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Design Archaeology: on the Smartwatch

by

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Abstract

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This research is designed to form a holistic understanding of the smartwatch as a contemporary product, as it has the potential to reveal the tangled dynamics between people and technology. This study attempts to understand present phenomena by benefiting from the past, creating and applying a design archaeological approach.

The research is conducted in two temporal axes and explores the connections, parallels and reoccurring patterns in the past and present by looking at the genealogy of the research object. Moreover, it aims to investigate the relationship between smartwatches and people and to explore the archaeological traces of the smartwatch to have a better understanding of the current phenomena related to it. By benefiting from the past and exploring the parallels and interactions between the past and the present, it provides a comprehensive analysis on the smartwatch and the relevant contemporary concepts.

The study implements various research methods such as focus group and autoethnography. It suggests new approaches in design and theorisation of smartwatches as well as new interpretations of the relations between technological objects and people. Additionally, it provides insights into digital culture.

The findings of the study vary from the connections between time discipline and information discipline to the elements for internalisation of using smartwatches and adopting self-discipline. Moreover, the parallels and reoccurrences between the smartwatch and its antecedents are identified. The quantified and qualified self, intimacy and gamified discipline are some of the concepts explored further in the research.

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Research Thesis: Declaration of Authorship

Print name: Betul Aybala Cakmakcioglu

Title of thesis: Design Archaeology: on the Smartwatch

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

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Definitions and Abbreviations

OOO.....Object-Oriented Ontology

WDO.....World Design Organisation

IoT .....Internet of Things

HCD .....Human-Centred Design

ICSID .....International Council of Societies of Industrial Designers

Chapter 1 INTRODUCTION

This research is designed to create a holistic understanding of the smartwatch as a contemporary product. As a technological device carried on the user's body, it has the potential to reveal the dynamics between people and today's digital technology. This study attempts to understand present phenomena by benefiting from the past by applying an archaeological approach.

The research was conducted in two temporal axes and explores the connections, parallels and reoccurring patterns in the past and present by looking at the object's genealogy. Therefore, it includes a diachronic approach as well as synchronic. Hence, it is possible to comprehend the past but also to see the situation of a particular moment in the present. Moreover, the relationship between smartwatches and users is explored. Accordingly, focus group discussion and autoethnographic studies contribute to this research for an in-depth analysis at micro level. They provide observations regarding the recent phenomena, with an archaeological lens. Hence, the research presents a holistic view and discussions about smartwatches and associated concepts and practices.

It eventually aims to identify contemporary and reviving cultural elements and suggests new approaches in design and theorisation of the smartwatches as well as in understanding the relationship between technological objects and people.

It is also worth mentioning that the occurrence of Covid-19 pandemic has inevitably influenced the approaches in this research, its outcomes and its conduct while providing a very specific context to the research.

1.1 Research Background

Digital culture, often considered to be closely linked to digital technology, is not completely determined by this technology. The ways people think and live their everyday lives governs technological developments, and vice versa (Gere, 2002, p.17-18). On the other hand, considering the contingency of digital culture, it is possible to say that the formation of digital products which have penetrated everyday life, and the way people experience them, are highly sophisticated. These contemporary products are not only tangible objects but also intangible entities with their omnipresent features and the ability to generate extensive networks. As they have become such integral parts of individuals' everyday lives, for the design field as well as other disciplines, it has become crucial to make sense of the new relationships between these hybrid products and people, according to the current cultural paradigm. It is significant to comprehend the place of these

products in everyday life, and how they transform the practices for many stakeholders including companies, users and designers. Analysing how people perceive, use, and adopt these products is necessary, particularly for designers to see the changes in culture and possibilities for the future, as they redesign the relationships between products and users as well as products themselves.

Today's prevailing digital culture, where technology mediates daily practices and creates new means of communication and interaction through products, has inevitably altered material culture, which is concerned with society's values, beliefs, and attitudes against artefacts. This means that the tangible layer of culture now consists of objects which are invented, redesigned, recontextualised, or adapted, with new technologies. Consequently, these products are becoming more and more popular and diversified, creating novel meanings, and experiences.

In line with this situation, the field of product design inevitably tends to focus on more digital or abstract modes of design such as user interface, user experience, and service design to address current needs. With the effect of digitalisation, products have become more interactive, invasive, and ubiquitous objects. The relationships between these products and users are multi-layered, dynamic and generative in nature. Products have unconventional functions such as creating networks, connecting people, objects, and web-based services, thereby creating a diverse ecosystem. Moreover, they are responsive to external factors and communicate with users in visual, audial, and haptic ways.

In these respects, smartwatches are remarkable products and worth researching to understand digital culture and ever-changing everyday life. As wearable devices, they are unique in terms of proximity to users and representative to complicated relationships between digital devices and people.

1.1.1 Smartwatches

Smartwatches are chosen as this research is designed as a response to the emerging need for understanding increasingly complicated relationship between smart, ubiquitous products, which combine physical and digital elements, and people. Smartwatches, the successors to wristwatches, exemplify well-established everyday objects that are digitalised and become part of a network. They also illustrate how a paradigm shift has occurred in culture as well as in the product design field.

Smartwatches are mobile and wearable devices similar to wristwatches on the surface, but with digital and smart elements such as a touchscreen, circuits and sensors. They are typically connected to smartphones and other devices as a good example of the internet of things (IOT). They have

many functions including telling the time, making calls, counting the user's steps and more, since it is possible to use many smartphone applications present on a user's smartphone on their smartwatch. Smartwatches show notifications that the user receives on their smartphone. One of the main functions of smartwatches is defined as health and activity tracking (Min et al., 2015) but there are also fitness-trackers which have fewer features than smartwatches and solely focus on tracking health and physical activities. Nevertheless, smartwatches are the focus of this research as the most popular and owned wearables with a bigger share in the market (Denghani, 2017; Mintel,2022) and diverse impacts on everyday life.

Although there is not an established definition for smartwatches and there is ambiguity in classification of similar products such as 'smart wristbands' and 'fitness trackers' (Chuah et al., 2016, p.277), smartwatches are described by many scholars in similar ways; emphasising different features. Cecchinato et al. (2015, p.2134) presents the definition below:

> "a wrist-worn device with computational power, that can connect to other devices via short range wireless connectivity; provides alert notifications; collects personal data through a range of sensors and stores them; and has an integrated clock."

On the other hand, Chuah et al. (2016, p.277) defines the smartwatch as 'a mini device that is worn like a traditional watch and allows for the installation and use of applications.' There are common themes in the definitions such as presenting information, capability of communication and multifunctionality.

