature, which was a unique experience back in those days. When all my friends put the watch on their wrist, the watch similarly showed similar values such as 60/80 BPM for their resting heart rate. When I put the watch on, the screen showed my heart rate as 120BPM, far above the expected limits. It was the experience that made me aware for the first time how dramatic obesity is affecting heart health. I was aware of how obesity is dangerous, but this was the moment that triggered me. Neutralization of numbers was clear; interpretations were left out, and I was out of "excuses" I was holding my very own heartbeat as my data-double. It was a feeling of abstraction. My heartbeat was neutrally turned into a data flow, and I was seriously facing my double data—a home truth of my body, without any blurriness. The moment I met with my data double, I felt its "gaze" directed towards me as Foucault described with an eye of power:

"There is no need for arms, physical violence, material constraints. Just a gaze. an inspecting gaze, a gaze which each individual under its weight will end by interiorizing to the point that he is his overseer, each individual thus exercising this surveillance over, and against himself." (Foucault,1977 as cited in Richardson, 2010, p. 11)

The gaze was so powerful enough to be reminiscent of the gaze in the panopticon prison system. Once you believe it is there, you don't have any changes to forget. After that moment, whenever I crave for snacks, I remember super-fast blinking 8-bit heart in the smart watch's interface. I interiorized my data double's gaze. It was so powerful and unforgettable as well. There was no way left for me to be disciplined according to it. I know that I have to slow down this 8-bit hearth until it gets the "acceptable" level, as those bits were representing the truth. From now on, the data double's gaze was standing there, in front of me, as a digital edition of the guardian's gaze in John Bentham prison design. Mina Ruckenstein defines that digital gaze with a term; techno gaze, which data plays the role of the gaze which

turns self into a self-surveillant subject and become the fundamental mechanism of discipline:

“that can be directed towards the user: measuring devices offer insights into personal data flows by making them comprehensible and actionable in terms of individual and biopolitical aims.” (Ruckenstein, 2014, p. 70)

The watch was standing there as a digital panopticon prison, keeping an eye on heart, always yelling that I was out of “normal” values. But most importantly, the values which build upon cumulative statistics of “the others”. Data embraces the feeling of “failed couch potato”. Meeting with my very own data presented me with a new embodiment. I began to define my very own self in the context of others. I became aware of myself, but not only of my body, either its position in society.

2.1.2. Role of the Data Double

As a consequence of self-awareness, the body is divided into two parts: the digital data double and the physical body. This dichotomy summons the Cartesian Dualism, which is well cited in Niall Richardson’s work:

“René Descartes who argued that in culture, there has always been a distinction maintained between the head and the body... ..In this respect, the body is often viewed as the enemy – something which is unruly, base and needing to be kept in control.” (Richardson, 2010, p.13)

I believe, today, data double takes the place of the mind in Cartesian understanding. But some of the studies see the distinction between data double and body as unnecessary. Irma van der Ploeg provides another perspective. She refers to body-related information as an extension, not a total separation. She says that distinction doesn’t make any sense at all, especially in societies that see the body as a piece of information for a long time. (Ploeg, V.D. I, 12012).

The distinction between the “ *data double*” and the physical body is also questioned by Matthias Bode & Dorthe Brogård Kristensen. They offered the alternative concept; “ The Digital Doppelgänger” as they believe modification of the self might not be started by the self-tracking at all. (Bode and Kristensen, 2015)

While I can get the point of “*The Digital Doppelgänger*” concept, my experience was quite different. I have never been aware of my health condition since I met with my data double. It was the moment that I decide to modify myself. I was left with no excuses. For me, it still makes sense to try to make the distinction. Visibility was so clear enough for me. Data double provided a clearer image of my body than the mirror. Instead, data double was the digital killer of that doppelgänger. It made me put my thinner body-image away, which I used to imagine as a shelter against the people who shamed me with their gazes, as Richardson explains that gaze people directed pityingly towards me:

“Fat bodies are so vilified in contemporary culture is because their owners have presumably allowed the body to take over and have violated the Cartesian dualism. Fat people are thought to signify a lack of control, a body which has not been disciplined by the mind. a fat person is read as a body which is all body and no mind.” (Richardson, 2010, p.14)

Lupton analyzes the power of the data double with *the lure of numbers*. She suggests that the lure of the numbers provides a clearer perspective on the body rather than instincts. (Lupton, 2014).

The moment I met with my data double, the body image I generated according to my senses was vanished. I prioritize the digital data as absolute truth on my body, thanks to that *lure of numbers* that Lupton explained. (Lupton, 2014). Data double provide me a clear body image. I have never seen my body like that before. It was so purified from the body image that I draw when I felt inadequate in society, data, became an organic attachment: “*The data becomes a “prosthetic*

of feeling, ” something to help us sense our bodies or the world around us. ” (Neff and Nafus, 2016, p. 75)

In that sense, data gained power, which is enough to construct the truth. As once you are exposed to data double, it is getting harder to believe than any source than data. Digital data seems like the best of knowledge. As mentioned in *Critical Bodies*, we know that some forms of knowledge are more privileged than the others in constructing the truth:

“The social processes that enable the acceptance and validation of some forms of knowledge over others. Power in these terms is the ability to construct what is ‘true’; it operates through language and is diffuse and situated. ” (Markula et al., 2008, p.10)

Today, according to that poststructuralist understanding, it could be claimed that digital data is the privileged form of knowledge amongst the other states. But if digital gains the level of power that is enough to construct the truth, how does it involve meaning-making processes? How data double manages the produce its discourse?

The first step was meeting in a transparent body image produced by the digital double and relevant technologies as Lupton defines:

“The ‘transparent body’ is created using such technologies in the effort to penetrate the dark interior of the body, render it visible, knowable, and thereby (it is assumed) manageable. ” (Lupton, 2013, p. 13)

From that perspective, the body becomes more manageable if only it is visible. Thereby, self-tracking technologies are gaining disciplining power since they are easy to use, mobile, and capable of visualizing more body elements. But since they produce fast and mobile digital data, meaning they also undertake making processes.

Before my first experience with the smartwatch, I have never been to a hospital to check my heart conditions. I had never taken my obesity seriously as I believe I'll be okay anyway since I become old. But when I demoed the watch, it was the first time that I saw my heart rate. I was in an electronics shop, was just trying a new gadget. As we didn't have any medical professionals in our group of friends, I was on my own with my data double in the meaning-making process. There were just two options in my mind, as I don't have any medical background. I have to be 'normal' or not. I referred to simple logic in the meaning making. There was something wrong. I was not normal. I haven't been offered anything in between by the system. I was left out with two simple options.

As seen in the examples of how Self-Tracking technology works, in some cases, data requires a sorting for meaning making processes since it lacks behind the interpretations of human. Unlike the 'the mind', digital data is fundamentally based on a binary system; therefore, it requires the 'systemized standard of the recognizability' to properly work in the meaning-making processes. But as Rosi Braidotti criticized, the *systemized standard of the recognizability* could be resulting in the 'sameness':

"The human of Humanism is neither an ideal nor an objective statistical average or middle ground. It instead spells out a systematized standard of recognizability - of Sameness - by which all others can be assessed, regulated, and allotted to a designated social location." (Braidotti, 2013, p.26)

In that sense, digital technologies need pre-given cultural codes to recognize and sort the analog information for meaning-making processes. But, if the social sorting practiced through digital data, would technologies force all users to share the same systematized standard of recognizability instead of an ideal for themselves?

Modern computers are still based on a fundamental fact. They can recognize you (1) or not (0). They are limited in digits between. I think this lack of

interpretation summons the dialectical scheme of thought which explained by Braidotti:

“ ...where difference or otherness played a constitutive role, marking off the sexualized other (woman), the racialized other (the native), and the naturalized other (animals, the environment, or earth).” (Braidotti, 2013, p.27)

Social sorting has been a part of our culture for a long time. Thereby, digital thinking didn't have a difficulty to take control over in already patriarchal, gendered, and racialized society. But since the digital data can construct the truth in any social domain, more people might be forced to carry a systematized standard of recognizability to be recognized and become visible in the meaning making processes. The whole sorting process might end with the devastating results, such as: lack of visibility of the divergencies which are ‘not looking same as the others’. They might feel insufficient in society such as Braidotti claimed:

“This political economy of difference resulted in passing off entire categories of human beings as devalued and therefore disposable others: to be ‘different from’ came to mean to be ‘less than’.” (Braidotti, 2013, p.28)

Systems rely on the systematized standard of the recognizability defined me ‘out of the standards’ as they couldn't recognize me as my vital parameters were out of the standards. I tried to give a meaning to my parameters on my own. The only thing supporting me was the software that didn't have the human level of intuition in the meaning-making processes. Hence, I thought that I was ‘not normal’ rather than different amongst the others. The difference between ‘not normal’ and ‘different’ might be sound like an unimportant detail, but at the end of the day, I felt as if I am less than others.

This particular experience shows that what is the data's power in constructing truth.

It is not only the data but the discourse, which has structural power on truth. Instead, data-related technologies such as digital services, ecosystems, hardware, and

software are all reproducing the cultural codes already available in discourse shared by society.

2.1.3. Constructed Body

Data double has the power to produce the truth. But it is a product of the societies already constituted by the discourse that emerged long before the data. There is a mutual relationship. Technology is a product of the already given culture; simultaneously, the power of the data now produces culture. Regarding that, I would like to provide an example that shows how the developers decide how to design those technologies regarding the discourse in an already given framework.

Halit Soysal, a developer of the self-tracking device called Paó, summarize his notion regarding that disciplining power of technology and his own story related: (Halit Soysal, Personal Communication, July 25, 2020)

“As I am from the generation who listened to Grunge music like Nirvana and such, it was a cool thing to stand in kind-a bending position for us. It carries a meaning that; I’m cool, I don’t care anything, one hand staying in a pocket... ..a cool posture, the vagabond. I grow up like that. I was not a sportive child, either. Then I had a hunchback. I feel uncomfortable with it. At this time, my relationship was on the rocks. Other protagonist of this lousy relationship once told me that; you always have the hunchback look! That offended me to hear this out in a certain way. Then I said to myself that; I’m going to work this out.”

It was not the technologies, but it was the already available discourse in that particular time which insulted Halit to made him felt that he should ‘fix himself’. Already robust and yet disciplining discourse triggered Halit to design the technology to discipline himself according to that discourse. Therefore, while

technologies privilege the data as a constructive one, it shouldn't be ignored that technologies are emerging from the culture which already constructed. In that sense, even *'the development of the technology'* is *'the discursive practice'* As it has explained in Critical Bodies:

'Rather, discourses can be understood as providing meanings that define the practices people engage in everyday life.' (Foucault, 1972 cited by Markula et al., 2008, p.10)

Discourse has real effects on the design-wise choices, preferences, optimizations, and, most importantly, the motivations for inventing the technology. Halit researched in which ways he can design the Paó by digging through available technologies given that time:

'I was the interaction designer by that time, so I decided in that particular way; if something consistently warns me, it can make the back loop so that I can fix my hunchback. It was around 2008 / 2009; I checked over the internet. I saw that there are a lot of tools for posture control. But they were all bad and weird. Such as ugly looking medical corsets. There was one electronic device. It was looking like a small fire extinguisher that you attached to your back. It sounds stupid when you stand hump. I said that I wouldn't use them. They are all garbage as I was trying to "look good". That is necessary detail as it determined all the Paó development process. In 2013, when I found myself in a "start-up world" I met with Cengiz Ulutav, ex-CTO of Vestel, president of TTGV (Technology development of Foundation of Turkey). He liked the idea of Paó. Then me and my team developed the Paó.'

While Halit Soysal's story reflects how self-experiences are essential in developing technologies that give new meanings to the body, it also remarks that the whole development process is catalyzed with already given meanings. But

regarding the disciplining power of technology, Halit Soysal's story carries another essential reference. When he met the global community of QuantifiedSelf, he began to realize that what he was trying to achieve is something critically cultural:

“When we left the thinking on the functioning of utility when I met with Quantified Self community. I presented with whole heroes of that community who have dedicated themselves to self-quantification. They carry weird-looking devices. They seem like they would be okay even they have to carry a desktop computer on their back. Then I said, yes, I was very respectful of what they are doing. But I'm not that kind of person. I don't live my own life like that. I smoke. I don't eat regularly. I sleep irregularly. My thing is not a health issue. If I choose the discourse of the community, my product will look like a scam. In each community, everything looks as if they are quantifiable. But I do not believe it. But then where should I be? This question let me think about body-image, body integrity, and body-identity.”

In the development process of Paó, Halit found himself in the middle of modern criticism.

Critical Body studies declared modern positivist medicine as patriarchal and gendered from the perspective of post-structuralist and the queer theory. According to that framework, power relations try to regulate and control humans according to ‘normal’ which is defined by this gendered, classified, the modernist thought. Halit's criticism is referable as it indicates the same ‘patriarchal’ notion of the medical industry. When he presented Paó to the doctors, the device's utilitarian sound become more perceivable:

“Then, I realized that this project should go something beyond Quantified Self. I don't have to ignore my discourse just to satisfy that group. I went to the medical industry, which has welcomed us. One of my father's friends,

who was also a doctor, was a good physiotherapist. He loved it. He supported me enormously. He told me all the technical details on the humpback posture. But his approach was so modernist. He was thinking of attaching the device to the kids who are careless about their posture. I found this very against human dignity. While we are in-control over children, do we attach the devices to 6 years old children? A Squealer device that is spying on children reporting their misbehavior to families? It would be a device that produces a new control area for families over their children's bodies, yet it found its way on body-integrity. Then, I declined the medical industry.'"

One other example from Halit's experiences shows that how the device can easily be modified as "the digital guardian" which takes the role of the guardian once stays in the middle of the panopticon prison:

"In one important investor meeting with the significant educationalist, while everything was going on pretty well, she got that eureka moment. She said, I found a fantastic idea! Just imagine that we attach Paó on all the students in the class, and according to their digital posture analysis, we can understand if they are listening to the class. I said, No! I don't want it! I couldn't understand how the educationalist can offer that kind of idea. How can you mechanize that intention? That's a pure idea of modernity. In other cases, some companies asked as if they won't use Paó to track their workers. I said no, as I believe if it is "self-tracking" it should be limited to the "self"."

Halit's examples signify an ontological problem; In the posthuman world, how we identify the human body within a context of data? What are the consequences of a heavily data-driven body? To where does the body integrity ground when it sits between data-driven culture and culturally driven data? Not surprisingly, answers vary according to different contemporary theories: post-

structuralists, queer, and posthuman. I would like to mention one of those from Homay King, who inherently criticizes the binary code as opposed to the queer. She criticizes that we are far away from the notion of Alan Turing, who is the person behind the digital code but also familiar with the queer identity. (King, 2015) Therefore, she suggests a distinction between the digital and analog way of thinking. Which, I believe, could apply to how we perceive the body in Self-Tracking culture. Homay, mostly grounded on the philosophy of Bergson, defines the computer's way of thinking with Intellect:

“For Bergson intellect is a problematic business: it is not reflective or contemplative; it apprehends the world in a utilitarian way in which perceptions are deemed valuable only insofar as they suggest possible actions of will upon the matter they reveal.” (King, 2015, p. 38)

While Intellect stands for the digital, intuition is more related to the analog way of thinking for Homay:

“is the faculty that helps us to understand that which is not predestined and cannot be calculated or predicted in advance.” (King, 2015, p.38)

One of the expressions that I retrieved from Halit's interview evokes the same comparison of Homay within the content of the wearables. (King,2015) While the device can intelligently calculate the data, ‘lack of intuition’ makes its tone of language more ‘utilitarian’. The language, which can be dedicated more to the cartesian dream:

In one scenario, think that you went to Paris with your girlfriend. You woke up on a beautiful morning and had a great breakfast. Then you tripped all around Paris all day long hand to hand. Then you saw that you step 16.000. But in another scenario, you have to apply for a job or registering to the school. You get out from home at 9:00, then went to the hospital, district

governorship, and tax office. Then you realize you forgot some papers than you restart all the paperwork from the very beginning. Then you saw that you step 16.000. Are those numbers can be the same? The experience is different. When my watch says, hey, you stepped 16.000 steps! In Paris, I would say that “hey, that’s cool. But in another case scenario I would probably say that; God damn you! to my smartwatch.”

After realizing how a simple device can replicate the tone of the utilitarian language, Halit decided to investigate alternative ways for developing Paó to be a more intuitive device. It should be a digital device, but it at the same time, it should be queer; it doesn’t have to be disciplining power; rather, it should be open for the alternatives. Therefore, he suggests a ‘new’ discourse in service. He chooses the term the companion instead of the coach to identify the Paó:

“Paó is an ARM mobile computing unit emerging with one or two components. It has a gyroscope, accelerometer, battery, and vibration motor. You can do anything with that kind of device, like an anti-theft alarm. It is your point of view on how you give meaning to this sensory device. We want it to be a companion rather than coaching. It is up to you to figure out the tone of voice regarding your device. It’s the persona. Coaching is like “I know the truth, I rule you! But companion is not like that, you know the truth, and I’ll help you get that!

He provided practical examples he and his team designed to produce Paó as a companion device:

“Therefore, after unboxing, Paó introduces itself to the user as I’m not like any other wearable. I won’t order you to step daily 10.000 or regularly exercise. Instead, I’ll offer you a one-week probation period. Please put it under your pillow while you sleep. So, I can track your sleep, activities, and posture. For a week, I’ll understand your potential. You can change the

week as if it is not representing you in general. After that period, we are asking the user of his expectations. What are your priorities, such as activities, posture, or sleeping? But we wait for the user to define his own goals. We are just nothing numbers of wearable industry's consensus. But that's all. We let the user to decide. Then we unlock some goals regarding specific needs. Like on the activity side, do you want to gain more weight, or you want to keep your weight in control and such. Like you want something concerning with your posture so I can understand when you stand as a hunchback. In-office or at home? Or in the morning or in the evening? So, we can analyze if your humpback is regarding your work or sleep quality. One another "companion feature" is that open your calendar so I can retrieve data from there. When I see a meeting in the morning, and as you wear me all night long, I can understand that you are sleepless for that meeting. So, I can understand how important that meeting. Before that meeting, I acknowledge the user that I will more strictly warn you in that meeting as you are more inclined to stay humpback more frequently. But after that meeting, I will message my user that It was already a rough day. I won't notify you more."

This way, Paó was forced to be directed into a more intuitive design by software. But the hardware design also goes along with the software. It is easy to use Paó with gestures. A simple button invites you to be in charge of notifications to manage when you need them. And in the setup process, the hardware button only dedicated to choosing the right position that only you feel as right:

"When you define the goal regarding the posture, we ask you to stand up the way you like most. Emphasize the way you like most is an essential point. We don't mention any medical truth. "The right position" is very personal. It is up to each individual. It is cultural. It is what you want. It's unique way of approval. We design a very distinguishing button in the

middle of Paó. It is very distinguishable as when you reach the position you want; you click that button.”

Taken granted from the fundamental question on human-machine interaction, Halit referred to how he intentionally prioritizes human autonomy in favor of notifications with the help of the hardware button:

“I think its relationship with technology and me should be well defined regarding master and servant relationship. Who is the master, and who is the servant? I’ll provide an example from the Paó project. In some cases, it is so hard for Paó to understand what your intention is. Therefore, even while you are hanging a curtain, Paó can vibrate as it is thinking that you are not standing as expected. But gestures are significant. It is such an easy stop Paó to vibrate with a simple gesture.”