There had been many attempts to create watches with multi functions including the capability of connecting to PCs such as Timex Datalink (Timex, no date) in 1990s, IBM Linux watch (Narayanaswami et al., 2000) and PDAs (personal digital assistant) in 2000s such as Fossil's Wrist PDA (Charlton, 2013). Nevertheless, the smartwatches in today's sense appeared in the emerging mainstream market when crowdfunding projects such as Pebble watch (Pebble, 2016) and Omate TrueSmart (Omate, 2023) launched in 2012 and 2013 respectively. They subsequently spread to other big companies such as Samsung, Google and Apple.

Revenue in the smartwatch market is expected to reach US$28.72bn US dollars in 2024 and US$40.57bn by 2029 (Statista, 2024). On the other hand, the global revenue of 'the Digital Fitness & Well-Being market' has reached US$83.25 billion in 2023 (Statista, 2023) which could be considered an overarching industry for the products such as fitness trackers and smartwatches.

Apple, Garmin, Fitbit and Samsung are considered key smartwatch companies. According to the Statista Market Insights report, in brand shares, Apple comes first by 53% in the UK in 2022; Garmin

and Fitbit follow with 25% and 22% respectively. Worldwide, on the other hand, Apple (29%) is the leading company, but this time Huawei (8%), Samsung (7%) and Fitbit (6%) follow (Statista, 2024).

Based on the data, in 2023, 52.58% of users were female, and the biggest user groups were 35–44-year-olds (27.60%) and 25-34 years old (25.70%) in the UK (Statista, 2024). 44.94% of the users had high income while 30.35% had medium income. This provides insights about the unique positioning of smartwatches and how it has spread over different groups. Trends point out a growth in the market, however, a market report identifies cost-of-living crisis as an issue. It also identifies that tracking their exercise has become a viable alternative to gym memberships (Mintel, 2022). Nevertheless, resistance or problems in adoption of the smartwatches have been acknowledged (Ghazali et al. 2020; Chuah et al. 2016) although not addressed comprehensively.

Smartwatches have been discussed in literature in a wide range of fields, including computer sciences (Alsubhi et al. 2023), health sciences (Holthe et al. 2022), and sociology (Lupton, 2016). The recent debates have revolved around health-related functions and accuracy of these functions such as ECG (Isakadze & Marin, 2020) and oxygen saturation (Spaccarotella et al., 2022). The Covid-19 pandemic was influential in initiating these studies, as it was crucial to monitor patients' health remotely. There are also recent studies that explore new applications of smartwatches to help people with different health problems such as diabetes (Lehmann et al, 2023), sleep apnea (Chen et al., 2021) and Parkinson's disease (Ko et al., 2022).

On the other hand, in the field of sociology, smartwatches have been heavily discussed in terms of surveillance as well as self-tracking practices (Hepworth, 2019; De Moya and Pallud, 2020). These debates also covered biomedicalisation and how medical data is incorporated into daily life, changing behaviours. Some evaluate these technologies as exploitation of human body and reproduction of social norms such as gender roles (Åsberg and Lykke, 2010; Dolezal and Oikkonen, 2021), especially from feminist perspectives, while some see positive aspects such as empowering women by giving them the chance of tracking their ovulation, etc (Algera, 2023; Zampino, 2019). Nevertheless, there is still a lack of studies that analyse qualitative aspects of the relationship between users and smartwatches and exploring the connections in culture by looking at the origin of these practices and products. There are limited in-depth studies on the adoption of smartwatches, although there are some that utilise the technology acceptance model (Al-Emran, 2021; Lazaro et al, 2020).

Therefore, recent research highlights the need for further and deeper exploration and analysis of these devices and the ways people interact with and adopt them. Examining these objects in daily life becomes crucial to understand both changes in the culture and the future of product design which will take place in a specific cultural setting.

In this context, this research investigates the relationship between smartwatches and people and explores the archaeological traces of the smartwatch to have a better understanding of its current related phenomena. By exploring the parallels and interactions between the past and the present, it provides a comprehensive analysis on the smartwatch and the relevant cultural concepts. This helps to understand how we have arrived at the current situation and how we may envisage the future.

Design archaeology is used to explore predecessors of smartwatches and the relationship between users and smartwatches to see the changes and similarities in cultural patterns through products and the implications on everyday life.

1.1.2 Design Archaeology

Design archaeology is the approach that intends to provide a comprehensive understanding of the socio-cultural contexts and underlying conditions of designed products as well as the disruptions, parallels or changes that have occurred throughout their non-linear history.

Design archaeology can be simply defined as both a theoretical lens and a methodological approach that aims to understand contemporary design objects through a scrutiny of the past to explore recurring elements, cultural patterns and conditions for their existence. It draws heavily on Foucault's (1972) archaeology concept - a methodology used to analyse history of discourses and discover underlying structure in which knowledge was constructed. It also built on media archaeology studies that investigate alternative histories of various media forms and technologies (Parikka, 2012).

The most prominent feature of design archaeology is the examination of designed products through their past to understand the underlying conditions of their existence and usage by gaining insights into the connections to their predecessors and the culture. It primarily focuses on materiality and design but also takes the multiple layers of ecosystems in which they exist into consideration.

Design archaeology is mainly interested in genealogy of objects and takes technological and historical conditions into account. It also borrows elements of cultural and anthropological approaches in design such as ethnographic methods or cultural probes that focus on human experience and interaction with products. However, it always contextualises it through an archaeological perspective. It creates an overarching perspective by synthesising human-centric methods and object-oriented approaches as well as questioning temporality and challenging the concept of old and new. It searches for recurrent elements in design and therefore repetitive

cultural patterns in the relationship between products and people. It examines different actors and conditions that contribute to the presence of a product in a certain period.

This perspective also challenges common understanding of progressive and linear development of design and technology and pays attention to the products that are outside of the mainstream. This differentiates it from many of the conventional historical approaches. It has potential to find alternative ways to understand the past by focusing on its cyclical feature and long-lasting effect on the present. Although looking at the past, it mainly aims to understand the present without relying on the concepts of continuity or evolution.

Design archaeology acknowledges the structure that produces certain ways of understanding while giving importance to subjectivity and agency. It moves from individual experience but transcends it to explore continuing or reviving structures in culture. It ties epistemological and ontological perspectives and discuss how products and practices are determined or occurred contingently, and how they are understood.

It differs itself from other approaches in design by not being solely future oriented and human centric. It also has a more explorative approach which can bring fresh insights into design process which has heavily adopted problem-based approaches.

By focusing on materiality, the way it shapes people's perception and experience of products and providing criticality in analysing contemporary discourses and practices regarding these products; design archaeology brings historical, technological and cultural foundations together.

1.2 Research Rationale

As Bergson (2004) states, a thing and its surroundings are inseparable, and the things that surround us reveal our potential actions upon them, and so the ways we deal with the background they exist in. Watches, regardless of whether they are smart or not, have been the objects that are almost inseparable from the user so their everyday life. They are intermediary objects between people and time, and most of their activities now possess smart aspects. Therefore, they provide a fruitful ground to explore the complicated relationships between technological, wearable, and connected products and people. They are good signifiers to reflect transitional times when they are examined retrospectively, and they are also physically very close to the user which provides a different layer to explore and discuss.

Moreover, according to worldwide market research reports, the number of smartwatch owners is increasing, and smartwatches, particularly Apple, dominate the wearable industry (Statista, 2024).

Smartwatches as products, whose market share is increasing and which is expected to increase even more in the next years (The Business Research Company, 2021), are relatively new products and were not on the mainstream market before 2012. There have been some unsuccessful attempts in the past, and smartwatches have not completely moved past the adoption process when the problems of continual usage are considered (Basha, et al., 2022). Furthermore, according to Mintel's (2021) global consumer trends report, consumers' worries about possible negative consequences of using digital devices, such as mental problems that emerge from using them too often, have put them in a bind. Moreover, a considerable number of consumers are concerned about the amount of health data that smartwatches can collect from the user, while health tracking is one of the biggest motivations for having these products (Mintel, 2022). Therefore, there is a need to understand and address the conflicts and concerns that prevent people from adopting and using these products long-term.

Additionally, research on smartwatches so far is not very diverse. There is a need for smartwatches to be further explored in terms of cultural aspects, as they have a variety of aspects that create new representations and apprehension of self and social relations (Lupton, 2016).

As mentioned in section 1.1.1., there are studies on smartwatches; however, particularly in computer sciences, they regard smartwatches as IT products or assess them in terms of technological capabilities and physical characteristics. Smartwatches generally have been studied to create a new application or product (Sim et al., 2019, Khurana et al., 2019, Tartarini et al. 2023). They are sometimes studied as associated with marketing (Jung, 2016) and usability (Chun et al., 2018). On the other hand, many studies are relevant to health issues (Mondol et al., 2015; Mortazavi, 2015; Maglogiannis, 2014; Lehmann et al, 2023). There are limited number of studies in which the interaction between users and smartwatches is discussed through the haptic instants of smartwatches (Gilmore, 2017). Within the social sciences, wearables are discussed with ethical concerns and in terms of surveillance (Lupton, 2016; Kent 2018; Hepworth, 2019). Some studies concentrate on self-tracking devices in workplaces (Weston, 2015; Moore et al., 2016). However, in the design field, there is a lack of qualitative research which deals with smartwatches, especially from a cultural perspective with an archaeological approach. The origins of these devices in terms of both design and establishing relationships with people in the everyday have not been deeply investigated.

One of the motives for this research is the need for design insights and criticism of smartwatches which try to find a stable position in the market but face resistance. Another factor is the lack of knowledge of the changing perception of watches and people's interaction with them. Furthermore, providing such an archaeological perspective will contribute to both design history

and the design field in terms of improving contextual knowledge and comprehending agency of design.

Having an archaeological perspective at this point is significant to understand the present, as design is a practice that envisions a better future, and so past design decisions affect the way people live today (Huppatz, 2020). Additionally, a retrospective look allows us to see how culture is altered through products and which parallels and turning points a product has in the past. Nevertheless, the quest for a new approach towards exploring products archaeologically is also due to the lack of interest in methodologies in the scope of design and culture as Huppatz (2020) pointed out. The methodologies in design history also are not sufficient and rich to conduct this kind of research, and design history has not set out an idiosyncratic methodology so far (Huppatz, 2020).

While design history is more focused on production and consumption phases, in recent years, some studies suggest using the 'mediation' concept including both channels and products as mediating objects (Lees-Maffei, 2003) or using methods derived from technology studies like actor-network theory as proposed in Fallan's book (2010, cited in Gorman, 2011). However, there is limited guidance on how to implement new methodologies into the design field and how the relation between new products with their predecessors can be reconsidered.

Challenging the methodology and exploring new ways of understanding the present with the help of the past by considering all previous approaches and creating an inclusive approach is important to intensify the relation between design and digital culture. Therefore, the 'design archaeology' approach is created to provide the field of design with more systematic and explorative methodologies and perspectives. It also addresses the need for immaterial design history stemming from the fact that contemporary design practice also operates in the digital realm (Huppatz, 2020). Design archaeology is explained further in the following chapter.

1.3 Research Questions

The research questions guiding this project mainly focus on understanding the current position of smartwatches in everyday life as part of digital culture by utilising an original approach - design archaeology. In this way, the research explores the notion of archaeology and seeks new ways of benefiting from archaeological perspective in design field, particularly in how smartwatches are experienced and perceived. Therefore, it scrutinises the relationship between smartwatches and people. It also aims to explore the current notions that arise from this relationship and the ways in which they can inform the product design field. The main research questions and supportive sub-questions are below:

- How can archaeological approaches be adapted by the field of design?
    - *How does design archaeology work and contribute to understanding smartwatches?*

- What are the archaeological origins of the smartwatch, and its relations with its predecessors?
    - *How was the relationship between people and the antecedents of the smartwatch?*
    - *Are there any parallels between the past and present regarding the usage, perceptions, and design of smartwatches and their predecessors? What do these parallels or differences demonstrate?*

- How do smartwatches influence culture and everyday life and vice versa?

- How do people establish a relationship with technology and technological objects?

- How do people establish a relationship with their smartwatches?
    - *What kinds of relationships are established; intimate, pragmatic, etc.? What are the reasons behind them?*
    - *How do smartwatches influence the conception of self?*

- How do people experience smartwatches?
    - *What are the motivations of people to use smartwatches?*
    - *What are the determining factors in the way they use and adopt the smartwatch?*
    - *How do users think and feel about using smartwatches, sharing their data and being tracked?*

- What kinds of concepts and issues are prominent regarding smartwatches?
    - *What are the archaeological roots of these prominent concepts?*

- How do smartwatches mediate and transform our everyday practices?
    - *How do they influence people's behaviours, routines and habits?*
    - *Are there any authentic ways to experience smartwatches?*
    - *Do the users employ some tactics or resist some aspects of smartwatches?*

All questions are thought to be investigated in an archaeological view to make sense of the transition to the present circumstances. Additionally, there is a possibility to find out different, minor issues as the nature of research is exploratory and the research methods have semi-structured and unstructured aspects.