While Halit’s approaches are relatively distinguishing ones in Self-Tracking industry, designing an intuitive digital device is the fundamental challenge of the computer industry since from the very beginning regarding the works of Alan Turing. Even though the discursive practices are shaped by the technologies claiming the opposite, I believe that human intuition is more complex to be digitalized as it is more open to the unpredictability.

2.1.4. The Lovely Body

If we are going back to the very beginning of Halit Soysal’s experience, all the development process began when he believes there is something he needs to “fix” in his posture. This draws a very significant image, which is reminiscent work of Adriana Cavarero in her work, *Inclinations*. She prioritizes our inclined posture and signifies it as a rebellious act against the idea that humans are always upright and invulnerable. She supports her thesis by the etymology of words such as “upright man”; “right” in the English language:

“Words like righteous-ness and rectitude, which frequently occur in dictionaries of morals, and were often used already in the Middle Ages for the “rectification” of bad inclinations, are an important anticipation of this scenario” (Cavarero,2016, p.6)

Halit’s problem was his body inclination. It exemplifies how the modernist approaches continue to force the human body in an ‘upright position’. While one thing that should not be ignored in the context of digital data is that, even it is privileged by modern culture, it lacks behind when it comes to drawing inclined lines. Digital data is the language of 0 and 1, which can only draw straight lines, so inclinations are still complex logarithmical problems. But love, which is in the very core of being human, implies the attack of the inclinations to the straight lines, as Cavarero suggests;

“love, is an attack against the self’s balance.” (Cavarero,2016, p.6)

So, data still lacks the capacity to recognize love. While data-driven culture is amused by possibilities in quantifying the body, inclinations, intuitions, and senses need more queer approaches than binary code as we are all *‘threatening by love’*. (Cavarero, 2016)

In Halit Soysal’s experience, which started due to the awful moment in his bad relationship, the meaning attributed to the posture shifted from something that ‘you have to fix’ to something ‘you need to love!’ when ‘love, senses and intuitions’ regained their priority in his life. He prioritizes the intuitive design in Paó. In this way, he tries to respect all bodies in diversity:

“Paó understands that position is your idealization. It is the position only you love. In this way, it only tracks your posture and gives feedback

regarding your taste. In another way, all the people will look the same. There won't be a Seattle Culture. There won't be Kurt Cobain. ‘

Halit Soysal's story exemplifies how the human body culturally constituted, how the truth produced by the lure of numbers in Self-Tracking culture. While Paó represents a success story on balancing the heavily disciplining power of the data, one other local example, a dieting app Diyetyapp shows a simple way of avoiding numbers. Within an interview, the founder dietitian of Diyetyapp, Merve Çıray, explains their method, which helps them to sustain the compliance of the client by ignoring the numbers at all: (Merve Çıray, Personal Communication, July 19, 2020)

''Weekly graphics motivate them to comply with the diet. We never count calories in the system. People feel more relaxed with photographs. When the calories counted less, the client becomes less obsessive''

From the very beginning of my own experience, the smartwatch motivated me to lose weight. While I agree with the post-structuralist theories' criticisms, I found my condition relatively different, as I was morbid obese who is not in good condition. I was hardly breathing. I was sweating all the time. Today, I am not complaining about the results. But I would like to mention that I felt obsessed using a smartwatch in the weight-lost process. It was quite depressing to see how dangerously fast that my heart was beating on a smartwatch, all the time. At the same time, it was becoming more stressful to be aware of that condition. Luckily, obesity generally not a chronic disease. But for people with chronic illnesses, a high level of awareness could cause devastating results as they are exposed to their own's ‘out of normal parameters’’ all time.

Esra Avcı, the founder of the Diyabetimben community, complained about this level of awareness. She claims that some people with type-1 diabetes feel devastating when they are exposed to vital parameters which represent how their bodies are fragile:

“Seeing the big picture is upsetting. I can give an example; when I became aware of how even just a little bite from an apple can raise blood sugar, this is devastating. Or, for example, a half bite from a slice of bread can rocket your blood sugar levels. When you see that by the graphics... when you see that as progress... you should really see for yourself how dramatic it looks on those graphics... Therefore, seeing the big picture makes people unhappy and anxious. Then, you become more obsessed and always try to control yourself by saying that; ‘I shouldn’t eat it even it is just a small bite’” By interpreting the big picture, seeing yourself through those graphics and numbers, you feel more restricted on controlling yourself. Even you dramatically long for something to eat (to ‘cheat’), you fell forced to self-control. This limits your life. This makes you overly self-aware, the negative impact.”

Esra Avci’s example clearly shows a unique example of how awareness becomes more devastating in certain conditions. While there are motivational consequences of having a data double, there are devastating examples when your body is born with ‘out of standards’ and registered as out of the systems’ recognizable values. If your condition is chronic, so called intelligent systems to behave you as a freak. If you are unable to self-control in a certain situation, it is not you but the system that should be open for optimization. In recent years, self-tracking technologies have become more intuitive. They offer more features on accessibility. They provide more accessible solutions to dismiss stressful notifications and personalized goals.

If the Body image is generated by the power of the data today, we can claim that our body image is heavily constituted by self-tracking culture. But then, which digits makes us believe in healthy body image? How many bits do we need for our bodies to believe in them as if they are healthy or not?

2.2. Self-Tracking the Health

Health concept, dramatically changed with the datafication. It turned into a performance, a journey of fitness rather than a stable condition. This evolution might be explained by the mentality that positions fitness over health. Unsurprisingly, this evolution catalyzed with both cultural and technological offerings of self-tracking. Data became a key for people to recognize their healthy state. It became an important parameter, a way to describe the healthiness. The signifier. The decision maker. It enables people to full-time check their conditions, sometimes on their own. Just without the necessity of professional support. In anywhere.

In that context, the biomedicalization theory of Adele Clarke precisely describes data-driven health concept. (Clarke,2014) It repositions health in a data-driven culture. It provides a framework for modern society that takes fitness over health. It recognizes the techno-scientific developments of self-tracking culture and technologies which we have mentioned before; Capable sensors move outside of the clinics; algorithms transform data into more meaningful outputs, technologies invite new actors to the health such as developers, connectivity enables health professionals remotely reachable, interfaces reimaged health through the graphics, and health adopted into a dynamic process of enhancement rather than a fixed situation. Also, it enables personal data's to be compared, collected, and provide new meanings when data goes beyond personal, as Neff and Nafus argue:

“A biomedicalized culture teaches us to measure our selves in the context of others.” (Neff and Nafus, 2016, p. 38)

Biomedicalized culture already projected a new health image which drawn by those technologies. It already made a room for self-tracking culture.

Then, how self-tracking culture fitted in the biomedicalized society? How is health addressed by communities and practices of self-tracking culture? By introducing new practices, new actors and new discourses to the modern health, self-tracking culture is transforming already biomedicalized society with the new questions such as: who are taking the responsibilities, is computer clever enough to

care human health, what are the new ways of dialogue and who are the new actors in health communication?

In this regard, I would like to review Adele Clarke's five processes of biomedicalization theory and compare it with the contemporary studies on self-tracking culture, which inevitably carry similar claims. (Clarke, 2014)

As I believe, investigation of this mutual relationship will provide me the comprehensive framework to gather modern discussions over health in Self-Tracking culture. By comparing them with the local examples, I think this would expose the relationship between actors, newcomers, and new ways of communication, which I would like to review on behalf of health in Turkey's self-tracking culture in a context of biomedicalized society with its idea that posits fitness over health and a dream of the digital clinic.

2.2.1. The Biomedicalized Society

Adele Clarke theorizes biomedicalization as she sees medicalization theory as an insufficient in recent conditions.

According to the biomedicalization theory, there are five remarkable processes in the reconstruction of health. I would like to review each process, as I believe each one demonstrates how health in Self-Tracking culture can be explored under the biomedicalized society.

The first process is: "the shift from the political economy to the biopolitical economy... ..over the roles in the industry. (Clarke, 2014, p.2) In addition to corporatized organizations and states" discoveries of citizen scientists, products of start-ups and organization of social groups are also gaining an important role as technologies enable anyone with any background to participate and collaborate to the process. Communities of people such as self-trackers, developers, self-experiencing people, DIY groups (such as QuantifiedSelf) are all invited to the professional medical industry. People are enabled to participate in health-related debates. They can contribute with their own data to big data libraries with the tools of self-tracking. In this case, one of the important features is the digital clinic, where

mobile technologies of self-tracking are challenging the physical limitations of the clinics. People can remotely connect with professionals, other self-trackers, and other people “like-them”.¹ Also, many start-ups that I mentioned in this study might be quite relevant example as they are not corporatized organizations but taking important roles in the industry.

The second process that: “the biomedicalization theory emphasizes is the intensive focus on health over everything.” (Clarke, 2014, p.2) The process is well aligned with the healthism concept that Lupton refers to theorize the self-tracking. The idea of Healthism positions health privileged over anything in life. (Lupton,2013) When data takes multiple roles in Self-Tracking, such as; preventive medicine, tool for self-optimization, sign of responsibility. (Swan, 2012, Cited by Lupton, 2013), designator of healthy body image, healthism embraces self-tracking culture as practices motivated heavily by the healthier, optimized body projection.

The third process is: on innovations and practices of biomedicine, as Clarke defines: “*are increasingly techno scientific.*” (Clarke, 2014, p.2) That process, even well aligned with the self-tracking culture. As I already mentioned in Self-Tracking technologies, most technologies are looking into ways to gather big data libraries and mine them in favor of multiple scenarios in medicine such as preventing risks, analyzing ongoing treatments, and enhancing compliance. From bigger companies like Apple and Google to smaller start-ups, developers are looking into the ways of datafication by self-tracking technologies, which invite researchers on biomedicine to data libraries of self-tracking.

Fourth, as Clarke defines as: “transformations of biomedical knowledge production, information management, distribution, and consumption”(Clarke, 2014, p.2) -in Self-Tracking culture, health related knowledge promoted, imagined, and mediated in the form of any possible media in any possible medium. Through all multimedia channels, self-tracking culture promotes health-related data as the most privileged way of preventive care by promoting early-diagnose of illnesses AFib, arrhythmia, flu and promoting self-caring and self-optimization

¹ Here, Paul Rabinow’s concept of Biosociality should be referred in collective practices of biologically identical individuals. (Rabinow and Rose, 2006).

through activity tracking, calorie counter, pedometer, sleep tracker technologies which promote smart fit bodies and active lifestyle as a way of healthy living. Self-tracking culture, as biomedicalization theory suggested, promotes self-awareness as a key element in the production and distribution of biomedical knowledge. As seen through the marketing discourse, the reification of biomedical knowledge and healthy body image is catalyzed by the consumption of self-tracking products. As a result, health seems like a thing that can be bought or upgradable. According to those marketing materials, just by showing a smartwatch, wearing a basic shirt, and thick glasses, the image of a self-aware human could be drawn. The contemporary image of a healthy body could be distributed on social media as well, as digital data is sharable with others. Biomedical knowledge continues its production and distribution process in online social media groups; hence, the production of healthy body image is a broadly social process,¹ supported by self-tracking devices and their marketing discourse. Therefore, representation of health takes a leading role in Self-Tracking culture, as health transformed into a ‘simulacrum’ by media, as Lupton suggests:

“Data comprise a simulated ‘healthy body,’ regardless of how well an individual may actually feel.” (Lupton, 2013, p.16)

Fifth, biomedicalization is looking into ways of transforming illnesses rather than control. As Clarke defines, that transformation is led by the contemporary technologies where big data libraries are seen as a place that carries a bigger picture on human-health. (Clarke, 2014) Data to be gathered is important for future inventions in human health. Therefore, data should continuously flow. I found that transformation such a similar one in the ‘*vital normalism*’ concept of Lars Gertenbach and Sarah Mönkeberg’s, taken from the Bauman’s approach to

¹ This might be call in again Paul Rabinow’s concept of Biosociality. Concept also discusses patient empowerment and social gatherings. (Rabinow and Rose, 2006).

Health, in liquidity, something like a ‘‘fitness’’¹. (Gertenbach and Mönkeberg, 2016) It always transforms. It is something carries flexible goals. It is a dynamic condition which is something that you always have to achieve.

Then, in which cultural domains we can retrieve the side effects of this transformation? When society keen to choose fitness over health, in which ways cultural mechanisms react?

2.2.2. Fitness Over Health

The self-tracking culture implies the shift from healing to optimization, or in other words, from control over the illnesses from the transformation. But if fitness is new health, how can computer-based systems meet with this demand? As I also examined, there are some promising technologies of self-tracking to support more flexible, more dynamic, and deeper thinking machines. But when all the solutions for self-tracking relies solely on data, who will take responsibility in situations where digital technologies can't cover? Is it that easy to declare transformation from health to fitness in the social context? While biomedicalized society is heavily motivated by the shift from healing (control) to transformations (optimization), are the capacities of those technologies enough to handle human health care?

Even though the marketing discourse is promoting self-tracking technologies as flexible enough to handle the optimization that self-tracking culture demands, when it comes to the responsibility of human life, most of them get out of this responsibility by declaring themselves as wellness devices. Then, according to the transformation in health care that biomedicalization offers, what are the actual responsibilities of the self-tracking devices?

¹ In the beginning of chapter ‘‘Self-Tracking Concepts’’, I referred Lars Gertenbach and Sarah Mönkeberg’s concept of vital-normalism which influenced by Bauman’s fitness concept in liquid modernity. Here, same conceptualization again applicable under biomedicalization theory.

In self-tracking culture, if healthiness becomes more related to fitness and wellness takes over the healthiness, how developers design their devices according to the responsibilities of human health? How are they positioning their devices in the market? How do they deal with the uncertainty regarding the categorization of the device? According to the interviews that I made with the developers; experiences are various. One of the examples is provided by Gözde Büyükacaroglu, the Chief Operations Officer of Vivoo, a local start-up, now operates globally. Vivoo is a wellness service that advises you personally on nutrition and exercise. Vivoo offers a rather different use case, amongst other wellness services. Vivoo provides its subscribers with monthly urine strips, which are the same strips actually used for any urine test before. But through the App, users take a photo of the strip with the unique color identity. Artificial intelligence steps in there. It processes the image to identify the changes in color bars. According to those tests, Vivoo gives personal advice (which is also given by the non-software professionals) based on Liver functions, Ketone, water consumption, pH / Nutrition, kidney functions, immunity, UTI (Urinary Tract Infection), and general health. (Vivoo Learn Your Body's Needs, 2020). While they use the same urine strips (little color adjustments made as it required for AI to work precisely in image processing), which have been used by clinics for a long time, they are "consciously" limiting their advisories, as they do not want to provide any diagnosis or treatment plan. By this way, they avoid responsibilities that require new regulations and classifications that identify Vivoo as a medical device. Therefore, Vivoo presents the service as a "wellness" product to avoid those considerations. Gözde Büyükacaroglu was quite clear on their attitude. She explained how they are really careful to limit their service to be classified in wellness category: (Gözde Büyükacaroglu, Personal Communication, August 27, 2020)

"You have to be in the wellness industry if you want to the roundabout on health if you want to skip the diagnose and treatment processes. You have to regulate it according to the process. We looked deeply for an answer on problematics in categorization between health and wellness according to

regulations and our own ethical concerns. The border between health and wellness is actually a grey area. But then how we separate it? If we look for a strict definition, health technologies implicate everything which steps into the processes of diagnosis and treatment. It is a standard definition. We don't want to take any action in diagnosis and treatment. Because urine sample is actually not enough to diagnose, for example, you can't say that you have diabetes relying merely on glucose in the urine sample. You need a blood sample too. A urine test is the first step; you need a blood test to be sure. Therefore, we are not into diagnose, and we definitely do not want to. We are beware of health regulations, R&D expenses, and weighty responsibilities. It requires more time and funding. Therefore, we are doing our best on positioning Vivoo outside of the diagnostic processes. We only provide simple parameters like water and urine pH. For example, If you have both Leucocyte level and nitrite in urine, your urine test is very high. This might show that you may have a UTI (urine track infection). As the treatment of UTI doesn't depend merely on nutrition, we suggest users see a doctor instead. As we are not taking a part in diagnose and treatment. As I mentioned, it is not a proper way to diagnose people depending merely on urine test.''

In our biomedicalization culture, it sounds as if wellness and health concepts are less distinctive than ever before. But especially from the developer's point of view, they are still different categories. Instead, as mentioned in Gözde Büyükacaroglu's interview, the problem might be starting from the language and definitions. As in some languages (in this case, Turkish as well), wellness and health doesn't have rather distinctive meaning at all:

'The problem begins with the language. In Turkish, there is no equivalent wording that has the same definition of 'wellness'. Word wellness can be translated into Turkish by healthy living, a good life, and welfare or maybe living in soundness. (Esenlik / Esenlikli olma) Even there is no equivalent

wording in Turkish. We have looked for an equivalent word for our Turkish marketing, and to be honest, we can't figure it out at all.”

Even though there is even no such a difference between the meaning of health and wellness in the culture of the self-tracking society, as seen on Vivoo example; developers are restraining their services to take rather different levels of responsibility on health. But the categorization is also an issue from the user's side as well. I find Spirohome as a good local example from Turkey, which suits well in this discussion. Spirohome is the mobile smart-spirometer device designed for easy usage in mobility but at the same time have a clinical accuracy. As retrieved from Inofab Health's web site, they represent themselves as: *‘Accurate as a spirometer you would see in a hospital but has been compacted to fit into your pocket!’* (Inofab Health 2020)

While Spirohome could be used by any self-tracker, in the same time, it is a medical device specially designed for people with specific health conditions. Taken from their website; *‘Spirohome Personal is a spirometer designed for asthma, COPD and cystic fibrosis patients to help quantify their lung health.*

Merthan Öztürk, CEO of Inofab Health, demonstrated that even they serve features for anyone who wants to self-track, there are in the health category. Their position is certain in the market as they criticize wellness products against health: (Merthan Öztürk, Personal Communication, July 18, 2020)

‘We are not positioning ourselves as a wellness product. There are positions in the market. We are not a wellness product. We are more ‘self-conscious’ products. We believe more in ‘lucidness’. Wellness products, due to the numbers flowing around those, are leaving their users in uncertainty.’