1.4 Thesis Structure

Chapter 1 of the thesis introduces the background to the subject including smartwatches and design archaeology, research questions and the rationale for this research.

Chapter 2 presents the origins of the idea of archaeology and the differences between history and archaeology to clarify the meaning of the term. Additionally, archaeology is discussed as the 'history of the present.' Having explained archaeology, this chapter then demonstrates how the term 'Design Archaeology', which is built on media archaeology and Foucault's archaeology concept, has been devised for the research. This section discusses important factors in design archaeology such as temporality, subjectivity, and agency.

Chapter 3 is dedicated to exploring the relationship between the 'self' and 'smart' technological products. While providing definitions for key concepts in the research subject such as 'smart', 'wearables', 'self-tracking', it also initiates the design archaeological research by exploring the genealogy of concepts and watches. It also incorporates ideas from philosophy of technology and mediation theory, while investigating the precursors and appearance of the technological products.

Chapter 4 provides the methodological decisions and justifications of them. It presents the philosophical stance of the research and chosen research methods, along with their limitations.

Chapter 5 encompasses the largest part of the design archaeology on the smartwatch. In section 5.1., mostly based on the textual data, predecessors of the smartwatch and the effects of disruptions in the past are investigated. In this section, both material and discursive elements from both the past and present are analysed and compared.

In section 5.2, the reoccurrence and alteration of cultural conceptions and the parallels between cultural patterns in the past and present are explored. This refers to social and cultural structures and meanings. It presents and discusses the idea of time discipline being transformed into information discipline today.

Section 5.3. presents focus group research and the findings as the key themes emerged from the data.

Section 5.4. includes the autoethnography with Bangle.js hackable smartwatch, demonstrating my personal experience with the watch and its analysis. Similarly, Section 5.5 encompasses my experience with Apple Watch Series 7 including various issues I encountered. It also provides analysis and insights.

Finally, section 5.6. provides an overall analysis of autoethnography with both smartwatches.

Chapter 6 presents the conclusion and future directions.

Chapter 2 DESIGN ARCHAEOLOGY

This chapter introduces the philosophical foundation which the research is considerably built on. By giving the background to vital concepts and approaches, this section will delineate the conceptual framework that the research employs. Although this framework is considered a lens that will be actively used throughout the research, its use will be the most visible in the investigation of smartwatches in a diachronic sense. When the research object is explored across time, design archaeology, derived from many fields but mainly media archaeology, will be used as the main approach.

On the other hand, the other temporal axis of the research, the synchronic axis, will benefit from this approach which allows us to use the past in order to better understand the present, as well as to compare and converge some of the findings from a certain moment in time and of different moments across time. In this way, the aim is to comprehend the essence of the research object holistically.

This archaeological approach will be directly effective and crucial for the diachronic axis of this study as it offers an exploration of multiple layers of the phenomena which will be explored by digging into the past.

To be able to describe this design archaeology approach, the most significant concepts and theories that are integral parts of this framework will be introduced and discussed. Therefore, starting from the concept of archaeology is reasonable as the core element of the research idea.

2.1 The Notion of Archaeology

All entities could be considered to have antecedents and continual relationships with the past, as living creatures do. Although the progressions or evolutions of inanimate objects in time do not always follow a linear path, they might have some core aspects or cultural codes which are transferred from past to the present and which may even lead to recurring patterns in everyday life. While this transfer or recurrence is sometimes visible, often it remains implicit and requires in-depth research as in an archaeological excavation. Therefore, archaeology as a discipline that probes into and makes sense of the past seems to be an appropriate instrument for other disciplines and interdisciplinary or transdisciplinary studies by drawing on its philosophical core.

In the general sense, archaeology is defined as a scientific investigation of the artefacts that are products of human activities in the past (Daniel, 2023). Nevertheless, in addition to this

conventional description, archaeology has been described as the 'discipline of things' which has the potential to be considered more comprehensive (Olsen et al., 2012, p.3). The reason for emphasising things in this definition is the objectivity that material things provide and the fact that words alone might not be sufficient to portray the world in which things exist. Therefore, the standpoint of archaeology prioritises things in terms of ontological inquiries. In terms of ontological perspectives, it would not be wrong to say that archaeology contributes to the discussions of object-oriented approaches that have led to a recent ontological turn (Olsen et al., 2012, p.1). Nonetheless, the 'discipline of things' encompasses more dimensions even though 'things' lie at the heart of this definition, and archaeology has often been denounced as a tool to describe only things. It refers to culture, as well as the implicit ways people engage with things. When the fact that things are not in an isolated sphere from the society is considered, the multifaceted nature of this discipline is obvious (Olsen et al., 2012).

Similarly, archaeology has been defined as a craft and a 'mode of cultural production' by Shanks and McGuire (1996, p.76). On the one hand, archaeology resembles crafting, as it is a practice which requires technical skills, creativity, intellectual and physical processes in which knowledge is created by scrutinising material remains. On the other hand, it is a cultural production since it has a social dimension involving multiple interpretations. Moreover, it serves communities and ties in people's needs and interests both in the past and present. It relates to various fields including culture and politics (Shanks et al., 1996). This illustrates how the basis of archaeology grasps more than digging in the earth and how it has the potential to discover beyond the objects.

In addition to classifying, reconsidering past, reimagining artefacts' physical and non-physical functions, archaeology is also about creating socio-cultural connections instead of merely accessing ancient information (Moore, 2015). It may be considered to give some insight into how individuals experienced things in the past and how it is similar or different to the way they are experiencing things now. Despite the fact that it is a discipline focused on the past, it has the ability to serve as an inspiring link between the past and the present, and even the future.

Consequently, 'digging' into the past both physically and ideationally seems to be an identical practice for archaeology. This practice can be beneficial to explore evolution of ideas, cultural elements and patterns underlying the objects. Archaeology may be seen as a more comprehensive and holistic approach that many fields could make use of it. It could be considered a different concept than its first meaning, as some philosophers have suggested, and pave the way for probing different subjects by not digging into earth but digging into past. The approach of this study will benefit from this concept and be based on this foundation, namely, the core idea of archaeology.