But even they have classified Spiro as a medical device, they still offer different products specifically designed for different use cases. Merthan Öztürk

explains how the design differs in each product according to who is using the device and where it is used:

“We have two different types of products. One is clinical, and the other is for personal usage. Clinical one is for professionals. They use it for medical diagnosis. We offer mouthpiece for every patient. Professional Technicians, such as nurses, use the interface on iPad or PC. Retrieved Data can be uploaded to the whole hospital’s data library if needed. This is for professional use cases. The other device is for personal use. Patients can use the device at home, self-check themselves, and see the results on their own. Or they can export and share the reports by mail or any way they want in pdf format. We have the third product, named Spirocloud. In Spirocloud, there is a joint interface. Here, hospitals can offer a personal device to patients. This way, each patient has accounts in Spirocloud. If the device is connected, when a patient makes a test, the system uploads tests automatically, so doctors can review the process even the patient is at home. Especially after COVID-19, this is a critical feature for a patient who should better not be at a hospital. The automatic synchronization feature is such a new approach because while you are video calling your doctor, you can test yourself, and the doctor can see the results simultaneously through the same interface. This is such a new way of interaction design. We even want to rename the test because the spatial perception is changing, so it is time to rename what we once called “clinical”. Even you and your guide don’t have to be at the clinic. But through the screen, you will share the same. Interaction is conveying us to new online coaching; it is not only “automatic-synchronization”. It is a collaborative way of testing with a professional. “

Self-tracking is carrying an idea of the physical detachment from the clinics at its core. In some cases, it succeeds. Self-tracking technologies provided clinical

accuracy. You don't need assistance, not as much as before. They are small. In some cases, you don't need a physical requirement of the clinics. They are connected, so they enhanced mobility. All those advantages point out a clinical revolution when technologies are taken out of the cultural context. But even though technologies are claiming and promoting differently, regulations are quite restricted and clear. The blurriness between wellness and health categorizes that made by the fitness over health idea of biomedicalized culture do not reflect on legal regulations. Regulations and classifications are clear in differencing wellness and health services. They are answering clearly on who will take responsibility. Therefore, from the developer's side, categorizations should be clear. It signifies the level of responsibility. It clarifies a threshold. Therefore, they organize their operations according to those regulations. They can be on both sides of health and wellness. But even that should be clear. This distinction and categorization could be retrieved in different examples. Mehmet Şeref Kayalı, a developer of the Dakik platform, emphasized that how their products are not like fitness devices. He claimed that they make a "serious" clinical device. Mehmet Şeref Kayalı mentioned other devices are like a "toy-like", not serious enough to be a professional health product. Here, this "seriousness" states the regulations which I would like inquiry in another chapter. But briefly, seriousness here means that a serious level of responsibility and features that can be serviced according to those responsibilities taken. Merthan Öztürk presented same attitude with Mehmet Şeref Kayalı to the wellness category. According to the interview, health is quite distinctive category from wellness. There is no place for "uncertainty" once you regulated within health category.

From other perspective, Halit Soysal mentioned the struggle he had when he introduces his device Paó, to choose in which category that his device will be positioned in the market. In the end, he chose the fashion industry, instead of wellness and health. He claimed that fashion provided him the freedom he has been looked for.

Even if the developers choose the category of health and ready to accept all the responsibility for it; they might be confronting with regulations that still

approach digital data in a very traditional way. When the service and implied actors are digital, regulators are stepping back from approval. The very traditional way of ontological understanding continues data. In some cases, still the only physical and tangible information seems “real”. Even though self-tracking culture is motivated by digital data, ontological concerns on the digital data are still relevant, especially in critical health-related conditions. Developers are still bounded to the physical spheres. They are regulated with the idea that sees physical presence more credible than the digital. Some of the examples show how both regulators and some users still believe in the services if only they offer physical solutions. This way, they become more confident. In Mehmet Şefik Kayalı provides a good example with Dakik. They are offering a digital service, but regulations have required them to collect a wet-ink signature of users if vital level of responsibilities will be taken:

“Also, it will be a legal issue if doctor and patient don’t physically meet. The physical meeting is a must. Our system can only work if they met physically. After the wet-ink signature, we can invite a patient to the system. Else, it would be too risky to take responsibility for a patient to diagnose remotely without a clinic. ”

In the example of the dieting apps, which are positioned more into the wellness category, the belief continues. Moreover, İrem Adıgüzel, a founder of Diyetsaatim service, promotes their service by the “lack of the software”. By this way, she claims the system becomes more professional, which positions the service under the category of health:

“We are not using the software. There are real doctors, trainers, and dietitians in our team. Even you remotely in dialogue, the team is not at home. The system is not like a call center. It is so important for our professionals to be at the office.”

Even though promoted power of the software on replicating human-like interactions and artificial intelligence, it seems like it is still an important feature to servicing with real professionals. In an Interview with Merve Çıray, she claimed that it is fundamental to have a direct dialogue with the ‘*real*’ dietitian instead of ‘*software*. As I see here discourse still declares software something that is ‘*unreal*’ which is a good example for ontological concerns in the wild:

‘‘You can make pre-interviews with the dietitian. It is a free feature in our system. In a client and dietitian relationship, it is so important to talk directly with a dietitian. You should get to know your dietitian; you can read and ask about those reviews. You can also introduce yourself. This is fundamental for dialogue between those two.’’

In Vivoo example, service advice users with the ‘*real*’ professionals. The interesting point is that some of the users thought that they have given machine-generated, autonomous advice. They assumed this as they instantly served, as fast as possible. As Gözde Büyükacaroglu explains, when instantly served, people have perplexity:

‘‘We have an advisory board with doctors, and in the meantime, we have dietitians as well. Those dietitians are working full time. They are writing advice served on the system. They are in charge of it. They are the one doing the scientific research. Then doctors in our advisory board check on those advisories. Both dietitians and doctors are going through the advisories. If they detect misinformation and mistakes in scientific papers, we are retreating our advisories relating to those papers as our doctors and dietitians are giving feedbacks—approved advisory collected in our advisory library. Even though users feel like everything is working autonomous, actually, when you look at the background, nothing is autonomous. All the processes rely on information verified by professionals. You think it is automatic because it is instant.’’

I found this assumption quite related to modern critique, as those assumptions suggest that how modern can forget how inorganically fast, they are when they challenged with the machinery work.

On the other hand, it is also important for professionals to choose their patients wisely. Rather than professionals serving for anonymous users, it is still important even in digital services for health professionals to choose their patients. It is also a legal right, too. Mehmet Şeref Kayalı explains their motivation according to that tradition. Unlike the user / patient / self-tracker-oriented App, they offer a doctor-oriented solution instead. Their team promoted the App to doctors; by this way, doctors can choose with whom they preferred to keep on the dialogue even outside of the clinic:

“Dakik is promoted to doctors. We don’t promote ourselves to patients. Doctors are offering our system. If he really needs to connect with a patient remotely, doctors are offering our system. It is up to the doctor to choose which patient he will offer our system. Because it is so important to choose wisely as the culture and psychological condition of a patient is really important for communication. Some of the patients are really lacking in primitive skills to communicate with doctors. Both mentally and physically, they were unable to communicate. Therefore, we can’t adopt all the patients into the system. So, communication between patients and doctors is very important. Both are the fundamentals. As a developer, we are just distributors of this communication channel.”

When intimacy and responsibility are provided, the services seem more “professional” to the users. According to those examples, enabling a communication channel with real(physical) professionals is the most preferred way for developers to gain the user’s reliability. When developers offer solutions beyond the software-based technologies, services gain a more professional-look, according to its users. If the developer wants to posit the product as a professional medical

self-tracking service, engaging with a real professional is needed, unlike the projected perfectionism of the AI, as Merthan Öztürk contributed.

“Even the AI is not enough for today. We definitely need professional medical coaching. We can’t turn over to software. It can’t say when you should go to the hospital. Some cool features actually bring really critical responsibilities.”

Gözde Büyükacaroglu’s explanations are supportive of Merthan Öztürk’s statements. As Gözde Büyükacaroglu states, artificial intelligence and machine learning technologies are limited to work on only in image processing. They are using artificial intelligence, just like an optical reader. For advisories, they still see digital technologies insufficient. Hence, as she mentioned, they have an advisory board full of ‘real’ professionals:

“We are using artificial intelligence and machine learning just for image processing. We are using artificial intelligence to identify the user’s urine test. In professional labs, there are optical readers. Those optical readers perform a urine test by reading urine strips graphically. We use the same urine strips that have been used for a long time in hospitals. It is the same strip. We have even performed the same verification tests. But we use artificial intelligence instead of optical readers just to perform image processing. “

When it comes to vital parameters, digital data seems a reliable source of information. But meaning-making processes still require the traditional/analog forms. Digital clinics provide clinical accuracy, but when it comes to decision making, concerns are real. For most of the conditions, both health professionals and the regulators still require a physical clinic. This situation approves how concerns in digital data are still relevant when it implicates the concept of health and body.

Although Technologies are claimed to undermine the physical boundaries in health in some cases, even the biomedicalized culture is still motivated by the traditional methods when data steps into the responsibilities in human health. I think this struggle is calling up another discussion which Eugene Thacker takes on with Biomedica concept. (Thacker, 2003) And maybe it is time for us to ask again what has been asked in Eugene Thacker's fundamental work; *'in what ways is the notion of biological materiality already informatic?'* (Thacker, 2003, p. 48) While some of the studies see technologies and data as such an exterior-tools beside the human body, maybe it is time for us to decide in which ways we are already a machine with full of digital information? Maybe we are making an unnecessary categorization, as I already discussed in ubiquitous computer part of my study¹, maybe it is not computers but our nature that makes everything 'ubiquitous' at all. Self-driving cars, self-tracking technologies, self-learning machines, self-optimizing medicines are all introduced but are we culturally motivated enough to believe in self-healing wounds? Did we take our time to decide in which ways we are already artificial? Taken granted from Gilles Deleuze & Felix Guattari maybe: *'Everywhere it is machines—real ones, not figurative ones'* (Deleuze and Guattari, 1983).

Did we already attach to this complex of a network of the machines, or even we have already attached as we are inevitably no more than the machine? Biomedicalized society declared to be in transformation but do we ready to believe in machines to decide and identify us as healthy?

2.2.3. The Digital Clinic

I find it better to look at cultural domains, daily life practices, and dialogues arising from health-related concerns in the mundane life a modern. As I believe, It

¹ We have visited Biomedica concept in Ubiquitous Computers chapter under Self-tracking Technologies. Same discussion reflects here as ontological struggles are playing important role in determining, regulating and empowerment of the digital data.

seems as if it is too early to suggest digital clinics are taking over the physical ones. The digital clinic concept is generating hype, which makes it an important cultural domain where effects of the self-tracking culture can be read between the lines.

In Self-Tracking culture, blurriness of health image is causing an ontological ambiguity on what determines the healthy state of the human. Biomedicalization relies on a culturally constructed health image which is not a constant state. As I mentioned; Contemporary health implies active goals. It declines the static condition. Therefore, aligning with the biomedicalized society's attribute on Health, health concept in self-tracking culture is dedicated to transcending human life. All defects, misalignments, and statistical deviations are defined as rich data points which carries a potential for datafication to analyze, explain and enhance rather than solely problems that need acute-treatment solutions.¹ Therefore, self-tracking culture invites in new dialogues between patients, doctors and self-trackers at clinics.

With the offered technologies, new practices are implemented into the very core of those dialogues. But under the roof of health, I am rising a simple but yet important question; Can technologies hide the ongoing problematics in communication between complex variety of actors, such as health professionals, developers, self-trackers, mundane users, biosocial communities or people with chronic conditions? In any kind of scenario, can biomedicalization evolve the level of engagements between those actors? Can bits bind up the wounds in health-communication in Turkey?

According to data that I retrieved from my interviews; the answer is quite complicated. Merthan Öztürk, the CEO and the interaction designer at the Spirohome, complaints about the relationship between doctors and their interest in technologies:

‘‘Even though the all the features and marketing discourse, people’s level of digital literacy and adoption are far below what we expected. Personally,

¹ Adele Clarke explains that transformation by treatment transformed into enhancement in biomedicalization theory.

I don't think that this is not directly correlated with the level of education either. Instead, it is more correlated with habits. For example, a doctor who is 50 years old has more descent level of digital literacy than the 15 years old teenager. ‘

While Merthan Öztürk doesn't correlate digital literacy with education level, same experiences mentioned by Esra Avcı, a self-tracker with type-1 diabetes, who is overly shocked by doctors' interest in those devices:

‘3 or 4 years ago, there was a summit in Izmir, about technologies of diabetics. There were a lot of endocrinologists all around Turkey. I was shocked that how doctors are unaware of those technologies. They don't know about sensors and contemporary technologies. They don't know how we use those devices practically. They even don't know how to attach those devices to the body. I was shocked. I couldn't believe how a doctor, even an endocrinologist, doesn't know those technologies. How is it even possible? ‘

She provided one more particular example from this year when she visited her local community health center:

‘‘When I went to the community health center for the first time, the doctor was shocked when he saw my insulin pomp, ‘‘the light-bulb moment’’. I explained to him quickly about my own experiences with sensors, insulin pumps, and such technologies. He was so curious about the technologies but didn't have any chance to try. ‘‘

Merthan Öztürk, according to his observations, correlates the problem of digital literacy amongst the doctors with the age of the ‘‘opinion leader-doctors’’:

“The basic problem is, technologies are preceding the traditional health ecosystem. Critically, we have a serious problem with technology and doctors. In the medical arena, the age level of the opinion-leader doctors is so old. It is so hard to convince those people into the technologies. There are two types of people that I mostly met. One is so supportive, appreciating what we did but having a hard time when you asked them to use those technologies. The second type is so prejudiced. They say things like, who will use those devices? What is the point of making those devices?”

Even retrieved from those interviews, the most underlined motivation on what has been causing the neglect of technologies by the doctors is the workload. Doctors apparently don't want to take another responsibility regarding technologies. Esra Avcı implies the situation according to her observations:

“I can understand doctors. Their workload is super heavy. They don't have any chance to try those technologies. And maybe, they don't want to take responsibility for those devices.”

Esra Avcı's experience is supported by Merthan Öztürk's observations too. He claimed that doctors are looking into more practical ways as they have to be fast in their daily routine:

“The workload is problematic for a doctor. When doctors are heavy working, they are trying to be fast; they don't want to deal with huge amounts of data. In the US, the workload of the doctors is not like that. Nurses are more effective in that sense. They are given more responsibilities. Doctors are taking action in critical, final decisions. But here in Turkey, the doctor even working as his own secretary. He even has to do all the categorizations, even accounting. Therefore, more input is confusing in this heavy-loaded workflow.”

According to the statement published on 30/12/2019 by Fahrettin Koca, the Minister of Health of the Republic of Turkey, there were 164.594 doctors actively working to this date. According to the same statement, the ratio of doctors over the total population is 498,2. Which means there are nearly 500 people waiting to be served for each doctor in the Republic of Turkey. This number is above the average of 341,3 people per doctor of the OECD countries. When it comes to nursing, the difference is more dramatic as while the OECD average of the population over the nurses is 100, Turkey's statistics show 431,2 people waiting to be served by each nurse. (Sağlık Bakanlığı, Sağlık Hizmetleri Genel Müdürlüğü, 2019) The gap explains the heavy load work of health professionals in Turkey, which exemplified within the cases that both interviewers experienced. This data also well aligned with the remarkable study; Current and Emerging mHealth Technologies- Adoption, Implementation, and Use published by Emre Sezgin, Soner Yıldırım, Sevgi Özkan and Evren Sumuer. Briefly retrieved from those case studies, such as instant messaging apps like WhatsApp are quite popular amongst doctors, but there is a decline in health-related Apps, as traditional methods seem more reliable as "they just work". (Sezgin et al, 2018) Therefore, there is a significant denial of new technologies as their reliability is a question, especially under heavy workload conditions. Healthcare professionals don't want to spend their time understanding, learning, and even coaching their patients through the use cases of those system as. Technologies create new kind of responsibilities to their already heavy working conditions.

But then, what is the position developers should take? How can a developer manage to produce self-tracking device which do not require advanced digital literacy and don't increase responsibilities? Merthan Öztürk explained that they managed to build a compatible device which is helpful for the workload rather than increasing responsibilities:

"That's why we want to design smarter systems. Even a nurse can categorize the patient. We want the diagnose process to be fast and practical. We should serve the most refined data. One important fact could be the load

of information that doctors have. They are educated traditionally, they have the workload, and they don't want to deal with one more new thing. Therefore, As a developer, the best thing we can do is design the easiest, fastest, and most user-friendly solution. Developers want to donate their devices full of features, but doctors quick-check two or three main parameters, which is really necessary. They mostly share just 10 seconds to understand what is actually going on. The rest of the parameters seem just a distortion. More data do not mean more professional devices. ‘

From my point of view, when Merthan Öztürk claimed that more data do not mean more professional devices, he signified an important point in technological determinism. Technology determined idealism and solutionism¹ catalyzes techno-centric thinking, which distorts developers on building a user-friendly device. Developers still challenge themselves to invent the most feature-loaded device to take the best professionally looking position in the market. But unfortunately, the end result could be a device full of features that no one can actually use. Or worst, people for whom the developer specifically designed the device can't interact. As also Merthan Öztürk claimed, in some cases, it is better to not to produce the device instead:

‘As developers, we have a disease, we have such a problem to see the technologies as a solution for everything. Digital health, quantified self, and such are sound cool, but they are not fully capable solutions to all. Instead, we should produce more adaptable things. Or maybe for some-cases, preferring not to do at the very beginning is sometimes can be the best solution at all. For example, designing a smart bracelet, a smart screen, etc. for a patient with Alzheimer's is meaningless. You design an interface, the screen for a patient who is out of his mental capacity. Who is out of perception? The best way is not to design at all. This is problematic. You

¹ The concept in a way that Evengy Morozov explored.

really believe that patients can use the device you design, which is even cannot interact with organic life. You wish the user to cooperate with the device while he can't cooperate with life. He can't use the device he was born with.”

But this doesn't mean that technologies distort professional's workflow. Instead, when they are adopted, technologies share the workload as they offer faster and easier solutions. For example, Diyetyapp App provides a well-designed HUB for communication. This communication HUB designed especially for dieting. It supports digital dieting listings, graphical quantifications, and one-to-one sessions. Hence, App shared workload of the dietitians, as Merve Çıray claims:

“The app really eased our workload as a dietitian. On messaging apps like WhatsApp, it was so hard to find them and analyze past quantifications and diet listings. But with the communication tools designed especially for dieting, it is easy to retrieve that data. Before the App, you should open 2-3 screens of Apps for each data such as dieting list, quantification, and user profiles. But anyway, consistently checking photographs could sound devastating, but App is covering all that devastating processes with its other helpful tools. At the very beginning, people were asking more, but there is a learning curve anyway. But with App, the user's adaptation rate is faster. Consequently, our workflow has eased. “

As expected from the biomedicalized society, self-tracking culture invites health-related technologies to anyone's mundane life. Self-caring, self-optimization, and compliance with the treatments are facilitated for anyone who does not declare himself as self-tracker at all. Technologies of self-tracking enhanced relationship with medical professionals and patients in this sense. As interviews point out; self-tracking technologies are reforming the dialogues between patient and doctors with the tools they offer. Therefore, it can be claimed

that; self-tracking technologies and relevant practices are transforming the communication between health professionals and patients.

According to the interviews, dialogues between the actors transformed into a faster, reliable, and more apprehensible way by the given tools. Some of the digital tools cover up inevitable human frailties. They convey more clear reports to the doctors. The duration of the appointments is shortened as doctors are provided with more visible and clear measurements. One example retrieved from the interview with Esra Avcı points out a really good point on frailties of patients in her dialogue between doctor:

“In one example, as I remember; In the era of handwritten quantifications, some of us were ashamed due to the results. Because at one point, maybe blood glucose was super high, like 300. Therefore, we didn’t write the real quantification, instead, faking it with a lower value. Because we want to cover “the feeling of guilt” against the doctor, they don’t want to mention their cheat like a piece of melon. They think it will be rude. They think the doctor will be “*mad*”.