2.1.1 Archaeology vs. History

The foundational ideas of archaeology have aided philosophers to establish various concepts and methodologies to understand history and contemporary phenomena. Foucault's works such as 'Archaeology of Knowledge' and the works in media archaeology field are some of the intellectual products in which an archaeological perspective was developed and employed. The fact that the approaches in these studies show strong interest in the past, and the association of archaeology with the past reasonably leave this concept at risk of being confused with history. Also, it poses the question of how archaeology differs from history. At this point, it should be emphasised that all those philosophies and approaches are based on the critique of traditional history. Therefore, before presenting these philosophies, it is useful to differentiate between the concept of archaeology we are going to benefit from in this study and the traditional history clear. In this way, it will be understood why this research is not about the history of the smartwatch exactly but the archaeology of it.

The concept of archaeology in this study will mainly refer to and be derived from Foucault's archaeology concept and media archaeology. The first refers to a research method which digs into the past and explores discursive traces to comprehend order of discourses (Garland, 2014). The latter is a field which was inspired from various works and ideas such as Foucault's archaeology concept, and it attempts to understand digital culture by using the past. It aims to find the reasons and contingencies for a specific media to be able to exist under certain cultural conditions (Parikka, 2012).

The key information about the archaeology concept here is that the aim of archaeology is not to study and write the history, but it is more about undoing the assumptions of history. It negates traditional historiography. While teleology, causality and continuity underlie history, archaeological approach tends to criticize these widely accepted principles (Kurtgozu, 2001).

On the other hand, the subjects that history and archaeology rely on are different, too. While history deals with the past through the texts, archaeology reconstructs the past and search for alternatives by performing material readings. At this point, it should be also noted that "archaeology, unlike history, does not work with objects and materials that represent the past, but with objects that materialise it in varying ways (Ebeling, 2016, p. 14)." Nevertheless, what is called material is very diverse in archaeological search. For instance, Freud considers the 'human soul and psyche as material', Foucault posits 'discourses and knowledge as material entities' (ibid., p. 14). Archaeology redefined materiality, and the basic idea of it was altered by the fact that even intangible concepts were materialised in a way with these philosophies and approaches (ibid). Materialisation here refers to the way a researcher treats their research objects as

monuments. As Foucault (1972) suggests, they aim to focus on the aspects of their subjects that could be verified and examine how they occur and function by keeping themselves at a distance and unfamiliar. They avoid describing their research object in the same way that archaeologists would depict a physical artifact.

Accordingly, it could be said that archaeology is more concerned with materiality or visibility while history is concerned with textuality (Ebeling, 2016). According to Foucault (1972), archaeology examines monument instead of examining document to confirm historical and teleological narratives. In traditional history, any intricacy of a document that does not suit the narrative could be neglected as historians were not interested in documents themselves, but they used to see them as signifiers of the narrative. However, archaeology considers archaeological objects monuments which encompass “inert traces, objects without context, and things left by the past” (ibid, p.7). Monument can be described as something inert, isolated, and neglected in terms of temporality and not necessarily in line with broader historical narratives.

As mentioned above, archaeology gives importance to materiality and examines the archaeological object regardless of what it is, and it focuses on the object itself. However, this does not mean that it completely ignores contextual elements. While it investigates the conditions for presence and the objects themselves, it explores how meaning is produced in relevant context and what the elements of these systems, in which ‘meaningful’ is defined, are. For instance, Foucault’s (1972) term episteme refers to the set of relations that leads the conditions of possibility of a discourse. It denotes specific everchanging relations between science, knowledge and discursive positivity in a given period. Foucault (1994, p.22) describes this term as:

> “…what I am attempting to bring to light is the epistemological field, the episteme in which knowledge, envisaged apart from all criteria having reference to its rational value or to its objective forms, grounds its positivity and thereby manifests a history which is not that of its growing perfection, but rather that of its conditions of possibility… Such an enterprise is not so much a history, in the traditional meaning of that word, as an 'archaeology'.”

Nevertheless, archaeology unavoidably refers to the historical context of a certain period when the discourses occurred since it “reveals relations between discursive formations and non-discursive domains (institutions, political events, economic practices and processes) (Foucault, 1972, p.162)”. However, the intention is not to explore cultural continuities, nor to exclude apparatus of causality. Archaeology intends to identify the procedures of formation and ‘specific forms of articulation’ (ibid.). In this respect, archaeology seems to explore connections and

articulations between different domains or different forms of knowledge by questioning temporalities and tackling both the past and the present. It seeks something new in the old in agreement with Zielinski's (2006) suggestion.

Another feature of archaeology is to function as means of 'self-descriptions of cultures' (Ebeling, 2016, p. 15), which differentiates it from history. Moreover, with self-reflection in archaeology, cultures are uncovered and archaeological objects, whether they are tangible or not, become intelligible. It becomes possible to comprehend what is crucial or redundant in the culture. Although archaeology is strongly associated with the past, in the contexts of various areas, it is developed and used as an instrument to understand the present better. The next section will discuss Foucault's archaeology and media archaeology further and how archaeology is designed as the history of the present.

2.2 Archaeology as the History of the Present

As is briefly mentioned in the previous section, the concept of archaeology has been used to constitute new philosophies and methodologies such as Foucault's archaeology of knowledge (1972) or Kittler's archaeology of media (1999) which are all attempts to find an alternative to typical historical thinking about the past (Ebeling, 2016).

Archaeology is discussed as a subsidiary science and a methodology to query the generation of knowledge and discourses by Foucault who is a historian of systems of thought (Foucault, 1999). It can be said that archaeology surpasses other disciplines and becomes a supra-disciplinary method with his approach. Foucault (1972) presents this approach which investigates discourses, discursive formations and describes the conditions in which they are originated and transformed. Foucault's archaeology is considered a term that defines a research method in the history of ideas: one which excavates the past, reveals discursive traces of different eras in history and rearrange them as they consist of many layers, each of which has unique patterns and order of discourses (Garland, 2014). Foucault's analysis aims to find the epistemological structure, namely an 'episteme' as he coined, of each archaeological layer. Episteme refers to a priori knowledge which serves as a basis for discourses and indicates the condition of their possibility within a certain period. It determines how discourse is formed and how people think without interfering with their consciousness (Garland, 2014). According to Foucault, the discourse and experience in a certain period of time are formed by episteme that refers to a structure of thought or an order of things including words and dictates its pattern on discourses regardless of the subject; however, they are also influenced by discontinuities and transformations in the history. Therefore, an

archaeologist should not focus on course of change but the distinctive logic of each period's structure (ibid., 2014).

In relation to the aim of archaeology and the concept of episteme, Foucault states his aim in an interview (1971, p.198) as below:

> "My problem is essentially the definition of the implicit systems in which we find ourselves prisoners; what I would like to grasp is the system of limits and exclusion which we practice without knowing it; I would like to make the cultural unconscious apparent."