Thanks to the technologies, there is no way left for people to cheat. This really opens a new pathway for doctors to better understand the processes of the illnesses. When doctors don’t have to deal with uncertainties, analysis get more accurate. Those clear quantifications let doctors act fast and accurate. It shouldn’t be forgotten that; even simple-looking problem in quantification can affect the treatment process dramatically. Esra Avcı claimed that; even the most common and simple software-based solution or any graphical representation simply far better at supporting the treatment processes than handwriting when compared. Esra Avcı claimed that; her handwritings were troubling her communication with the doctor, as it was so hard for the doctor to read and analyze handwritten quantifications:

“It is so clear when quantifications are represented through graphics—for example, my handwriting like chicken scratch. There is a dramatic

difference between analog and digital quantifications as it is easier for a doctor to review my digital graphics rather than my handwriting. This is such a precious way of communication between doctors and people with diabetes. It is shortening the time we spent with doctors.’’

In some cases, if sensory data provided to the doctor, appointments in the clinic become more efficient. But the effects are not limited to those appointments. Instead, technologies support doctors in the conditions in the post-clinical era of the illnesses. Mehmet Şeref Kayalı gave an example that they recognized some patients on the system were changing the dosage and the type of pills on their own without the doctor’s notice:

‘‘When we first developed the system, we realized an odd situation. The system has alerted us for nearly all the patients who were using it. It was quite shocking to see that we were having problems with nearly all of our users. But when we investigated the problems. We figured out that problems are not related to our service. Instead, it is mostly related to patients. In one case, there was a patient who should take an anticoagulant pill regularly. Those pills should be taken precisely. The dosage is critical. But anyway, he changed the dosage on his own. Or in another case, the patient traveled to another city. There, he visited a hospital. In this visit, they changed his prescription. But due to the side effects of that new pill, the system has alerted us.’’

Communication is getting better between doctor and patient gets better when it is extended to the clinic. The mutual trust to the treatment process becomes stronger thanks to those technology-driven dialogues. Mehmet Şeref Kayalı claims that, as developers of self-tracking tools, this is why they are paid for:

‘‘Dialogue is more continuous. We had better communication. We became aware of the problems even when if the patient is far away from the hospital.

We realize that we weren't aware of what actually patient do after the clinic. We became aware of risky actions that patients do after the clinical process. Even a simple chat or pill-reminder feature were enough to detect those risky situations. It simply developed more confidential dialogue between patients and us. This is what we are paid for. We provide a system where doctors are reachable at any time, especially for people in critical condition.”

Simple tools are helping patients' compliance, as well. When communication gets better, compliance to the treatment plan gets better. Regarding this claim, one of the features that I would like to refer to is Diyetyapp's review tool. In Diyetyapp App, users (or clients, as they refer) can write down comments and give ratings to any dietitian on the platform. Like as an online shopping experience, those reviews and “5-star-ratings” could be seen by any user. From my own point of view, I found this very insulting when I see the dietitians and their service very much like any consumer product. Therefore, I asked Merve Çıray about that interface. But according to her explanation, this is also another helpful tool for both dietitians and clients to choose their dieting wisely. If the dialogue between client and dietitian is clear from the very beginning, compliance is getting better. Both dietitians and clients can clearly understand each other by reading those reviews. This truly transparent relationship entails a clear understanding of the client's primitive goals on dieting. If this transparent dialogue is supported, clients can be directed to a specific dietitian related to personal goals. Even the online shopping like interface is quite divergent. It supports diet to be more compliable:

“One of my clients write down a review for me, claimed that his blood glucose level is more regular with my dieting lists. Therefore, a new client can register a diet without a doubt, according to that review. Reviews, according to different scenarios such as for pregnancy, could convince the pregnant on dieting. It also helps clients to direct dietitian who specialized in the different fields of dieting such as pregnancy diets or diets for people

with diabetes. This is really important for a specialist. Also, the categorization feature is really important for direct clients to a specialist. Are you claiming that you want to lose weight you only exposed to dietitians who are specialized for that category? If we want a sustainable healthy lifestyle, it is so important to find the exact dietitian you are looking for. Therefore, those features are so important. ‘

As retrieved from those examples, even simple solutions offered by the self-tracking technologies are enhancing the dialogue between doctors and patients. They make clinic visits shorter, efficient, and more reliable. Tools can cover up the patient-related frailties. Both health professionals and patients can choose for whom they serve and from who they get serviced. In Self-Tracking culture, dialogues are getting more apprehensible. Communication is healthier.

But on the other side, it is too early to declare a demolition of physical clinics as effectiveness of technologies are quite relevant to the level of digital literacy, technology-adaption, and technology awareness of the actors. Merthan Öztürk gave an example of how he had a hard time even in the installation process of the Spiro app:

‘‘Lack of technology-awareness and digital literacy is not only limited to doctors. Instead, there is also an important lack among patients. When you look at the statistics of smartphone usage in Turkey, I’m pretty sure that you will see that levels are high, but I even see some patients and doctors who even don’t know how to download an app from the app store. They even ask the USB drive to download an app to the smartphone. They ask if the software will be on CD, which I already demoed on the iPad. They couldn’t really believe we don’t offer a CD. Even this exemplifies a level of digital literacy. But also, I don’t think that this is a local issue. Even in the global conferences, I met with lots of doctors around the globe who are sharing the same level of technology-awareness.’’

I believe his unique example demonstrates the digital literacy problem. Adoption of the technologies are not easy. They require different background. Also, some developers are too determined to technologies, especially in health-related cases, doctor's reliance on traditional methods are too acceptable. But those traditions are carrying over former problems as well. One dramatic example of Mehmet Şeref Kayalı clarifies that some problems are stem from former, chronic issues in communication. In his case, he faced with a violence within the clinic with the same toxic communication skills which once directed to medical health workers in hospitals:

“In one case, the patient didn't understand how to check his temperature. We try to tell him the correct way to check the temperature. We even produce a video-tutorial for that. But in the end, he gets really mad, yelled at us as; I paid for that system! then threatened us by showing a gun.”

Even the ages of digital technologies, new cultural phenomenons and promoted enhancement, the toxic communication and violence are still experienced in clinics. Between 2012-2019, 1098 incidents covered by the media are listed in the compilation of the “Committee of the Health of Health Care Professionals”. But violence against the health workers is not a local issue at all. According to WHO, Health workers are at high risk of violence all over the world. Between 8% and 38% of health workers suffer physical violence at some point in their careers. In 2020, the Turkish Ministry of Health inured the “Violence in Health Act”. But violence is still existing in clinics.

The experience of Mehmet Şeref Kayalı shows that, in the age of biomedicalization, it is possible to witnessing with the developers who are the possible victims of a violence in clinics. Violence that once directed to health professionals, now extents to the developers who are new actors of the clinics.

Digital technologies are forcing us to give bold decisions on our culture and society. While we are claiming that our society's transformation is challenging traditional theories, we are witnessing with very primitive human instincts, such as

deficiencies, frailties, conservatism, and violence. Eventually, it isn't rather different to direct our questions on trust, confidence, and reliability to rather human or a computer, as I believe, fundamental issues are not only determined to technologies. Moral, economic, and political issues of late capitalism still present in today's data-driven societies. I think it is time to focus on a more important question; if we believe in the power of the data that takes the control over human, are we going to let data to reproduce the same discourse which motivated by gendered, violent, and classified traditions. If human violence can be reproduced by computers, what remains distinctive for the computer from the human?

2.3. Self-Tracking the Mind

Mind has rather different meanings based on the background of cultures and societies. For example, in Cartesian Dualism, Mind stands for consciousness, a rather separate part of body which controls it.¹ In an Eastern Philosophy, it reflects ethics, spiritual meanings and feelings. But even in the eastern philosophy, conceptualization of the mind is quite variable. It differs according to the languages, geographies, and related cultures.² Each conceptualizes the mind differently, according to culture's relevant background and beliefs. Mind can be referred something like a spiritual element but at the same time from different point of views, mind is not rather different than human-brain function.

Hence, unlike the human body, which has a tangible form constructed with flesh and bones, mind has a more controversial state when it comes to quantification and definition. For example, in Foucauldian way³, it is still controversial to define healthy state of mind. Ongoing debates are extending to the topics of different disciplines such as modern medicine, religions, philosophy, anthropology, and

¹ As I mentioned in Self-Tracking Body Part, Mind in the Cartesian Dualism is well explored by Transgressive Bodies, Niall Richardson, 2010.

² The Problem of Mind in Eastern Philosophy by Hajime Nakamura proposes etymology and conceptual differences with deeper analysis on mind and how each culture perceiving it. (Nakamura,1988).

³ Unsurprisingly, Foucault's History of Madness is offering extensive debate on mind and its healthy state

psychology. Ontological struggle over mind is clear in those debates. But conceptualization of the mind by the self-tracking culture is quite clear. It simply refers all the mind-related parameters which could be quantified by self-tracking technologies. Hence, mind concept in the self-tracking culture comprehends such parameters, like stress level tracking, habit tracking, mindfulness meditation and conscious breathing. All the practices that might be digitalized and be trackable in form of data might be applicable to mind related self-tracking.

But some of the conflicts in concept of the mind are extending to the self-tracking technologies, too. While body-related quantifications are simple enough for meaning making processes, (you can simply understand if you are losing / gaining weight by looking into the numbers) tracking of the mindfulness minutes, stress level and proper breathing are still complex processes for digital sensors and softwares to get meaningful results. Retrieving a meaningful data from the user's inclinations is still a complex issue when it comes to rather less physical bodily functions. For example, it is still so hard for a stress tracking app to detect real reason of the irregular heart rate of a user which might be reasoned by stress or a serious health condition. In another case, for a meditation app, it is hard to detect user's attention and quantify his mindfulness minutes through given sensors. For example, most of meditation apps offer limited tracking futures or simply avoid offering one.

But this no means that there aren't any solutions. Instead, especially for sleep tracking, attention tracking and stress level tracking, both software and hardware-based technologies are offered. There are headbands which EEG-sensors, smartwatches with heart rate monitors in the market. For example, on software side, there are habit tracking apps that can retrieve data from other apps. So an habit tracker can check your digital expenses data to track down your savings. Thanks to the APIs, most apps can retrieve other apps data so there is a chance for meaningful correlations thanks to the ecosystems. But still, lot of meaningful data missing within those services as there are still ways to go for technologies to understand what user is doing. Especially, when it comes to digitalization of the mind related activities and mental health, solutions are still limited as what do we mean by mind

is still too complicated. Can we simply have left out the effects of the other activities over mind? Or can we quantify the mind without truly understand user's intentions? How deep can a software go to understand as if user is relaxed or not? In which ways sensory data might be turned into a meaningful message? For example, there is no way for a habit tracking app to really track-down user's smoking habit, while it is so easy for a smartwatch to understand if user is running or not. Same with the mindfulness meditation apps, there is no way for an app to detect if user is fully concentrated or just thinking about the upcoming meet while the meditation session is playing background. Even for bodily actions, it is so easy misunderstand user's inclination but especially for mind-related apps there is no simple way to properly detect. Hence, due to the limitation of the meaning-making processes in mind-related data, services are forced to approach mind in very cartesian way as if it is something apart from the body. They left out body-related data as it might be too complex for them to understand user's intention. For example, a most of the mindfulness meditation apps only serve as a media-streaming platform, they mostly designed for listening experiences. They avoid tracking users motion, hearth-rate and such body-related data for feedback, as unlike the more quantifiable parameters like burned calories and taken steps, mindfulness minutes, focused hours are not simple enough to be quantified by sensors. Most of them claim to quantify mindfulness just by looking at the time that user spend within-app.

While I found cartesian approach to the mind is quite problematic, this do not mean that apps are insufficient and unpreferable.¹ Today, mindfulness meditation apps became one of the the most popular amongst the self-tracking apps. Especially in COVID-19 era, mindfulness meditation apps are the most preferred apps within their categories.² Popularity of mindfulness meditation carried out the

¹ Actually, there are quite different empirical Works on how effective mindfulness applications are working, one of them is collaborative work of Jennifer Huberty, Jeni Green, Christine Glissmann Linda Larkey, Megan Puzia, Chong Lee; Efficiency of the Mindfulness Meditation Mobile App "Calm" to Reduce Stress Among College Students: Randomized Controlled Trial or Reyes, A. T., Bhatta, T. R., Muthukumar, V., & Gangozo, W. J. Testing the acceptability and initial efficacy of a smartphone- app mindfulness intervention for college student veterans with PTSD.

² According to SensorTower's work business of Mindfulness Apps and user's interest are highest of all time. <https://sensortower.com/blog/meditation-apps-2019-revenue-downloads>

digital spheres. Apps like Calm, Meditopia, Headspace and Tide are becoming digital spaces where communities of meditation digitally meet. We can define those platforms as sociocultural spaces where self-tracking culture lives. Within those apps, people can join for meditation, motivate each other for regularly and effectively meditate. While most of the apps are designed only for listening meditation sessions, recently, apps are gaining more social features and enables people to collaborate and meditate together. New communities are emerging thanks to those social features. They cultivate a next generation of meditation culture. They share their processes to everyone and planning their next meditation sessions together. Those new communities of digital mindfulness meditation is getting more populous amongst communities of self-tracking culture and they are even reframing meditation concept from something personal to social.

Same communities of digital mindfulness meditation are emerging in Turkish Self-Tracking culture too. An Istanbul based start-up called Meditopia is serving in eleven languages and became most popular mindful meditation app in Turkey, serving to its populous community of 4 million users. Meditopia offers meditation sessions in platform designed to coach users in their meditation journey. It also has side-features, such as diary like note taking, background soundscapes, mindfulness minute tracking [based on user's activity within the service] and social sharing which turns Meditopia to the digital meditation hub where people digitally meet, together meditate, share their experiences, and become a part of a community. In my interview with Beyza Makuloğlu, chief of staff from Meditopia, mentioned how they are considering new features for building up community; (Beyza Makuloğlu, Personal Communication, November, 3, 2020)

“Challenges are really important feature for us. We developed a new feature called live challenges. You can invite your friends and take a 21-day long meditation journey together. We also collaborate with more known people who are more aware on mental health and mindfulness. Those people can motivate others to meditation. Their support is so important. Meditate together can really motivate people on meditation. Those are really helping

us out to build a community. Collaboration with your friends is so important. People become more motivated when they are able to invite their friends to sessions.’’

Meditopia’s popularity is not only global. As mentioned, they have quite populous members from Turkey in their community. But while Meditopia is one of the most popular meditation platforms in Turkey, they are facing with the localization problem based on the Turkish language. The problem was quite reminiscent to the one that faced by Gözde Büyükacaroğlu from Vivoo, as she mentioned that, they are struggling on translating word ‘‘wellness’’ to the Turkish and adopting it to local culture. In case of Meditopia, same problem is replicating on defining *mental* and *mindfulness*. Beyza Makuloğlu mentioned that how they considered to define each concept in Turkish:

‘‘We refer mindfulness (bilinçli farkındalık) in Turkish. We are calling it mental health, but it seems like when we refer ‘‘mental’’ it makes people a bit worried. Actually, we definitely have psychologist in our team, but we always find ourselves in same discussion of what if we don’t use the mental in our wordings. Even mental stands for zihinsel (which doesn’t have negative connotation in Turkish) it has a negative implication. We don’t have the same experience with other languages but in Turkish, we discuss to refer something else.’’

Finding the most precise translation for Turkish is quite problematic in Turkish Self-Tracking culture. It is so hard to find exact meaning of some concepts, hence, language is another problematic layer on top of the problems of localization beside of categorization and regulations. Difference in the meaning might change user’s experiences, even it can be problematic on behalf of regulations. Hence, self-tracking platforms are dynamically tuning their discourses according to local cultural aspects for more compliant services. They choose wordings wisely. This also reflects in regulations as services regulated according to their definition.

In this regard, Meditopia defined as, mental health coaching service. Hence, their approach is appropriate for biomedicalized society which takes fitness over health. Perception of the mind no rather different than any muscle. Mind has to be fit. Has to be shaped. Has to be exercised. In her Interview, Beyza Makuloğlu's notions were corresponding to this notion. She defines Meditopia as; 'gym for mind'. They are considering their service to feel as 'sexy' as gym:

'Meditopia is a meditation app but actually we approach Meditopia like a mental coach for short-, mid- and long-term needs for mental requirements. We are imagining a use of technologies, such as artificial intelligence and algorithms for that. We are trying to make it more 'sexy' unless It might be a quite depressive topic. But we encourage people to approach their mental health in such a same way as it is more common for people to regularly go to gym and fitness centers nowadays.'

For several time, Beyza Makuloğlu defined Meditopia as 'mental-coach' in her interview. In the self-tracking culture's discourse, 'coaching' is commonly referred term. It looks like coaching is quite political term in self-tracking terminology. It is a 'neutral' term. It quickly fixes the problem regarding the categorization of service between health and wellness. It gives a confidence, but at the same, it eludes the possible responsibilities. As we already saw in other examples, such as Vivoo, limiting the service in wellness category is a common solution for services that do not want to be regulated according to medical device regulations. Those regulations are more restrict. They require a different economic model. They call in greater responsibilities. Hence, like any other wellness service, Meditopia doesn't offer any treatment or diagnosis. In this regard, Beyza Makuloğlu explains how they categorize Meditopia between health and wellness:

'We are thinking our categorization as a company; we are an app about mental health, but we are definitely not an health company. We are technology company servicing for health but at the end of the day, we are

selling a personal experience. There are some companies that try to position their apps like a medical device. Even they try to serve an app which might have prescriptive use. We are not like that. We are limited to the coaching.”

Meditopia, like as Vivoo did, limits its services consciously to be regulated within the limits of the wellness. But in some cases, especially when it comes to the mental health category, some cases require a medical assistance beyond coaching. If team come across with that type of case, they immediately direct user to the professional health support, Beyza Makuloğlu provides an example:

“We sometimes come across with emails which are saying that I have suicidal feelings, I want to commit suicide. In those cases, we immediately suggest professional support.”

Meditopia regulates its marketing discourse to avoid possible problems. They avoid offering instant relaxing or sleeping. They prefer not to offer treatment. Preventative usage is a keyword in this case. Mental health coach can assist you, but it is not a total solution. They promote digital meditation not rather different than going to gym. It is a just a preventative practice. Beyza Makuloğlu mentioned that they emphasize preventative usage in every level; from defining the app to its marketing discourse:

“We always emphasize that Meditopia is a preventative app. Meditopia is not a space for enlightenment. We don’t offer solutions for all the problems. Recently we regulated ourselves within this context. We edit some of our marketing discourses such as sleep instantly or reduce your stress level. “

When it comes to coaching, personalization is such an important feature. There are two main reasons for that. First, coaching is more personal service, second, in theory, when service gets more personal, it boosts user’s loyalty. Digital mental health coaching, a service which designed to work in very personal spaces,

personalization features require deeper data. It requires such a deep and rich user information from very personal spaces to work better in those spaces. If service identifies user better, it has a higher chance to kindly blend into personal spaces. Hence precise data means more personal therefore more motivational and effective meditation. In this regard, Meditopia is utilizing contemporary technologies of datafication. Beyza Makuloğlu claims how personalization is getting more important than ever in meditation:

“We invest more into the personalization features. We develop the personalization features for meditation same with the Spotify’s weekly discovery feature¹ for personalized meditation features. This is only possible with data. We are so much into personal spaces. People mostly use app when they wake up or right before they sleep. Those are the most popular periods that people use Meditopia.”

But Meditopia do not solely relies on datafication for personalization. Instead, their approach is like the other self-tracking services. They have professional psychologist for precise consultancy as Beyza Makuloğlu says:

“We have to be so careful about personalization. Therefore, we have professionals for psychological consultation for directing people correctly. Most of our team is psychologist. It is so important for us to design an appropriate journey for our users for best personal experiences. It is so hard to do this while people are experiencing anxiety. Therefore, we invest in technologies mostly for personalization.”

Even service is categorized in wellness area mental health is more sensitive issue that in some cases requires instant support. Therefore, it is so important to clearly define user’s intention. Hence, consulting to human professional still looks

¹ Feature that offers user song according to music they preferred to listen.

more reliable than relying solely on digital data. Also, in that kind of sensitive case, data brings in more concerns over privacy, as I mentioned, digital meditation coaching services works in so personal spaces than any other service. This level of sensitivity bother both sides of users and data keepers. Users might be more anxious to share their data. Moreover, services are taking more risks as they collect such personal and sensitive data.

In some cases, ethics, regulations, and responsibilities are all direct services sometimes to avoid retrieving such sensitive data. Meditopia, aligned with that theory is concerning ethics to collect data from very personal spaces. I criticized the digital meditation services to Beyza Makuloğlu, as I didn't find services any different than other media streaming services. I thought they are just media streaming services that only provide meditation-specific content which lack of understanding the user's real intention. You can cheat the service easily just by playing a meditation session. It will count those sessions as "mindfulness minutes" anyway. It doesn't use any further technology to detect if user concentrate or not. It is not looking into other bodily parameters such as heart rate, and movement at all. I found that approach quite cartesian, as it separates mind from body. It defines mind something particular without body. But on behalf of my criticism, Beyza Makuloğlu simply directs another question that changes my perspective to think data privacy and ethics from the data-keepers' side:

'If we are going to get into personal spaces for reaching bodies through data, is this going to be an ethical?'

While there is an amazing economical potential to have a big database, both ethical and legal responsibilities are so serious. Digitally getting into personal spaces are not rather different then physical infiltration.

If the required permissions taken, there is nothing left to worry about regulations. But ethically, mental health is so sensitive that, in some cases, digitally approved permissions are not enough. Hence, services investigated in more convenient, traditional media solution; sound-based content which approved its

success a long time ago. While I found sound-based meditation coaching is quite passive activity, Beyza Makuloğlu claimed that there are ways to direct users to interact with their bodies by voice recorded coaching. In Meditopia, they offer sound content that directs users to breath and touch their bodies:

“We should measure how we can reach body, feelings. Then we should push the limits. We always talk about breathing. Which is heavily body related. It reminds us our body. Meditation politely suggests appropriate breathing. Instead of breathing there are some meditations that suggest users to touch themselves.”

Some users feel uncomfortable even when there are lot of sound-based directives. Some users refer more quiet meditation sessions. They do not refer heavy coaching in their personal spaces:

“Some meditations are less directive. They designed with less sound. Some of our users like to get more in touch with feelings and body but some of them want more quiet experiences even they don’t use background sounds. While some sounds remind good memories, there are also sounds that remind people worst memories.”

In this regard, nostalgia is another personal background that direct user’s preferences in digital meditation services. Each sound evokes different feelings based on user’s memory. At this point, there are two remarkable point regarding the data in digital meditation services. First, Digital meditation services are so personal experiences that algorithms might not be able to work well. Recommending a new content to user by analyzing his earlier preferences might not work for meditation as is works in services like Amazon, Spotify, Netflix, and such. Latter, it suggests how data might be such a sensitive and personal, as even it might suggest user’s nostalgia when it collected from very personal spaces.

Today, Self-tracking applications are requesting more personal information more than ever. It will be overreacting to think that all services are pursuing for data just for economic benefits. But this do not mean that privacy concerns are irreverent. Instead, in the age that we invite self-tracking applications to our very personal spaces, our bodies, mindsets, and their health state are all digitalized which makes them open to data breaches. Moreover, self-tracking is no longer personal activity. Most personal self-tracking activity today involved into a social one, as we see in the example of meditation, technologies are turning it into a social activity which once very personal. This evolution might suggest us that keeping our privacy secure is hard when everything, even digital spaces are digitalized and digitally socialized.

3. SELF-TRACKING SOCIETY

Self-tracking practices are getting more social with the technologies. They are not personal activities, instead, they extend to social domains. Hence, self-tracking culture constitutes an important part of modern society. In this regard, the Self-tracking society concept describes all domains that will provide an extended perspective on self-tracking culture. It demonstrates how self-tracking is positioned in modern society. It will reveal the background of society's organizations. It covers all the responsible organizations, governments, non-governmental organizations, institutions, communities, ministries, administrations, social groups, citizens and their regulative acts that control, distribute and regulate modern self-tracking practices. Self-tracking society shapes the contemporary form of self-tracking culture with its policies, domains, politics, and regulations.

In this regard, I would like to suggest three sections regarding acts and corresponding foundations in Self-Tracking society:

- *Regulating Self-Tracking.*
- *Self-Tracking Market.*
- *Self-Tracking Citizens.*

3.1. Regulating Self-Tracking

Categorization and identification of services is still a complex issue in self-tracking. Even for academics, there are many terms referred for self-tracking such as Lifelogging, self-tracking, QuantifiedSelf and mHealth. Perplexity is extended to culture itself. For biomedicalized society which takes fitness over health, wellness and health categories are so close than ever before. Self-tracking technologies are also making regulations quite complicated. For example, a smartwatch can offer different features with different level of responsibilities. It is so common to come across with a smartwatch that can count steps but also can take electrocardiogram. Also, a service can provide you with a result but expects you to get some advice from a doctor for further assistance.

But problem in categorization (such as wellness/health) and relevant identity crisis is covered with corresponding regulations of self-tracking society. Most of the laws, regulations, and guidances produced by the self-tracking society are standing mostly for classification. They are against the perplexity. They even addressed the issue as ‘borderline’ as guidance named: Manual on Borderline and Classification in the Community Regulatory Framework for Medical Devices. Those manuals are in charge to fix a fundamental problem in determining which technologies of self-tracking can take which level of responsibility. Devices and services are all regulated, categorized, and tested according to the device's primary function. It is important to determine limit of the services. Claiming to treat illnesses and diagnose are bringing different responsibilities. Those services are regulated different than coaching services. Guidances and classifications are clearer. They prepared according to risks taken by technologies. They are grading different levels of risks taken in case of malfunctioning

The main intention of the developer is so important in the development process of the device. Use cases should be clear. Service should be designed considering the limits of possible responsibilities. Therefore, use cases should be determined clearly. It is crucial to determine intended use cases of the device or service if they designed for diagnosis / treatment or just for coaching. In some

cases, limitations are unsurprisingly leading users to uncertainty. But those limitations are required for proper classification of services. Otherwise, regulations will be too complicated to cover malfunctioning. In his Interview, Merthan Öztürk from Spiro, emphasized the importance of determining the intended use cases:

"Clarifying the intended use case is the main issue. Who will use it? Why would they use it? The intended use case provides a framework even for operating manuals. Regulations are starting with the developers' statement. According to that statement, you will find lots of regulations and guidelines mostly provided by the European Union. According to your statement, your device can be a medical device" You can even produce a bed. Still, even for a regular bed, if you claim that you are developing this bed for a hospital, you are in the medical industry. But the most critical thing here is that if you are not qualified to carry a medical device certification according to CE guidelines and the Turkish Ministry of Health, you can not sell this device. It is quite different than mundane objects such as furniture. For Spirohome, we start with the simple question; what is this device? Then, we claimed that it is a quantification device that quantifies respiration capacity and lung function. When we claimed that we are quantifying a vital parameter, we confronted the Regulation on Medical Devices by the Turkish Ministry of Health. Based on risk factors, the device's intended usage area, body contact, and the device's function in treatment processes are critical for the developer to be regulated. Our classification is quite simple. We quantify a vital parameter. As a spirometer, we are not placing our device in any inner body part. We use low voltage energy. As Spirohome carries software and electronic components, it is classified as an active medical device. "

As Merthan Öztürk detailed, the Turkish Ministry of Health provides comprehensive guidance to categorize and classify devices and services. Turkish Ministry of Health provides three types of regulations according to device's type,

which is relatively the same¹ as the European Union's guidance provided in Manual on Borderline and Classification in the Community Regulatory Framework for Medical Devices, which is updated in 2019 according to European Council's directive on Medical Devices (MEDDEV) and In Vitro Medical Devices (IVDD) which published in 1993.

According to that guideline, there are three types of devices, and each carries its own regulations; Medical Devices, in vitro medical device and active medical devices.

In both Turkish Ministry of Health's and European Union's Guidances, each medical device determined based on its specific purpose. For example, term medical device stands for the purpose of:

“- Diagnosis, prevention, monitoring, treatment or alleviation of disease, diagnosis, monitoring, treatment, alleviation of or compensation for an injury or handicap.” (Medical Devices Regulatory, 2011)

In Vitro Diagnostic Medical Devices differ from the medical devices, as they are designed for in vitro examinations, as exemplified in guidance:

“Reagent product, calibrator, control material, kit, instrument, apparatus, equipment, or system... ..to be used in vitro for the examination of specimens”(Medical Devices Regulatory, 2011)

Active Medical Device is the third category. They separated from other kind of medical devices regarding the power source:

“...which depends on a source of electrical energy or any source of power other than that directly generated by the human body or gravity and which acts by converting this energy.” (Medical Devices Regulatory, 2011)

But most important for the self-tracking technologies is that guideline refers standalone software as an active medical device in 1993's MEDDEV. But considering the directive's age, Manual on Borderline and Classification in the

¹ The similarity between the Turkish Ministry of Health's Regulations on Medical Device and European Union Guidances is quite expected. Turkey's is in the process of harmonization of laws and legislation with the European Union. Still, in the Turkish Ministry of Health's Strategic Plan of 2019-2023,(363.3) development of internationally approved test and analysis infrastructure to test certificate and register for the medicine and medical device's industry declared as ministry's aim for the medical devices.

Community Regulatory Framework for Medical Devices published for addressing classification issues regarding more complex technologies. According to that Manual, it is possible to regulate and classified contemporary technologies according to their categorization between Medical / In-Vitro / Active Medical device.

Today, technologies are so complex to separate each as hardware or software. Instead, they offer multiple features which should be regulated differently. A smartwatch can check oxygen saturation or smartphone can offer an app for urine testing. Hence, Manual, published in 2019, offers guidelines for complex cases. It goes through possible cases and offers example procedures. It covers different scenarios. It underlines the new risks that might be taken within the service. It offers procedures to check quality standards. The cases provided in manual is enriched and extended. Therefore, it is possible to regulate any contemporary technology. For example, ECG is the serious medical parameter that once only available to be taken in clinics. But recently, it is getting so common for smartwatches to offer ECG. But as Manual provides a featured case for "*A mobile application for processing ECGs.*", it is possible to find out how to classify and regulate ECG feature of smartwatches.

For mobile applications and software Manual includes a designated chapter. Most of them classified as medical devices. By this way, Manual demonstrates two important concerns on mobile applications. First, they can offer critical features for medical purposes. ¹Latter, they might share same amount of risks with the traditional medical devices. In this regards, European Council declares that any software and mobile application needs to share same quality standards and reliability with traditional medical devices if they are intended to use for medical

¹ Manual includes such different cases. While I am retrieving some interesting cases, more cases can be reviewed on manual; *A mobile application for the communication between patient and caregivers while giving birth. A mobile medical application for viewing the anatomy of the human body. Medication decision support software. Mobile application for managing pictures of moles. Mobile application for the assessment of moles Standalone software application for conception and contraception purposes using data entered by the patient.* (Manual on Borderline and Classification In The Community Regulatory Framework for Medical Devices, 2019)

purposes instead of wellness coaching.¹ (Manual on Borderline and Classification In The Community Regulatory Framework for Medical Devices, 2019) Or, if we take on InoFab Health's Spirometer which designed for home use and requires no prescription, it is still defined as "active medical device". (Merthan Öztürk, Personal Communication, July 18, 2020) Device can be used for self-tracking purposes. It easy to use the service with mobile application. But accessibility doesn't change the way that device regulated. Device regulated in a way that is like any traditional spirometer device.² Interesting point is that, even in its contemporary version, for most of the cases, manual defines users as "patients". Self-tracking or self-trackers are nor registered for indented use cases. It seems a bit traditional for me to see users just as patients by considering the devices are medical. As Today, anyone, unsurprisingly, can access complex medical devices, such as ECG, without any medical requirement or professional assistance. Manual, by its discourse, lacks behind the self-tracking culture in this sense.

Turkey's Regulations are mostly retrieved from European Council's as Turkey is a candidate country of European Union but, regarding the borderline crisis in medical devices, Turkey has its state mechanisms too. The Turkish Medicines and Medical Devices Agency provides guidances according to regulations. In terms of conflicts, problems, and concerning technologies, the agency provides its guidelines, similar to the European Union's quality management certifications, such as *CE*. (Medical Devices Directive, 2020)

¹ I am retrieving important guidelines on how to qualify softwares that are acting as medical device from the Manual. More cases can be review on manual: *Qualification of software for interpretation of a guideline. Qualification and classification of software for delivery and management of cognitive remediation and rehabilitation programs. Classification of software for information management and patient monitoring* (Manual on Borderline and Classification In The Community Regulatory Framework for Medical Devices, 2019)

² In a manual, there is a guideline to cover a similar case of SpiroHome technology; '*Bacterial / viral filter for for use on patient undergoing pulmonary function testing*'. In that case, the manufacturer claimed that their spirometer is a Class I medical device due to the no energy exchange with device and user. Still, European Council decided to classify the device "Class IIa active medical device" same with the traditional spirometer as based on the risks taken during the testing is similar even device is limited in diagnostic functions. (*Each class holds different risk levels. In this case, highest risk devices are Class III medical devices from lower risk to highest; the list goes on as; Class I, Class IIa, Class IIb, and Class III*) (Medical Devices Directive, 2020)

As is seen from examples, governmental mechanisms strictly regulate self-tracking technologies. Unlike the hype of self-tracking culture's and biomedicalized society's desires, mechanisms are considering health and wellness distinctively. As mentioned, anytime, developers can tune their services according to those regulations. They can redesign the service, limit some of the features or even open up some specific features for specific countries. They can redefine intended use cases between diagnose, treatment or coaching. By avoiding serious claims of treatments and diagnosis, they can reduce the risks. This way, they can categorize as medical device or wellness service. As Gözde Büyükacaroglu claimed in Vivoo example, they use similar strips with hospitals. But they never share same amount of information as hospital laboratories. This is how they tune the service for avoiding being regulated as a medical device. If, Vivoo regulated as a medical device this eventually means the end of their operations since in Turkey. Gözde Büyükacaroglu explains:

"When I was trying to regulate Vivoo according to Turkey's medical device regulations, to be involved in the medical industry, we realize that it will get so hard for us to marketing our product and even selling it. Even we managed to sell it, one vital parameter, in this case, the urinary test, is not enough to diagnose an illness. Hence, we regulated Vivoo into a wellness industry rather than health. Once, we want our App to check C-reactive protein levels. In this way, our App would work as a medical device mostly designed for health care professionals, but then we realized that we don't have a budget for all the testing and development. That's why we want to be out of the health industry. We want to stay in the wellness area. We don't quantify glucose. Regulations regarding how to quantify a glucose level are quite different. Therefore, we don't provide a glucose parameter in the Vivoo app. We have a technological infrastructure for that, but we prefer not to quantify a glucose level at all due to the regulations."

The privacy is another concern in self-tracking society. In the age of datafication, connectivity and mobility technologies, services can easily access, collect and analyze sensitive health data. They can share data between other services. They can correlate with different datasets for more meaningful meanings. This way, they can maximize the value of data for both economic and politic purposes. In the complex networks of data infrastructures, society is confronting with the highest level of privacy concerns, but the anxieties are not new.

For *Surveillance society*,¹ social sorting, surveillance, and control has been there for a long time. Biopolitics², plays a crucial role in shaping Surveillance society. It directs the self-governmental actions. It disciplines bodies according to economic and political purposes of the power. But as it is seen in the panopticon prison system, this discipline is interiorized. Interiorization is maximized by the given discursive practices. Technologies produced according to the disciplines. Hence the given discourse is reproduced by the technologies. Regarding the loop, there is a fine line between surveillance and self-tracking. Level of agency is suspicious for both. Self-tracking is no more registers a personal activity. Hence, possibilities are rising to direct undesired surveillance under the name of self-tracking. Those services are well-designated areas for sensitive data, tempting the possible breaches. Privacy concerns regarding self-tracking are more serious since then. In the sensory environments, *self-surveillance* and *co-surveillance* might be turned into an object of *organizational surveillance*, easily. *Monetization of personal data* provokes the power against the privacy. Data might be copied, uploaded, processed by 3rd parties, requested by states, manipulated by any media tools, stored in multiple places, and exposed. As Haggerty and Ericson defined with the *surveillant assemblages*' concept, unlike the traditional surveillance, *new surveillance* is not only directed in the top to down hierarchies; it is more complex

¹ David Lyon's study; "Surveillance Society" extends the concept of Foucault to understand modern surveillance in the contemporary surveillance studies. It positions new kind of surveillance in to the center of society where surveillance involves complex network.

² Biopolitics, as Foucault conceptualize, is standing for politics which suggest the optimization of population for efficient bodies for political directives and economical purposes. Ongoing debates on Biopolitics are enriched and extended, started with Foucault's; *The Birth of Biopolitics*"

networks of actors, more decentralized thanks to the increasing surveillance capacity:

"We are only now beginning to appreciate that surveillance is driven by the desire to bring systems together, to combine practices and technologies, and integrate them into a larger whole. It is this tendency which allows us to speak of surveillance as an assemblage, with such combinations providing for exponential increases in the degree of surveillance capacity."