Additionally, he explains that he tries to find the origin of these implicit systems to demonstrate their formation and how they restrict people (Foucault, 1971). In terms of this aspect of his perspective it would not be wrong to say Foucault's archaeology tends to seem structuralist. However, in his future works, this aspect becomes less prominent when he focuses on genealogy more although the ways these terms approach and use history are very similar and complementary.

Foucault opposes the traditional way to approach and analyse history with his archaeological description. Furthermore, he contradicts the assumption that history makes linear progress and depends on continuities. Instead, he takes possible ruptures, cycles, and discontinuities into consideration, too. Moreover, his archaeological method questions the tendency of converging different elements with the help of causality and all kinds of teleological and 'cultural totalities' (Foucault, 1972, p.15). Foucault's enquiry contributed to the possibility of seeing different series overlapped or ensued without degrading them to a linear succession (ibid.). While he searches for a different history of what is said, he also aims to create a historical analysis which is liberated from anthropocentric view. Therefore, he focuses on discourses alone and tries to describe their complexities without having any bias about the unity of history instead of trying to reveal some implicit meanings. He does not consider discourses a representation of something else (ibid.).

While he defines archaeology as a method by which the emerging or transforming conditions of discourses are examined, he also suggests altering the concept of history in a way that does not merely rely on texts or historians who describe themselves by what they restated instead of what they saw (Foucault, 2004, p.142). At this point, a link appears between archaeology discipline and his archaeology concept in terms of the emphasis on materiality even though his term does not directly refer to the conventional meaning of archaeology. He tries to offer a distanced evaluation of discourses and avoid personal interpretations, to some extent.

To conclude, the most vital strategy of his analysis of discourse is renouncing all presumptions on historical consensus and continuity, and identifying discourses instead with all their starting points, disruptions, and variances. The idea propounded by him is that archaeological comparison has a 'diversifying effect' rather than 'unifying' (Foucault, 1972, p.160).

In line with his archaeological approach and its unique view on history, the history of present has been an over-arching concept in Foucault's works. When he developed his ideas and revealed the genealogy concept, the idea of exploring the history of the present was still effective and central in his works. The main idea behind this notion was to deal with the present critically by utilising history as a tool (Garland, 2014). Foucault (1988) implies that the question with which he starts his analysis is always formed in the present related to an issue, and he then attempts to explore its genealogy. Similarly, he emphasises that his focus is on the present when he explains the reason for writing a history of the prison:

> "Simply because I am interested in the past? No, if one means by that writing a history of the past in terms of the present. Yes, if one means writing the history of the present (Foucault, 1995, p. 31)."

Investigating and writing history of the present brings the concept of genealogy forward. As one of the key concepts of Foucault and Nietzsche, whom Foucault was inspired by, genealogy is another useful tool for any research that aims to dig into the past in order to understand the present. Although this concept becomes prominent later, the genealogical aim was always present in Foucault's archaeology, as it benefits from history to consider contemporary phenomena. Foucault (1971, p.192) explains his interest in archaeologies of different subjects by defining his research as a critique of the present which is built on retrospective analysis. Therefore, it can be said that the intents of archaeology and genealogy are identical in terms of charting the history of the present. However, archaeology tends to emphasise structural order and discontinuities, while genealogy focuses on 'descent' and 'emergence', exploring the formations of origins and how contingencies shape their course, as well as the present itself (Garland, 2014,p.371). Nonetheless, these concepts could be seen complementary for holistic research.

According to Garland (2014), in genealogical approach, the key is not to discover the origins themselves, but to explore the process of emergence, contingencies and power relations which are not continuous. This type of research challenges the idea of unity and homogeneity and creates a fragmental form of what is considered constant and linear. It provides an opportunity to revalue phenomena by linking today's practices that are based on the conditions of existence in the past to struggles in history. Therefore, a genealogist identifies the forces that generated

practices of the present to investigate the past conditions on which they still rely (Garland, 2014). As Foucault (2008, p.130) puts it, “The problem is to let knowledge of the past work on the experience of the present”.

In addition to Foucault’s archaeology and history of present, media archaeology is another crucial field that stemmed from multiple realms of ideas. As Parikka (2012) states, this field emerged based on existing discussions of the archaeology that consist of Foucault’s archaeology, Walter Benjamin’s works on modernity, 1980s’ New Film history and other studies that attempts to understand digital culture by benefiting from the past. Friedrich A. Kittler and Michel Foucault were the thinkers who became prominent most in the process of development of media archaeology. As mentioned above, Foucault’s archaeology was a methodology to find out the reasons for a certain discourse or, in this context, a media tool was able to exist, to be preferred and remained under certain cultural conditions. On the other hand, Kittler created an approach which takes technology of media into consideration more based on Foucault’s method. In addition to discursive and structural elements, he counts on scientific inventions and networks in media, too. Media archaeology, inspired by these theorists, aims to explore disregarded genealogies and unconventional ways to comprehend the journey to the present media cultural settings (ibid).

In the matter of temporalities, on the other hand, media archaeology concerns the parallels between ‘the new’ and ‘the old’ to contribute to the sphere which interrelates technology, science, and media, via critical queries. Like the archaeology discipline itself, media archaeology excavates the past but aims to comprehend the present, as well as to envisage the future. Furthermore, it explores new ways to read digital culture, new media, and the ways to practice it in artistic and creative processes (Parikka, 2012).

Corresponding to different temporalities, Parikka (2012) states that some of the key themes in media archaeology are the history of the present and alternative histories. Despite the rise of excitement about the ‘newness’ concept in digital culture around 1980s and 1990s, media archaeology paved the way for critique of ‘new’ and taken for granted linear progress by demonstrating how new technological devices were products of reorganisation of social networks. Newness is evaluated by some aspects such as performance, speed etc. but these are not the primary issues when compared to the ways technical aspects are discussed and adopted by various groups of people such as users, non-users, experts, etc. (Marvin, 1988; Parikka 2012). Identifying what new is, was the centre of fundamental discussions in media archaeology. Some of the theorists such as Huhtamo (1997) proposed media archaeology;

> "as a way of studying recurring cyclical phenomena that (re)appear and disappear and reappear over and over again in media history, somehow seeming to transcend specific historical contexts. In a way the aim of it is to explain the sense of déjà vu that Tom Gunning has registered when looking back from present reactions to the ways in which people have experienced technology in earlier periods (ibid, p.222)."