New surveillance is no more between surveillant and monitored. It is complex, decentralized, multichannel network of actors. Anyone can become an object or in meantime, a subject of the surveillance. Hence, I believe, totally secure privacy is no more possible in that infrastructure. There is no way to stepping out of the assemblage. Surveillance practices go beyond multiple actors, different geographies, various databases, other states, and strangers in interconnection as Mark Andrejevic extends *the surveillance assemblages* concept. (Andrejevic, 2012) Therefore, frustration of the activists is defined as resulting effect of increasing capacity of the Technologies of surveillance:

"In surveillance assemblages, where surveillance capacity is distributed within the invisible world of algorithms... ..it is extremely difficult to pinpoint the locus of responsibility for surveillance processes. An ongoing political challenge and continuing frustration for many activists' concerns developing the ability to tackle accountability for surveillance processes and their outcomes." (Ball et al, 2012, p. 9)

Aside from the mentioned frustration and pessimism, there are both civic and governmental organizations regarding the security of personal data. From the local perspective. Today, privacy concerns are drawing the Turkish authorities and civic organizations' attention too. In 2016, the *Personal Data Protection Law* was published in the official gazette, and in the same year, the *Personal Data Protection*

Board is elected. Since then, the *Personal Data Protection Authority* is as provided the Personal Data Protection Law (KVVK). In Personal Data Protection Law, health-related data is defined particularly in a different category under the personal data:

"Personal data relating to the race, ethnic origin, political opinion, philosophical belief, religion, sect or other belief, clothing, membership to associations, foundations or trade-unions, health, sexual life, convictions and security measures, and the biometric and genetic data are deemed to be personal data of special nature." (Personal Data Protection Law, 2016)

Health-related data is categorized as a particular category. It signified as sensitive one. It categorized quite distinctive. It can only be processed if the services have ‘*confidentiality obligation*’. Those purposes are clearly defined in Personal Data Protection Law:

“protection of public health, operation of preventive medicine, medical diagnosis, treatment and nursing services, planning and management of healthcare services as well as their financing” (Personal Data Protection Law, 2016)

But even under those conditions, I found it quite concerning as Personal Data Protection Law allows *"Personal Data relating to health and sexual life"* to be processed: ‘*without seeking explicit consent of the data subject*’ if the organizations, people or public institutions are authorized. (Personal Data Protection Law, 2016) As criticized under the *new surveillance* and *surveillant assemblage* concept in the complex networks of multiple actors, it is getting more complex to control possible data breaches and detect who collects, analyze the data for economic and political purposes.(Ball et al., 2012) Still, as mentioned in Personal Data Protection Law, explicit consent is required if the service require to process health-related data for the different purposes such as marketing. (Personal Data Protection Law, 2016)

Privacy concerns are extended beyond state-level organizations, too. The civic organization named; "*Personal Health Data Study Group*" was commissioned under the *Turkish Medical Association's* roof with the *Turkish Pharmacist Association, Union of Turkish Bar Association, and Turkish Dentist Association.* (Kişisel sağlık verileri, 2020)

Group has already organized four national congresses and published different studies on personal health data.¹ Attendees with different backgrounds as doctors, lawyers, chemists, biomedical engineers, computer engineers, and IT specialists are participated. They present different studies on different topics relevant to their own perspectives. Various categories are addressed in those congresses.² (Kişisel sağlık verileri, 2020)

In 2020, the Personal Health Data Study Group organized a new congress. Group's publishment and open call for the congress was pointing out the anxieties on personal health data. Health Data Study Group declares that, both national and international capitalist ventures dominate the health industry by using digital technologies. But awareness of society and its mechanisms are underwhelming. Group declares that the Personal Data Protection Law is insufficient to totally protect personal health-related data. They claimed that more restrict regulations are necessary. They even claimed for some cases, instead of democratizing, developing and protecting the public health services, personal health data is monetized.³ In the National Congress of Personal Health Data, Attendees express their concerns, provides relevant solutions and possible problems from the different perspectives of medicine, law, technology, and ethics. (Kişisel sağlık verileri, 2020)

¹ Those publishments and recordings from the congresses can be reviewed in their official web site; <https://www.kiselsaglikverileri.org/>

² In 2018's congress, several practices are discussed based on different field researches, case studies, and theoretical works. Several studies analyzed special topics. In a short review, some of those were covering the practices of law, such as; what explicit consent means and what are problematics (Dr.i Nilgün Başalp Yıldırım)(Av. Sertel Şıracı, Prof. Dr. Mustafa Murat Civaner) or Use of Health Data for Legal Defense Rights. (Av. Nesrin Özkaya). Some studies cover the ethical concerns on the usage of personal health data in medical labs (Uz. Dr. Suat Hayri Küçük), investigates digital hospital as cultural domains (Cem Nuri Aldaş) or practical discussions like; can personal health data can be sold? (Doç. Dr. Murat Volkan Dülger).

³ Full text can be retrieved from the organizations website: <https://www.kiselsaglikverileri.org/>

Both Personal Data Protection Authority, Personal Data Protection Law, and Personal Health Data Study Group of the Turkish Medical Association exemplify how privacy concerns are increasing remarkably. The frustration of the activist groups described in Ball, Hagerty and Ericson's study is similar to the Personal Health Study Group's anxieties. (Ball et al.2012), While Turkish authorities provided a regulator law on personal health data, the group sees personal health data is still no secure and open to be monetized with illegal ways.

On top of that, most recent self-tracking tools are relying more on the technologies of datafication. They need to store, process, and compare multiple sources of the data to provide more meaningful correlations. Even to achieve simple tasks, data from the different sources are required. For example, a smartwatch requires several kinds of the data for counting calories, such as, movement, heart rate, and body measurements. Hence, the self-tracker should *voluntarily* provide a significant amount of data if he wants the services to work properly. Self-tracking technologies are mostly referring the prosumption process that once George Ritzer define:

“The process of prosumption involves the interrelationship of production and consumption where it becomes difficult, if not impossible, to clearly and unequivocally distinguish one from the other.” (Ritzer,2015, p. 414)

Simply, if you need more information, first, you need to provide one. This mechanism opens new space for debates on privacy and ownership. The relationship between data and the owner is like a kinship. (Maurer, 2015, cited by Naff and Nafus) Data is in more organic relation between data-keepers, the data itself and the source in the complex networks. Hence, instead of more centralized traditional perspective, between owner of the data and data-keeper. I still found the concept of *surveillant assemblages* proper to analyze the situations. In the complex networks of multiple actors, data is quite like an organic entity. When settled in the big data libraries, it learns, reproduces, or become null. It becomes different than once it is collected from its source. But this no means that, we need more

transparency in this infrastructure. Hence, privacy is becoming the most popular feature in self-tracking market which also has its own trends and regulations.

3.2. Self-Tracking Market

Self-tracking Market defines, recent trends, contemporary regulations and mostly referred discourse in marketing self-tracking technologies. Marketing activities of the self-tracking technologies can provide insights regarding in which ways industries see self-tracking culture, how self-tracking culture sets the trends in marketing discourse and how institutions regulate the marketing activities.

Knowing, enhancing, optimizing, and tracking, unsurprisingly privileged activities in the marketing discourses of self-tracking culture. But this prioritization is not new. Since with the traditional quantification equipment, such as weight scales¹ self-tracking is more promoted than ever before, in line with the modern culture's obsession of *the body-image* which again, calls in the cartesian understanding. For a long time, body, needs to be controlled, fit into the given metrics, and should be optimized for the best performance available as body strength and body efficiency bring economic and political power as conceptualized in Foucault's biopolitics². This disciplining power reformulates the body into any commodity. Today, this concept reflects on the self-tracking market which covers the most prominent companies of technologies, healthcare, medicine, and insurance. Modern discourse doesn't hesitate to draw a body image not rather different than any media. Body lost the touch with its organic reality for economic and political concerns.³ It describes as any entity an artifact, a commodity. It seems

¹ Kate Crawford, Jessa Lingel and Terro Karpri studied a comprehensive analysis on self-tracking cultures evolution, for period starting with the weight-scale. They refers some of the activities of the personal data is not new; *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 et al., 2015, p.480)

² For further analysis Foucault's concepts Biopower and Biopolitics should reviewed, as Foucault conceptualize the human-body's both political and economic role for power-relations.

³ The criticized representation of the Barbie doll might be exemplified in this case. The criticisms covered many times in both media and academics for Barbie's unrealistic body proportions. Even,

as any media, you can buy a new image, a new representation, a new shape for your body. This plasticity¹ covered within the self-tracking marketing discourse. In some cases, body's physical limitations are ignored, and fitness imagined as everlasting performance as fit body image is dynamic.² Since self-tracking marketing discourse promotes machines (which is heavily burst out with the introduction of the weight-scale to the modern's daily life (Crawford et al., 2015, p.480) as best way to self-track. Discourse constituted a new truth on desired body-shape. It simply draws a new easier, affordable, cool and joyful way to control body as both digitalization and datafication played a crucial role in detachment from the physical boundaries. Body defined in its more moldable, crystalline, digitally extended, *cyborg-ish*³ form where; *'protein and silicon operate as a Single system.'* (Hayles, 1991, p.2)

Today, it wouldn't be wrong to say that there is no better way to draw healthy, fit, self-caring human image by showing off a smartwatch on wrist. As Belk referred in his concept of "Extended Self", self is a performance. It extends to what we preferred to consume. Self-image might be drawn up on our consumptions more than ever before. Hence, commodities play important role on body-image. Body is in very core of the *image culture*. Regarding that, customers of the modern self-tracking market have a chance to reflect themselves as a people who are capable enough to control their bodies, fitted in to modern society responsible and healthy by showing off the self-tracking device in both physical and digital realms. In this direction, relevant industries of health, medicine, insurance, fashion and sports are directing their marketing efforts to collaborate with potential customers of self-tracking market. Relevant industries are turning

in their issue of February 2016, Time covered the chancing efforts on drawing a new image to Barbie; *Now Can We Stop Talking About my Body?*

¹ Before and moreover to the self-tracking, plastic surgeries, cosmetics and fashion are all involved and criticized under the critical body studies.

² The Notion "Fitness over health" is playing a crucial role here, again.

³ Katherine Hayles, on *How We Became Posthuman*, defines the construction of a cyborg; *'Central to the construction of the cyborg are informational pathways connecting the organic body to its prosthetic extensions. This presumes a conception of information as a (disembodied) entity that can flow between carbon-based organic components and silicon-based electronic components to make protein and silicon operate as a Single system.'* (Hayles, 1991, p.2)

self-tracking market into an ecosystem where they can increase the brand visibility, reach their targeted audience and support branding. Self-tracking market is an essential, as it is one of the few alternative platforms for health and medicine industry to market their products

In this regard, there are various examples for self-tracking apps which are sponsored by pharmaceutical, medical and insurance industries in the Turkey Self-Tracking Market. First, insurance companies. They are offering mobile apps to enrich the experience that they provide. Anadolu Sigorta, a Turkish insurance company, published an App called Sağlıkım Cepte (My Health in pocket) users can reach, store or share their laboratory testing results which covered in their insurance policy Also to draw a compelling, caring image, they provide free self-tracking apps to encourage users for self-caring. (Sağlıkım Cepte, 2020) For example, AxaFit, an App from Axa Insurance medical assistance tool, is provided within the App along with the self-tracking tools such as calorie, heart rate, and water tracker. (Axa Mobil Uygulamalar, 2020)

Criticisms might be directed on two concerns. First, if insurance company reproduce the biopolitical discourse, it is so hard to appreciate it by neglecting its economical purposes. Especially in a territory where lower health risks mean lower costs. Latter might be about social sorting. If the insurance company provides a self-tracking platform, can we trust on its privacy? Wouldn't it be useful data to design personalized policies as it might get easier to calculate possible risk factors each insured? But on the other hand, Personal Data Protection Law shouldn't be overlooked as user's statements are concerned differently when it comes to health. Different ways (as we reviewed, sometimes wet signature) are required for having users' permission to collect and analyze personal health data. Also, in very practical way, those apps are providing easier tools to manage personal health. In state of emergencies, it is faster and easier to retrieve medical archives. While it is obviously for marketing purposes, their free to use design motivates and invites more people to reach self-tracking tools.

Second, pharmaceutical and medical companies. While they also prefer self-tracking platform for marketing, it is little bit different than any industry as their

marketing activities are heavily regulated by Turkish Medicines and Medical Devices Agency. Agency heavily regulates which medical device and medicine could be promoted. Also, products are only promotable in limited media. In some cases, the promotion is not allowed from the very beginning. Each company regulates its marketing activity regarding guidelines supplied in Regulation on Promotional Activity of the Medicinal Product for Human Use and Regulation on the Sale, Advertisement and Promotion of Medical Devices by agency.¹ While health, medicine, and pharmaceutical companies are sponsoring self-tracking apps for brand's image in the Turkish Self-Tracking Market they are quite limited by given regulations. In most cases, medicine industries can't mention their brands and name of the product can't be involved in promotion. To get a better view on the field, I interviewed the marketing director of one of the biggest companies in Turkey's medicine industry. Erhan Karagöz explained some of the ongoing regulations on the marketing activities of the Turkish medicine industry and their marketing approaches within those limits: (Erhan Karagöz, Personal Communication, July 21, 2020)

“We have medicine for Insomnia. Regarding the marketing of this medicine, we are now developing an app for sleep tracking. We are adding features to track length and the quality of sleep. Moreover, we are going to provide a playlist that helps sleep. But while we are planning to publish our App, we should be cautious about regulations. We don't have to forget that any drug company can't directly connect with the patient regarding its product. This regulation is the most important one as it is limiting our operations. In other words, I can't directly suggest my own medicine to the patient. I can't reach and say to patients that "use our drug" or tell patients that we have a different background in our product amongst our competitors. Even we are not allowed to do any advertising in public spaces. Eventually, you can't promote a drug to patients. Thereby, we, the drug companies, are

¹ Full text of the regulations can be found at agency's official website; <https://titck.gov.tr>

going through to the illnesses, and we build up a knowledge hub for patients. We provide them useful information for easier management of the illnesses process.’’

Limitations direct companies to refer alternatives way for marketing. In this case, rather than mentioning the products naming, they prefer to use brands’ colors and characteristic fonts in mobile App’s interface. This way, they try to affiliate their branding with provided features by blending brand’s color and fonts into mobile apps interface. Mobile app’s interface becomes a medium itself. Interface design, on top of the user’s expectations, is now concerned more with marketing purposes. Due to the heavy regulations, companies are only allowed to mention their brands as If their intention is more on to social responsibility purposes (such as disease-awareness) rather than product marketing. There are so many approaches which reflects those conditions from a local perspective. Nobel, a Turkish pharmaceutical company, published an app designed especially for people with Parkinson disease. (Parkinson ile Yaşam, 2020) Users can track their movement capabilities and try to exercise their abilities. Novartis Pharma sponsored a local App, MS Takip (MS Tracker), specially designed for people diagnosed with multiple sclerosis. Patients can track their clinical conditions within the App. Patients can track down the pills they need to take regularly. (YolarkadaşıMSın, 2020) Abdi İbrahim, a Turkish pharmaceutical company, provided a pregnancy tracking app for health professionals to track gestation period. (Gebelik Uygulaması - Abdi İbrahim İlaç. 2016) All apps mentioned here are developed to support patients and professionals in specific conditions. They are free of charge. They claim to offer tools for supporting public health services in terms of disease awareness, public health education and supportive services rather than marketing. Hence, they can only mention company’s name but not the product. As Erhan Karagöz explained:

"But, even in those knowledge hubs, you can't mention your drug's name. You are only allowed to mention your company's name. You can't even write down the product's name on any promotional item, either. If you are

making those applications for public health services, like an application for quantifying blood pressure for anyone, you can mention your company's name according to the regulations."

But still, mobile self-tracking applications are drawing industries' attention for more appealing brand images. Today, developing a mobile self-tracking app is one of the most fashionable way of marketing, as self-tracking technologies are adopting by more users. Companies can reach more users, in very fashionable way with technologies, just by claiming their public health purposes, same as sponsoring.

Not just insurance and medicine but rather different industries are looking more into promoting self-tracking applications for alternative marketing channel, and they are implementing various use cases for monetizing societies' hype over self-tracking. Adopting a user to self-tracking app is important for customer's loyalty. Self-tracking activities require constant use. This consistency is so valuable for marketing purposes as it might suggest more dedicated customers who has tighter and deeper connections with brand. While customers become more frequently exposed to brand, companies might draw caring image for the brand as self-tracking tools are supposed for fitter, heathier, better lifestyle. On the other hand, they can expand their databases for later to be monetized by different ways, such as personalized marketing and in-app purchases.

In this regard, there are different examples on how different use cases are offered for marketing purposes in local arena of self-tracking market. App called 365 Gün / 365 Days from Bayer encourages users to collect in-app points by registering the Bayer products they bought. (365 Gün Sağlık Hareketi,2020) Users have to scan a voucher to collect in App points, and even they can collect points by taking steps. Later, those points can be spent on get accessing special offerings by other brands rather than Bayer. There is a very different use case from Beşiktaş, a major football team from the Turkish Super League, has made a deal with HelpSteps. HelpSteps is a pedometer app, but unlike any other pedometer app, HelpSteps users can support foundations with their steps taken. According to the

club's press release, users worldwide can constantly support Beşiktaş with their steps. All they have to do watching in-app advertisements to turn their steps into real earning. (Beşiktaşımıza Gönül Verenler, HelpSteps İle Yürüyerek Kulübümüze Destek Olacak, 2020) Sport industry's giants are also marketing their brands with self-tracking apps too. Nike Training Club and Adidas Training by Runtastic are popular self-tracking apps for exercising. Brands can manage to show off their new products, announce their promotions, building up a community, and draw supportive image. (Running, Cycling & Fitness GPS Tracker, 2020) (Nike Training Club App. NTC, 2020)

Another interesting attempt has been made locally by PepApp, which provides menstrual tracking and a "*virtual best friend*" for women. Emrah Yiğit, a co-founder of PepApp, explains their attitude towards monetizing the service in the app economy:

"At one point, you look through the user group, and find yourself looking into ways to monetizing it. When you gather people, who have something in common, the revenue model appears, anyway. Brands start to get in touch with your community, which already has a loyalty to your services. Emotional ties and references are essential. They make it easier to sell. As we are sure that our community is so loyal, we believed it would be a huge success if we sell something. Then, we launched in-app advertisements. The first brands that want to reach our user-base were sanitary napkins. We partnered with one of the biggest companies in the industry of sanitary pads for four years. The pharmaceutical industry also interested as they have products specifically designed for woman health. Even the food industry is interested, as the snacks' consumption is prevalent in the menstrual period."

As seen on PepApp example, self-tracking applications are attracting corporations as they contain a database of already classified user groups. In the age of "*personal information economy*," which defined by Pridmore as:

"a context in which the use of personally identifiable data has become a primary resource and upon which many market economies are built." (Pridmore, 2012, p.321)

Self-tracking applications might be referred as an alternative tool of consumer surveillance, as they both statically and automatically do social sorting, which enables corporations to recognize, sort, and then target customers for deeper and reliable relationships as Pridmore explained:

"From a political-economic perspective, the growing automation of sorting practices inherent in systems of consumer surveillance leads to an increase in targeted messages and products that are meant to meet and fit personal lifestyles and choices." (Pridmore,2012, p.325)

PepApp offers an already categorized user group, in this case, women who track their mensural cycle with technologies. This database serves a useful category of users. Later to be targeted for marketing activities of related products, such as sanitary napkins as exemplified. This situates another point that a how gendered marketing activities are as there is a presumption that register some of products like chocolate, kitchen and household items. This categorization refers to reproduction of gendered discourse which catalyzed by the *systemized recognition* and sorting required by personal data required marketing activities to work properly. In Emrah Yiğit's interview, gender-bias was referrable as some activities are recognized as more related to women: (Emrah Yiğit, Personal Communication, September 7, 2020)

"We serve content in PepApp, which we presumed to draw the attention of women, such as astrology, fortune-telling, yoga, wellness, and fitness."

The attitude is quite clear on how gendered discourses are reproduced when sorting gains an economic value. In that sense, PepApp is an inherent *"cybernetic*

*triage*¹ It is a good example for how self-tracking applications might be inevitable platforms of the cybernetic triage and how they carry economical potential within databases for marketing purposes. In this case, PepApp supports a database for industries who are looking into better ways to reach women, but this suggests an increasing potential of the regeneration of the gendered discourse as well.

“Extended Self” concept indicates a deeper connection between consumption and self-tracking citizenship. First draws an image of self-adoption to healthy lifestyle through purchases, latter accredits that image within governmental institutes and politics. In this regard, the possibility to draw “Proper citizen” image is more attributed to consumption preferences, as Pridmore suggests; “*Consumption has become a proxy for proper citizenship*” (Pridmore, 2012, p.323)

In terms of proper citizenship, I would like to visit the concept of "self-tracking citizen," which explains how modern politics are shaping self-tracking culture when the government takes the same sorting, targeting, classification, and recognition activities.

3.3. Self-Tracking Citizen

In their work named Biological Citizenship, Nikolas Rose and Carlos Novas refer the Biological Citizenship as term that stands for a new kind of citizenship regarding the traditional citizenships projects which once based on an idea of the nationalism as they provided examples of traditional citizenship projects such as;

“a single legal system across a national territory; obliging citizens to speak a single national language; establishing a national system of universal compulsory

¹ The issue is examined by the concept of the Oscar Gandy's "The Panoptic Sort," which is cited by Jason Pridmore as: "hinges on mechanisms a kind of high-tech, cybernetic triage through which individuals and groups of people are being sorted according to their presumed economic or political value." (Gandy, 1993 cited by Pridmore, 2012, p. 324)

education; designing and planning buildings and public spaces in the hope that they would encourage certain ways of thinking, feeling and acting'' (Rose and Novas, 2005, p.3)

In this regard, traditional citizenship projects were strengthening the nationalist politics of states. But unlike the politics of the nationalist authorities, biological citizenship is a new way of citizenship as Rose and Novas claimed that development in the areas of biology, bioscience and biomedicine:

''...are challenging the existing conceptions of national citizenship and that they intersect with all these other challenges in significant ways.'' (Rose and Novas, 2005, p.2)

According to Rose and Novas, biological citizenship differs from the traditional citizenship projects as biological differences are becoming more important for citizens to be defined by authorities. Even citizens identify themselves and taking actions regarding their biological corporeality and presumptions, projections and expectations regarding to it. As they claimed that;

''Biology is no longer blind destiny, or even foreseen but implacable fate. It is knowable, mutable, improvable, eminently manipulable.'' (Rose and Novas, 2005, p.7)

Therefore, even its claimed that biological citizenship is collectivizing, it is also individual as it refers citizen's participation in identifying his own biological condition and taking active roles regarding to it. Self-control and self-knowledge are both important for a biological citizen. Unlike the prior centuries' traditional citizenship projects catalyzed by the idea of unchangeable destiny in biology, which directly eliminates the weak, biological citizenship concept refers to chance of optimization for citizens to adopt society who were once defined as ''troublesome'' thanks to the technologies. Even though citizenship has always been national, as

Rose and Novas claimed, today's nation does not simply found on a simple racial idea based on "racialized national politics". Instead, biological citizen has been thought as an individual who has given a chance to align and optimize himself according their "somatic individuality";

"...individuals shape their relations with themselves in terms of a knowledge of their somatic individuality. Biological images, explanations, values and judgements thus get entangled with a more general contemporary 'regime of the self' as a prudent yet enterprising individual, actively shaping his or her life course through acts of choice. (Rose, and Novas, 2005, p.5)

Hence, biological citizen is an active one. It requires each citizen to be educated and given a freedom of choices. Hence, biological citizenship is essentially self-related. It imagines self-optimizing citizens at its best. It is calling in self-controlling, self-knowing, self-optimizing and self-tracking practices to the daily life. For a biological citizen, self is important but not only an individual one. Self is also collective. It is both culturally and technologically collective for modern biological citizen. They simply require relations with the other in both analog and digital domains which is also building up what we called self-tracking culture. It requires both individual and collective practices for one to define his very own self. Individual practices of self-governance require social feedbacks, and, in this sense, biological citizenship reminds "governmentality" In Foucauldian terms. It deploys the technologies of self and therefore it requires an explanation of governmentality in Foucault's way. Encyclopedically, Britannica refers governmentality as;

"Governmentality... ...combines the terms government and rationality. Government in this sense refers to conduct, or an activity meant to shape, guide, or affect the conduct of people. Conduct takes on meaning beyond the form of leading and directing. (Huff, 2020)

In this regard, there is no any other term than *Governmentality* to clearly understand biological citizenship practices. It provides a stage for each citizen to ‘*conduct of oneself*’; where they optimize their pathologies that they born with. Authorities are defining citizens not just by looking at their current state but evaluating efforts that they put into optimizing, caring and tracking their self. Discourse implies the promotion of ‘biological citizen’ who is self-caring, self-optimizing and self-tracking citizens. It privileges those practices in domains such as digital citizenship platforms, official health networks and state-wise service channels. It opens up a new platform and invites in a relatable discourse rather than racialized politics’ definite judgements which were not giving any chances to citizens to take any action regarding his biological state.

Biological citizenship is still taking attention of the modern critiques, as fundamentally, it is modernist in terms of embracing the human deficiencies. But, biological citizenship should be credited for its notion, which offers room for the technologies of health and communication in state level domains which are already challenging traditional medicine by inviting in new cultural domains and practices such as; Biosociality and self-tracking citizen. In this regard, Biosociality is good example of what biological citizenship invites into the stage. Inherited from the Rabinow and Rose, it refers the use of technologies on gathering communities, building up social platforms and calling in civic engagement for patient groups, activists and people for empowerment, patient support and social support. (Rabinow and Rose, 2006). Therefore, the biosocial citizen is a biological citizen who takes the attention of authorities as they have never been so fast and powerful and strong in gathering before.

As another example, I would like to suggest ‘*self-tracking citizen*’ as a new concept under biological citizenship. (Rose and Novas, 2005) Self-tracking citizens are citizens who have a background on self-tracking practices and disciplined in that direction thanks to the state-wise politics and education. They identified regarding their adaptation to self-tracking technologies. They remain ‘healthy / good citizen’ as long as they self-care. Under the self-tracking

citizenship concept, self-tracking practices, promotions and education became more important than ever in state politics and state-wise domains.

In the age of data, datafication of the self-tracking citizen concept is not an exception. We have never prioritized data ever before. We identified by data. We recognized and reconfigured according to it. We are digital as Arne Hintz, Lina Dencik and Karin Wahl-Jorgen points out:

“We are not just digital citizens because of our actions but also because we increasingly live and operate in a datafied environment in which everything we do leaves data traces.” (Hintz et al., 2017, p. 732)

Hence, self-tracking citizen is the one who leaves data traces, who is identified in digital environment, who is an object of a state-wise digital surveillance. While biological citizenship is suggesting new possibilities to citizens for self-optimization, on the other side of the coin, digital self-tracking is increasing the level of already-taken risks over digital citizen’s privacy. (Rose and Novas, 2005) It is opening up new ways for data monetization and giving enormous power to the states for surveilling its citizens. In this regard, Arne Hintz, Lina Dencik and Karin Wahl-Jorgen suggest datafication as a new way of control:

“Although datafication is by no means the first instance of the state using information processing to expand its influence over citizens (Mattelart, 2003 cited by Hintz et al, 2017), it provides vastly enhanced possibilities to understand, predict, and control citizen activities” (Hintz et al, 2017, p. 732)

But it shouldn’t be forgotten that self-tracking citizen concept does not leave out the traditional practices. It is not only covering the digital. In this sense, politics that constitute self-tracking citizen might be explained by the Foucauldian biopolitics which recognize the body as an important domain for a power for a long time, a notion that established long before the digitalization.

Self-tracking citizen concept can't be extracted from historical narrative of modern nationalist politics who once imagined a nation with the picture-perfect bodies. Self-tracking practices has always been identified as effective tools for aligning citizens to nationalist politics by modern states. Such as ‘British Mass Observation Movement that started in the 1930s’ which referred as an example of processor of the quantified-self movement by Pablo Abend and Mathias Fuchs in their study (Abend and Fuchs, 2016) or Selke refers DARPA as a domain where self-tracking technologies are utilized for a long time. (Selke, 2016) Such references direct us to the notion that self-tracking citizenship has an older history than commonly referred digital citizenship. It always has an important role in making-up citizens and citizenship projects of the modern nationalist states. It covers education, promotion, interest and importance that state-wise mechanisms attach to the self-tracking activities; accordingly, self-tracking citizenship stands for a biological citizen who are thought to know how to self-track, disciplined in this regard, identified and recognized as long as they comply. Therefore, self-tracking citizen knows that how important it is to self-care, self-optimize and self-track to become a ‘good citizen’ regarding the expectations of the modern states. They believe self-tracking is a way of recognition, a privileged way of identification.

In this regard I would like to summarize directives and politics executed on self-tracking citizens by modern authorities, in terms of their education, identification and datafication

3.3.1. Education of the Self-Tracking Citizen

As Rose and Novas referred for the Biological Citizenship, same argument can be made for Self-tracking citizenship as Education of the citizens are essential for the states to discipline them to self-tracking. (Rose and Novas, 2005) In modern Turkey's social politics, projection of the citizen that self-caring, self-improving, self-optimizing and self-tracking is essential. In his comprehensive work, ‘Gürbüz ve Yavuz Evlatlar’ Yiğit Akin narrates history of the physical training and sports

in early republic era. In his work, Yiğit Akın refers ‘‘physical training’’ (tr; Beden Terbiyesi) as an important part of biopolitics in early republic era. (Akın,2004) But he also claims that:

*‘‘Problems regarding biopolitics has started to be an issue in the mid-19th century’s Ottoman Empire and empire-level politics developed for solutions...
...But those concerns extended to the early republic era and Government took regulative acts and developed politics regarding the reorganization of public health, education of the citizens in terms of practices of collective and individual care’’* (Akın, 2004, my own trans.)

Most interestingly, Yiğit Akın refers Umumi Hıfzıssıhha Kanunu (Public Physico Hygiene Law) as one of the most extensive act that taken in early republic era. What is concerning Self-Tracking Culture here is that; Yiğit Akın emphasizes Public Physico Hygiene Law indicates the shift in Turkey’s biopolitics from ‘‘treatment’’ (tedavicilik) to ‘‘sanitarization’’ (sıhhiyecilik). (Akın,2004) In this regard, we can declare this law as a seed of the biomedicalized culture in Turkey which formed a basis for Self-tracking citizens in Turkey’s Modernity. As Adele Clarke refered in *biomedicalization theory*. (Clarke, 2014)

In this regard, early republic’s goals in biopolitics referred the citizens educated well enough to prevent themselves from diseases rather than get ill. Yiğit Akın was too specific, and he refers to Dr. İhsan Hilmi Bey’s wordings in Health Almanac (Sıhhat Almanacı);

‘‘It’s better to be prevent from illness to get ill and to be treated. Fundamentally, this is the main objective of current doctors’’ (Akın, 2004, my own trans.)

Those examples are indicating the fundamentals of the biopolitics from 19th Ottoman Era to Early era of the Republic of Turkey. This intention is pertinent for a long time, as Yiğit Akın claims:

“Those social politics works for government who has weak medical-infastructure and insufficient medical personal after the World War I and fallowing Independence War. Therefore, Physical Training became popular for medical authorities as it doesn’t require complex equipment.” (Akın, 2004, my own trans.)

Unsurprisingly, as shift from ‘treatment’ (tedavicilik) to ‘sanitarization’ (sihhiyecilik) became an essential in Turkey’s biopolitics, this intention effected education. Yiğit Akın declares education as an area that we can see most apparent effects of this shift. He claims that:

“Sport and physical training education designed for increasing Public health level, Physical training understood as something related to rehabilitation, making healthy ones healthier... ..Public schools recognized as an important domain for raising up healthy generations, therefore physical training was a fundamental in curriculum” (Akın, 2004, my own trans.)

We can summarize that Self-Tracking Citizens of Turkey has long history on how they are well educated in terms of self-tracking practices. Modernity directs Turkey’s biopolitics to discipline its citizens to self-tracking in order to suit with idea of ‘sanitarization’ (sihhiyecilik) rather than ‘treatment’ (tedavicilik).¹ That means the background has been configured long before the digital technologies which is culturally fundamental in adoption of those technologies. Today’s politics is applying digital self-tracking tools and platforms nation-wide, promoting them to self-track and keep educating their citizens in order to know how to self-tracking as Turkish self-tracking citizens has been thought how to keep an eye on themselves for a long time.

¹ In a reminiscent way of notion that sees *fitness over health*.

3.3.2. Identification of Self-Tracking Citizen

Sağlıkta Dönüşüm Projesi (Transformation of Health Project) digitalized the Turkey's health services platforms, databases, and communication tools in health systems. Since with the digitalization of the health system, health related politics, strategies, and projections privileges data. Recent politics are taking data as a tool to provide better health services for citizens. Even, data seems supportive tool for reducing medical professional's workload. In Turkey's Ministry of Health's 2019-2023 Strategic Plan, digitalization and data is declared as an opportunity for those purposes. Therefore, data is prioritized in official strategies:

“Increasing the qualification and quantity of the digital services, making them integrated, actualizing the projects regarding digitalization and standardization for better data gathering and acquisition of more enriched data”

Regarding those politics, Ministry of health provides a service called e-Nabız, defined as:

“e-Nabız is an application that citizens and health professionals' access to health data collected from health institutions via internet and mobile devices. Regardless of where your examinations and treatments are held, it is a personal health record system where you can manage all your health information and access your medical background from a single location.”

It is the most popular Self-Tracking platform as e-Nabız is the mandatory service for all citizens of Turkish republic. e-Nabız offers tools that enable users to share their own quantifications from any data source such as wearables. Service includes a self-tracker feature if a citizen permits mobile app to track his own activities:

“Your phone or Android Wear watch automatically records your walking, running, or riding activities during the day via the e-Nabız mobile application.”

That means, it provides instant and enriched data, and in the same, it serves an extensive archive with comprehensive databases for institutions to track the citizens' health remotely. Hence it brings up a question regarding surveillance of the citizens. But as platform declared:

“The information can only be seen by the physicians you have authorized or by the people you have permanently or temporarily permitted by using the "Share" option in the system.”

Even it seems doubtful in terms of possible surveillance power, explained by: Arne Hintz, Lina Dencik and Karin Wahl-Jorgen:

“...those who hold, manage, and control the personal data of digital citizens are offered unprecedented insights into our lives, minds, and bodies.”

It is strongly underlined in KVKK (Personal Data Protection Authority and Personal Data Protection Law) that is definitely illegal for unauthorized people to gather data. Even, in terms of data breaches, source would be still trackable in the digital system that who gathered data. While Turkish Medical Association and dedicated Personal Health Data Work Group have concerns regarding the security of the personal health stored data in the integrated systems, e-Nabız platform definitely declares personal data stored in the system is only accessible by only authorized officials. Privacy concerns are rising relatively as e-Nabız is giving a such priority to the data in categorizing citizens. It is the most significant digital citizenship tool that identifies citizens if they are health or not. In this regard, data reconfigures identities, data redefines citizen. It reconfigures how we enact with our own identities, as Arne Hintz, Lina Dencik and Karin Wahl-Jorgen point out:

‘‘It is an identity we are assigned through data analysis, not necessarily one that we identify with or even know about.’’ (Hintz et al, 2017, p. 734)

3.3.3. Promotion of the Self-Tracking Citizen

Politics regarding social health services in Turkey are all designed by a notion that keeps sanitization (sıhhiyecilik) in mind. Hence, image of the self-tracking citizen is promoted heavily as ‘‘good citizen’’. By implying self-tracking tools to E-Nabız, serving designated Apps like ‘‘Formda Kal Türkiye!’’ (Stay Fit Turkey!) and even providing free pedometers to citizens, nation-wide politics are promoting the self-tracking culture in various domains. Turkey’s Ministry of Health’s strategies vision imagines Turkey:

‘‘...where everyone can access high quality health services in-ease and adopt healthy lifestyle’’ (T.C. Sağlık Bakanlığı 2019-2023 Stratejik Planı, 2019)

Even in the official strategies’ main vision implies all citizens to share healthy lifestyle, definition of the ‘healthy lifestyle’ is still questionable. Is it the one that suits for individual or one that aligns with the nationwide political demands? As it is written in the strategies, Turkey’s biopolitics are well aligned with the nationalist politics which sees citizen in a picture-perfect view, taking care of themselves, minimizing deficiencies and giving maximum effort to fit in society.

Modernist perspective in strategies are not unexpected, instead, it is inherited from the politics regarding modern Turkey’s fundamentals. But emphasize on self-tracking practices in the Ministry of Health’s 2019-2023 strategies are so strong than ever before. Instead of basic promotion, it is in strategies’ very core. Self-tracking practices are constituting framework for what Ministry of health calls for ‘‘healthy lifestyle’’. Self-tracking practices are heavily promoted. Self-tracking citizen is acknowledged as the healthy one. In this regard, examples might be referred in Ministry of Health’s strategies, as there is a list of objections that require citizens to self-track:

“encouraging more active lifestyle, adopting healthy eating habit, designing a society who are self-aware of their health.” (T.C. Sağlık Bakanlığı 2019-2023 Stratejik Planı, 2019)

More distinctively, one of the strategies refers designing a primary care health service that includes efficient self-tracking systems and technologies.

All those strategies signify the importance that Turkish authorities are given to self-tracking in terms of projecting a future with self-tracking citizens. Promoted habits are all calling in self-tracking culture on stage as it is declared as way of healthy living from the very firsthand, Ministry of Health.

3.3.4. Datafication of Self-Tracking Citizen

Self-tracking practices has a remarkable value in Turkey’s biopolitics from the 19th Century’s Ottoman Era to Modern Turkey. (Akın, 2004) They have been playing important role in different institutions. Tradition is ongoing from public health domains of the Turkish Republic, from Beden Terbiyesi to the E-Nabız. Since with the digitalization of those practices, unsurprisingly, self-tracking data is privileged for government too. Those data play a crucial role in Turkish public health strategy. It provides a new kind of information, a better statistics and better control. It simply means more control for government. It provides a capacity of control that citizens never exposed before. Therefore, it enables states to develop more dynamic and more precise tuning to its biopolitics. Data simply means power that each government requires; as Arne Hintz, Lina Dencik and Karin Wahl-Jorgen point out:

“We are therefore confronted with the emergence of a new power dynamic; one that is premised on an order of “haves” and “have nots” between those who provide personal data (digital citizens) and those who own, trade, and control it” (Hintz et al, 2017, p. 732)

Turkey's Health system signifies data as an important tool. It is suggesting total datafication in public health system with such tools of e-Nabız e-Hekim and Nationwide Health System. According to the Ministry of Health's reports, since with the 2017, %87,3 of public health institutions upload data to Nationwide Health System. Data is underlined by Strategic guidance of the Ministry of Health, as one of the future projects suggest:

“Generate data that is qualified enough for policymaking based on proof and datum, sufficient enough for scientific research and analyses” (T.C. Sağlık Bakanlığı 2019-2023 Stratejik Planı, 2019)

Reconstruction of the data sets is prioritized, and data defined as a flagship tool not only in nationwide politics but even in international relations:

“By reconfiguring medical data sets quality of the data will be improved. Data infrastructure which is capable enough to do international-level comparisons will be generated.” (T.C. Sağlık Bakanlığı 2019-2023 Stratejik Planı, 2019)

In order to comply with government's data strategies, digital self-tracking activities are suggested as data plays an important role in nationwide health strategy. e-Nabız stands for a most significant example regarding those politics. It promotes digital self-tracking activities; it suggests wearables as a part of healthy lifestyle, and it defines self-tracking data as an official document in state-level. Data in this sense privileged in governmental level and might work in decision making processes, as I cited before; *“our identities are assigned through data analysis”* (Hintz et al, 2017, p. 734)

While extended capacity of the authorities' surveillance is endangering secure feeling of the citizens regarding privacy, there is still fruitful territory of self-

tracking data which might help society in its cope with recent threads over public health, such as obesity and alcoholism.