It can be said that this strategy in media archaeology focuses on repetitive patterns and scrutinises them as instruments of opposing thoughts about how technology and history progress (Huhtamo, 1997). While Huhtamo (1997) tries to connect various occurrences of phenomena that are mostly distanced time and space wise, he remarks that the revival of something in a different form at a different time cannot happen merely by chance, but it can be related to the fact that those cases encompass some common everyday elements and cultural drives as the previous cultural processes. He calls these cultural motives topics (or topoi) which he considers "prefabricated molds for experience". Moreover, he claims that they are unavoidably ideological and cultural although they may appear as though "unconsciously" (ibid, p.222).

According to Huhtamo (1997), investigating cyclical patterns which lead the progress of media culture, and digging into how these articulations and customs have been embedded into certain media devices and structures across time forging their identity through ideologically and socially constructed networks of meaning, are the objectives of media archaeology. Considering the incarnation of topics, this approach accentuates cyclical patterns more than chronological progress and reappearance rather than sole novelties (Huhtamo, 1997).

Evaluating technoculture in the sense of continuous linear progress, moving from one invention to another and considering former devices and practices obsolescent, is the way of investigating media history and culture that media archaeology aims to change and does not adopt. Nevertheless, the main aim of media archaeology is not to disprove the facts of technological advancement but to reconcile them by reevaluating them within a broader and diverse socio-cultural framework (Huhtamo, 1997).

In accordance with Huhtamo's ideas, Zielinski's (2006) media archaeological approach seems to find alternative temporalities and diverges from the supremacy of linearity, too. He advocates that the development of media is not predictable and does not follow a linear progress from the very basic apparatus to a complicated one. He explains this idea by referring to the fact that civilisation history does not follow a "divine plan", either. According to him, "media are spaces of action for constructed attempts to connect what is separated." He believes that individual variations should be the centre of attention in media archaeology rather than enforced trends and points of disappearance (Zielinski, 2006, p.7).

As above-mentioned, Foucault's archaeology and media archaeology have some common aims and approaches that can be beneficial to any research which delves into the past to comprehend the present. They are very similar, although media archaeology specifically hones in on technology and media culture. Furthermore, Ernst (2005, p.587) draws attention to the reflectivity of media archaeology mentioning that media archaeology which deals with techno-cultural processes is a 'self-reflexive' method as well as an 'archival object' of investigation. On the other hand, Ebeling (2016, p.16) points out that regardless of an archaeological object being a physical artifact or knowledge, archaeological action can be considered the "art of constructing the missing link to the self". Therefore, a new archaeological object to be investigated occurs whenever culture crystallises in a specific object. When an archaeological search is conducted, it inevitably reveals something about the researchers themselves, and therefore the society as well as the present which required that query (ibid.). Thus, self-reflexivity appears to be another common feature both in media archaeology and in a broader field of archaeology.

Additionally, regarding the distinctive features of media archaeology, it could be said that media archaeology distinguishes itself in terms of archaeological objects. It focuses on not only discourses but also other elements such as materiality of the past. It mostly concentrates on "non-discursive elements in dealing with the past: not on speakers but rather on the agency of machine" (Ernst, 2005, p.591). As Ebeling (2016, p.8) states, considering temporality in the digital age necessitates a unique mindset beyond historiography, therefore; there is a need for working with "a material reflection of temporality" as media archaeology does.

Archaeology as the history of the present, by questioning the present phenomena and scrutinising the materiality of both the present and past, examines the phenomena of the past that still affect the present and vice versa. Ebeling (2016, p.11) suggests that employing wild archaeologies to investigate an incomplete thing, working closely to the present in order to find the past which is not explicit but still active and strong like a 'trauma', namely, 'the grounds out of which we originated' as Foucault expresses (Foucault, 1975) is an effective way to dig into and understand any phenomena as well as the self which is intricately involved with them.

Given all these conceptions and statements, it is reasonable to indicate that archaeology is a constructive and beneficial foundation for understanding both cultural phenomena and the objects that engaged with them. It has great potential to be used in fields which try to understand the materiality of culture and include creative practices or critical thinking such as art and design. Therefore, adapting the philosophy of archaeology to the design area at various levels, revealing missing links regarding the past and present of designed products, and engaging with the paradigm of design through a kind of archaeological drive could be invaluable. Archaeology as the

establishment of a cultural inquiry that generates its own object (Ebeling, 2016) seems open to new interpretations and also provides a strong basis for design research. Therefore, the following section will attempt to set the scene for adapting archaeological approach to design field.

2.3 Design Archaeology

In terms of its primary meaning, archaeology as a practice which traces the marks of the things and human activities by examining the physical remainders of artefacts has a similar foundation with the product design field as it also centres around people and objects. It is widely accepted that design practice starts from reasons and creates objects based on people's needs. However, archaeology follows the reverse of the design process (Chippindale, 1986) since it starts from the object and reaches the reasons for its presence. Nonetheless, looking at design from a different standpoint by utilising this kind of reverse method might be useful for the design field in many respects.

On the one hand, as Colomina and Wigley (2016) states, our world is surrounded by countless designed layers including our digital identities, data infrastructures, and networks which are integral parts of today's digital culture. These layers penetrate the world, space and our bodies, so we experience a constant interaction with design. Therefore, thinking about our everyday life and design requires an archaeological approach, since we need to dig into all layers of design without regard to their tangibility (Colomina et al., 2016). In such a complex world of digital and physical artifacts, delving into their layers, some of which transcend the limits of time, could be particularly useful to explore all aspects of design and the conditions for its existence.

On the other hand, design, particularly product design has been considered a progressive practice, and innovation its core value, even at the cost of losing connections to the past. Therefore, as Dyer (2015) states, not making use of past experience results in creating a discipline which disconnects and desensitises itself from the knowledge produced in the past. This approach prioritises solving problems but neglects the potential benefit of a critical approach to the history of design, and so culture. Therefore, an archaeological approach would provide the field of design with the opportunity to question the taken for granted linear progression of design as well as to explore parallel motifs in the intersection of design and culture. Furthermore, it is crucial to investigate the past with archaeological principles to create alternative views for the assumptions about designing products, such as the belief that every new product is designed as a solution for a specific need or demand, and it surpasses its antecedent and makes it obsolete.

Even though design is future-oriented in opposition to archaeology, which focuses on the past, searching for genealogies of products or of people's experience with products in cultural context

could be beneficial to understand the dynamics of today's products, and to anticipate the future by tracking the recurring patterns. As Dyer (2015, p.252) points out,

> "archaeology is to excavate past phenomena so as to reveal potential contemporary cultural or historical truths; it is to uncover the accessible past so as to inform the receptive present and shape the indeterminate future."

Therefore, employing the principles of archaeology may be rewarding to develop an alternative approach to designed products and the products which are to be designed.