State-wise domains of self-tracking society is no longer distinct from the politics of the data. When the profiles, activities, channels of communications, social domains, civic engagements, and cultures are all digitalized, there is no other way left out for governments to take data as an appropriate form of information. Today, data forms the recent politics and regulates the mechanisms around. Hence, biopolitics is not an exception in the age of datafication. Biopolitics are directing digital data and vice versa. Related practices of the citizens, governmental actions, official public services and regulations are all digitalized, and data requires traditional regulations, services, mechanisms, and domains' renewal. While inherited ideas from the modernity still referred in contemporary biopolitics, digital tools, services, profiles, activities are all considered as a new power domain. Therefore, digital data retrieved from the self-tracking activities are drawing attention of power as they carry economic, politic, and social value which later be used for extension of the domains that it regulates.

Significant importance that given to self-tracking by governments suggest that; modernist ideas still catalyze the recent politics of today's states. Rather the data is digital or analog, it is still drawing attention of power as it carries fruitful information to execute its directives in terms of disciplining the modern society.

When it comes to self-tracking culture, things are not different at all; It will be still relentless to call nothing new rather than digital, but it should also be acknowledged that today's politics that prioritized self-tracking culture are inherited from the biopolitics extended from the modernity. Whether self-tracking activities are digital or analog, states focus on those activities as a part of their biopolitics and disciplining citizens to adopt those as their daily life practices. Self-tracking citizens are thought self-tracking as a one of the practices that will help nation to meet with modernist demands for a long time. This implicitly suggests self-tracking for everyone to comply with the nation-wide politics, align with modern culture, living in harmony. There is no other way for society as long as it needs to be identified, not overlooked, alienated and be recognized by the officials.

4. COVID-19 AFTERMATH

It was February 2020, when I decided to study recent situation of the Self-Tracking culture in Turkey as my doctoral thesis. In Istanbul, we were recently hearing about the pandemic, news was coming from both from Europe and America, and images were quite shocking. We were exposed such iconic images all around to world; coffins were waiting in tandem all over Italy for people who lost their life due to the Covid-19, U.S Hospital Naval Ship anchored At New York Harbor for supporting New York City's health workers. City of Wuhan declared total lockdown and people were ordained to stay at home. Aerial shots of Diamond Princess at Yokohama Port were seriously worrisome as 700 of people infected, later 14 of them were died. Meantime in Turkey, there was no official signs of COVID-19. Street were crowded, concerts and gatherings were organized at full blast, schools and universities were still working at full capacity. But first signs of *infodemic*; ¹ publishing both online and mainstream media were already staged. Some declared that garlic is going to prevent people from infection and on the social media Bill Gates were blamed for all pandemics. But everyone was in shock. We were struggling to admit we were in the middle of pandemic.

In March 11t, 2020 first case of the COVID-19 was officially announced. (Genel Koronavirüs Tablosu,2020). Afterwards were quite same with all around the world. Schools and Universities were reorganized for online education, restaurants and cafes were closed; face masks became mandate. I was about the start writing down my thesis. I was reviewing literature. But none of those written by keeping pandemic in mind, as expected. I was facing with such unique condition, and I have to observe whole process to understand the position of self-tracking culture by all practices, concept and technologies in the midst of pandemic.

Even long before the pandemic, Popularity of self-tracking culture were led to adoption of tracking technologies. That popularity set ground for tracking technologies easily creep in daily life which is already called the *sousveillance*; a

¹ *information pollution due the serious impact of the fake news-sharing,*

concept which is quite different than traditional surveillance, as Steve Mann, father of the term; ‘*sousveillance*’ where surveillance are not designated for one simple top the bottom hierarchy, rather, anyone can become an object or a subject of surveillance. (Mann, 2002)

Sousveillance, in this regard, rather different than surveillance. It reframes the hierarchy in surveillance. Anyone might be an object of surveillance or the surveillant anytime. Thanks to the smartphone cameras, wearables, and such ubiquitous technologies, it reframes the hierarchy in surveillance, it invites ‘*veillance*’ to anyone’s mundane life. But quiet like *surveillance assemblages* concept, (Ball et al, 2012) *sousveillance* denies traditional mutual understanding in surveillance between watcher and watched it simply suggest anyone can be both, even at the same time.

Modern society yet internalized the authority. It is society cultivated in panopticon prisons. Asymmetrical surveillance has been living in its core for a long time, yet it is built up on Surveillance Assemblages, (Ball et al., 2012) a complex network of ‘*veillance*’. For example, a data retrieved from police-worn body camera later than be used by another 3rd party organization. Or in another example, public health data in some way might be shared by 3rd parties or simply be hacked.

In versatile networks of computers, people know they have been watched and they know how to watch. Instead, while privacy concerns are rising, the other side of the coin is quite different. Due to the self-tracking culture, people became keener on sharing their personal data. They believe that will make their self-tracking experience better. They know that permissions will enrich tracking experiences. Must of the tracking features requires permission to access personal data such as location and vital parameters. Such permissions must be given for tracking apps to work properly.

Pandemic only boosted that rationalization. It rationalized both surveillance and *sousveillance* practices; same as post- 9/11 era when temporary surveillance practices later turned into a permanent one. (Ball et al., 2012)

In this regard, it is no surprising the self-tracking in the middle of the pandemic's storm. But to make it clear, I could review such remarkable points by looking at each actor, self-trackers, authorities, and institutes.

First, Self-Trackers. Self-Tracking Applications and technologies are living their golden ages in pandemic, as it is getting more riskier to visit hospital, it is getting so important to reach health and wellness services without leaving home. Therefore, smart devices transforming home to clinic are taking more attention. Spirometers, take-home urine tests, smart blood pressure monitors, heart rate monitors, oximeters, thermometers are all popular. While those devices turning home to the clinic, they also connect each as they transfer the measurements to professionals for consultation, thanks to the IoT technologies. People also used online conferencing tools for telemedicine services, yoga and fitness classes. Fitness became more important. Due to the lockdown, daily movements are limited. It is getting more important to take care of fitness. Instead, in some countries, GYMs are closed. In this regards, mobile fitness applications and wearable fitness trackers are preferred. Social life is also limited. Risk of depression is increasing. Hence, usage of digital meditation apps, online yoga classes, stress trackers are preferred. To sum up, it might be said that there is no any other way than the self-track. Frankly, anyone, in some point, "have to" track themselves. You must know your body temperature, you must log your location, you must check your symptoms. Self-caring is not a choice, it is an order. We are living in a dream of the guardians in panoptic prison. The situation that directs us to the other actor's relations with self-tracking culture in pandemic: Authorities.

From day one, authorities tightened the limitations, and they simply adopted the self-tracking technologies for public health monitoring. Same technologies of self-tracking rapidly turned into a public monitoring and surveillance as Pandemic reframed sousveillance as something mandatory for public health. By offering designated applications they can simply manage to log citizen's location, health condition and body parameters which once only adequate for personal usage. With those applications, data which once claimed to be totally personal, became accessible by the authorities. In some cases, citizens have to share their

smartphone's GPS data, declare their body temperature and log their symptoms properly if they want to access to public areas. Most of the governments and organizations designed official tracking apps as Bluetooth and GPS technologies are suggested as tools to track down infected people's location logs and stop the spread. Even both Google and Apple provided bloatware software in iOS and Android phones to automotive share location data in favor to detect if user exposed to people infected.

On top of those applications, sousveillance is not going to anywhere. Instead sousveillance is transformed according to pandemic's necessities. Thermal cameras are directed towards public areas such as airports and shopping malls, face recognition systems are logging people's face as if they are wearing mask or not, beacons and NFC chips are dedicated to log people's indoor location logs and to detect their social distance.

The data retrieved by those technologies is threatening and concerning public safety. It carries enough information to give total control to whom might reach it. Instead, there is no way to foresee if those applications are going to be temporally used. It is still possible for totalitarian authorities, organization of surveillance capitalism and power relations to adopt those technologies permanently in favor of power, control and monetize, even after the pandemic. On the other hand, those practices are getting approval from public opinion as they are presented as if they are an effective way of controlling the spread. But there are studies that find those applications are quite insufficient to track spread precisely, for example, in his study on *Civil liberties or public health, or civil liberties and public health? Using surveillance technologies to tackle the spread of COVID-19*, Rob Kitchin covers how GPS and Bluetooth technologies are insufficient for tracking down the spread regarding their problem of accuracy depending on devices setup, local weather and geography conditions and landscape. (Jay Stanley and Jennifer Stisa cited by Kitchin.R. 2020)

Even there are known issues regarding GPS and Bluetooth technologies, like the rest of the world, Turkish Ministry of Health also provided an app called *Hayat Eve Sığar*, which designed for detecting location of people who infected.

Application provides a unique code for each citizen, which later became a sign if you are exposed to COVID-19 or not. If you can't get a clearance, you are not allowed to enter designated areas or use mass transportation. Application uses location data even if it is working at the background and require each citizen to log his possible symptoms. (Hayatevesiğar, 2020)

Level of surveillance might be quiet concerning in terms of privacy, but that doesn't mean that it is always mean an infringement to collect personal data. It simply doesn't mean that anyone who is collecting data might use if for surveillance capitalism, totalitarian control, and social engineering. Instead, when required permissions taken, big data might provide a useful ground for researchers. This directs us to the third actor, institutions.

Institutions and grassroots organizations are looking at the new ways to detect such early signs of COVID-19 with cumulative data retrieved from wearables. In theory, data retrieved from wearables might provide useful correlations between higher resting heart rate, body temperature and COVID-19 infection. For more precise detection, researchers need bigger data libraries for process. More data means better learning for machines. Unless it will be so hard for them to make precise correlations and correct diagnoses. Even in my thesis, there was an example in interviews regarding Dakik App, which suggests big data might carry meaningful correlations for early COVID-19 diagnosis. Moreover, universities (such as University and California and Northwestern University), and groups like QuantifiedSelf organized public events for voluntary data collection from infected people's wearables. But to determine that infection if it is COVID-19 originated, researchers need more data to process. But even in those conditions, some organizations and hospitals use wearables to detect possible infections for precaution. For example: NBA is using Oura Ring; a smart ring that can measure body temperature suggested for NBA players as differences in body temperature and resting heart rate might suggest a possible infection. (Eadicicco, 2020). Same smart rings are given to the 2000 health workers for on field research. (UCSF TemPredict Study.2020) Stanford Healthcare Innovation Lab also opened up a new platform to the public access for volunteer data collection. (Stanford COVID-19

Wearables Project, 2020) QuantifiedSelf release an open platform called Quantified Flu. Anyone can participate Quantified Flu with his personal data but at the same time, Quantified Flu is respectful to privacy in terms of Open Human guidelines. Platform requires using random identifiers for its database in respect privacy. (Quantified Flu, 2020)

For both actors, privacy concerns are rising as more surveillance required for detecting the spread. While mobile clinic, telemedicine, biomedicalization, wellness, digital fitness, digital meditation, wearable adoption and conveying self-tracking culture rising those are all bringing on concerns regarding privacy, regulations and reliability. But when pandemic kicked in, it feels as if there is no time for think and concerns regarding COVID-19 far outweighed than privacy concerns. Even for vaccines which require serious regulations for public use, states declared a rapid approval for emergency use. While world is in panic, it seems more logical to give up on privacy and instead consider public health. But at the end of the day, it is still questioning whether those applications are going to abandoned or will they stay forever even after the pandemic?

I was waiting to write down a section regarding to COVID-19. As I mentioned, this thesis was decided just days before the pandemic, and it was midst of the pandemic while I was writing the main chapters. But I always think that, if I reflect that situation so much into my thesis, pandemic will be quite overshadowing the technologies, concepts and culture of self-tracking. It was so hard to balance this condition. While I was writing about self-tracking culture, everything seems to have sort of connection regarding pandemic. Usage of wearables devices, necessity of mobile clinics, adoption of digital telemedicine, homecare, wellness, fitness and meditation services are all rising. All become more popular topics for anyone and take such popular places in daily life. I was quite concerned to fall into that hype. Instead, I believe self-tracking culture has establishments resting on ideologies that stems from modernity, long before the pandemic and digital technologies it is forcing. But at last, I think it will be quite hard to not neglect the situation. I thought that way when my phone rang midnight. It was mom who was calling. She was asking for help to download Hayat Eve Sığar App to my grandparents' phone. She

was quite in panic as she said it will be mandatory for them as unique codes required to enter public places easily be retrieved through those Apps. We download Hayat Eve Sığar on both grandma's and grandpa's phone successfully with the support over FaceTime. But right after the setup, Mom was saying that those are requesting permission for location access? How should I answer? This was the time that I realized there isn't any other way than writing down this chapter for me at all. Because answer was quite simple:

Is there any way than giving permissions at all?

CONCLUSION

I would like to summarize my study by briefly reviewing the analyzes from each chapter. I will turn to my main question; *What has evolved regarding the Self-Tracking Culture?*

I believe recent state of Self-Tracking Culture is documented for now, but as long as technologies, concepts and regulative mechanisms keep developing, there is still need a dynamic platform for archiving what has been evolving. On text-based material, archiving the digital technologies and related concepts are quite limited. Online, interactive databases are required for logging the most recent states. Each day, self-trackers are confronting with new regulations, new technologies, social groups and activities. But, even in those conditions, I tried to have my study as extensive as possible to expose the most contemporary state available. At the very beginning of my inquiry, I was quite hyped with the technologies and culture. I was a dedicated self-tracker. I was expecting to see more machines in more critical positions. I was thinking that the borderline situation between wellness and health categories is more complex. I was not expecting to see a developer a who criticizes his own product in terms of promoting same body-image. I found it quite depressive to see how violence in health institutions are now extends to developers.

I think exploring the ideas behind modern technologies, reviewing regulations, finding out how data positioned in health strategies, listening the experiences of the biosocial groups opened a pathway for me to explore Turkey's self-tracking culture as comprehensive as I desired from very beginning. In this regard, I would like to briefly present my conclusions, but instead of considering those outcomes, rather, I wish superior studies to revisit them for rising more up-to-date questions on Turkey's Self-Tracking Culture:

For moderns in liquidity, fitness is taking over health, as Bauman explains. (Bauman, 2005, cited by Gartenbach and Mönkelberg) This means, sectoral growth of a wellness is not a surprise. Health is not a fixed state. It is claimed that there will always be better version of self. Hence, health, fashion and wellness industries

are getting more closer than ever as culturally it is motivated to constantly self-track, but in fashion. Devices which can run electrocardiogram but at the same time still look fashionable is no longer extraordinary.

Even its claimed quite different in cultural discourse, categorization of the wellness and health services are rather distinguished in terms of regulations. Wellness services cannot diagnose illnesses, they can't offer treatments. If they want to do so, they have to be regulated as health service which requires different level of inspection. Hence, even their technologies are capable to diagnoses and treatments, some developers prefer to limit their services to be regulated within the limits of wellness services.

Technologies are still concerning doctors as they don't want to deal with the problems that those technologies might bear. They avoid offering recent technologies as they believe each might invite a new responsibility on their regular workload. They simply don't want to take their time to support proper usage, maintain and care of those devices. Even, it should not be forgotten that they are servicing for people who is not in a healthy condition.

Self-tracking technologies are reforming dialogues in clinic. When quantification provided by digital tools, they became more meaningful and understandable for doctors and support them for better serving.

We prioritized data in tests and analysis thanks to the related technologies of image processing, machine learning and artificial intelligence. But in the meaning-making processes professionals sees human more trustworthy than computers especially when it comes to health-related critical conditions. Still humans are the ones that giving final decisions mostly. They still here to supervise computer-generated automation. In this regards, Self-tracking industry still prefers professional dietitians, doctors, psychologist and trainers for their servicing.

Privacy concerns in Self-Tracking Culture is serious. Hype of privacy is real. Data's new economic, political, and technical valorization is a serious issue regarding the privacy. But that no means that there are no preventing steps taken. Instead, In Turkey has an official Personal Data Protection Law and Personal Data Protection Authority. Those mechanisms are taking health-related data more seriously, but still, Turkish Medical Association and its personal health data study group are carrying serious concerns which might be reviewed from the topics of nationwide congresses they organized.

Turkish Regulations on Health Devices rely more on to European Union standards. Regulations on marketing and categorization are quite same with the European Union countries. Unlike the United States, regulations are different especially in terms of marketing. You can't advertise specific medicines, services and features and some services requires a medical background for accessing.

There is no such a social community as QuantifiedSelf in Turkey. Instead, there are social communities in Turkey which fit more into biosocial groups (Rabinow and Rose, 2016), Those groups are formed under the *biosociality*, they share same medical conditions, they are more empowered patients, and they socially interact to share their treatment experiences. In this regard, people with obesity, diabetes, multiple sclerosis, or amputees gathering on mostly social media platforms such as Facebook and Instagram, but they can't properly be exemplified as self-tracking community like QuantifiedSelf, as their self-tracking habits are more mandatory. Still, Diyabetimben is exemplified as they are rather different than other biosocial groups. Their condition requires mobile, constant, reliable tracking. This enables a community that has better dialogue with self-tracking technologies.

Data related self-tracking Technologies are challenging traditional concepts and configurations. But this no means that, self-tracking culture emerged with those technologies. Instead, it originated in modern culture and biopolitics. In Turkey's term, self-tracking culture established by modernization and 19th Ottoman Era's

westernization movement. Since then, it always been a fundamental element of modern Turkey's biopolitics. Still, self-caring, self-optimizing and self-tracking activities signify good citizen. Activities are defined as a strategical element in Turkey's planned health and education systems.

Our digital embodiment carries political and economic value as much as our physical embodiment. Hence, government requires digital citizens to produce body related data for biopolitical purposes. In this regard, technologies of self-tracking have an opportunity for such power relations to retrieve fruitful data which later to be used for economic, political and social purposes.

There are still ontological debates going on digital data. Digital still do not referred for the real. Haptic, tangible, analogue way of knowing still preferred over digital. In governmental level, wet ink still believed as more reliable than digital validation.

Systemized standard of the recognizability required by computer is still concerning, as it overlooks the human unpredictability. Hence there are still things that are yet to be digitalized, such as love.

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