Accordingly, Dyer (2015, p.252) calls attention to the need for such an archaeological perspective in the design field to improve ‘contextual knowledge’ and to heighten the awareness of ‘agency of design’. He notes that although archaeology has the ability to create novel links and accounts holding the potential for change and multiplicity, archaeological approach is scarce in the fields of design. While he is criticising the lack of interest in exploring the past in the design field, he suggests that with the help of the acceleration in digitalisation, it is now crucial to revitalise critical standpoints towards design, some of which have been partially explored in the past. This approach, which requires an analytical and critical view of culture, would also contribute to the transcendence of border lines amongst different disciplines (Dyer, 2015).

Even though Dyer’s article does not set a course for design archaeology itself, it provides a valuable insight into possible articulations of archaeology with design. As a matter of fact, he mentions that the article is a call to action and reemphasises the value of this issue by the following: “there is vital importance for disciplines such as design to accommodate archaeological ideologies at their core level” (Dyer, 2015, p.254).

In addition to the above-mentioned potentials, the scepticism which archaeology incorporates into the exploration of past phenomena may be adopted as a principle in the design field as well. In the same vein, Zambelli (2015) discussed the risks of making assumptions and impetuous links to the past, while they were searching for the potentials of the relationship between archaeology and architecture. Therefore, archaeology appears to be an excellent alternative approach not only to historiography but also to creative disciplines which encompass both prospective and retrospective studies.

Despite these reasons for undertaking archaeology of design, it can be said that existing research is not very rich and diverse, especially in the context of product design. With respect to the literature on design archaeology, it is noted that the number of studies is limited. Although there are some studies which deal with design and archaeology together or tackle the similarities between them, design archaeology is not scrutinised and developed enough as an overarching

term that connects archaeology with design, especially in the product design field. In this respect, media archaeology can be considered the most relevant field and a good example of how a specific field could utilise and adapt archaeology. It is a significant example because it is integrated into a creative discipline which is intertwined with technology just as product design.

To highlight the need of archaeological approach in the design field, looking at the reasons for media archaeology to become prominent could be useful. At this point, Elsaesser (2016, p.183) claims that media archaeology appeared as a symptom of certain circumstances including the fact that digital media faces discontinuities and ruptures which need 'historiographic perspective correction'. One of these points of ruptures is considered the rapid acceptance of digital media in the field of art as well as everyday life. It would not be wrong to say this was the case for the field of design, too. In fact, recently, it has become more and more difficult to separate digital media from product design especially when mobile devices are considered.

On the other hand, Elsaesser (2016, p.188) evaluates media archaeology as an outcome of crisis, such as 'the loss of belief in progress' by referring to 'the critique of the Enlightenment'. They believe that archaeology's disapproval of linearity is associated with this lack of belief in infinite advancement and 'human self-perfection'. According to them, today's environmental issues regarding neoliberalism and its production model re-evoked this idea. Therefore, the causality and history crisis that have turned into crisis in memory and narrative were very effective for media archaeology to become an area that people contemplate and discuss (ibid.). It is very likely that this argument could bring a new perspective to the design field, including the history of design.

Moreover, causality might not be the most suitable way to comprehend complicated systems when the huge amount of data as the outcome of digital devices is taken into consideration. Furthermore, with the help of digital equipment, focusing on contingencies and patterns may be more reasonable and simpler. Regardless, archaeology justifies some approaches with its reflexivity rather than using problem solving methods as natural sciences do. This is one of the reasons for archaeology to be criticised as well as not having a certain method or question that it is supposed to address. However, media archaeologists believe that not being homogeneous and normative is archaeology's advantage and core value (ibid.). This unique aspect could hold the potential for enriching the perspectives in design theory and practice.

Another crisis creating the foundation for media archaeology can be 'the crisis in human senses' which Kittler (1999) describes as modern media. That crisis is due to the shift to audio-visual from print and moving to electronic transmission instead of mechanical. According to Kittler, since technologies through which people hear, speak, and see are in an intimate relationship with

senses and the body, they are more than tools for communication; they are determinants of what the meaning is and what elements construct the human (ibid.). Some new perspectives that give importance to machines in contrast to human centric views could be considered reasonable. This leads to a need for a deeper discussion of the way the machine is designed and adapted.

Furthermore, media archaeology can be read as a resistance to the new or as an urge to ‘preserve the past’ which Elsaesser (2016, p.206) described as the most common pathology in the culture. According to him, people tend to fetishize 'materiality' and ‘memory’ even though they do not rely on history and ‘the virtual’ comprises the most of everyday life. Moreover, when the fact that obsolescence exists with never-ending novelties in addition to being inherent to the discourse of technology and capitalism is taken into consideration, it is inevitable to consider media archaeology a vital component of the digital media ideology, too (ibid.). In the scope of this research, for similar reasons such as the correlation between constant novelties and obsolescence in product design, design archaeology could be a part of this ideology which intersects various areas such as technology, relations of production and everyday life.

Besides digital media ideology, in terms of creative spaces and media archaeology, Elsaesser (ibid.) claims that media archaeology appears as a symptom of material fetishes there to reassure people of their physical existence or for people to grieve or celebrate their temporality and obsolescence by looking at the media devices which are exhibited like sculptural objects. All these ideas about media archaeology shows the capability of archaeology to initiate various discussions around art, design, technology and every day. It seems an archaeological approach could bring new perspectives to the contemporary issues in product design, as it did in media studies.

Having explained the need for an archaeological perspective in the design field, and some views on media archaeology and its position in the big picture of digital culture, it is now essential to explain what ‘design archaeology’ means and this approach will be implemented in this study.

Design archaeology denotes the methodological approach of this study, so this term will explain the framework and the conception which will be generated and used within the research. It is considered a lens which will be used while investigating the systems consisting of objects, people, and all their interrelations in the broadest sense.

The reason for design archaeology to be this inclusive is that the meaning of design has changed over the years. Even though the field of product design is primarily referred to by this term in this study, it is necessary to acknowledge that design does not indicate only the physical existence of a product, but it unavoidably encompasses other aspects nowadays. Therefore, it needs to involve and refer to both material and immaterial aspects of an artefact. The very basic definition of

design based on its etymological roots which is ‘making sense of things’ is still valid (Krippendorff, 1989). However, there are many layers of an object now consisting of many relations to different actors to make sense of. Recently, in design practice, it is obvious that designing a product requires consideration of various systems, infrastructures, services, and experience. The field of product design includes so many layers of existence including material and immaterial components. As Krippendorff (1989) states, design includes designating an object’s relation to other things, besides creating an object, and differentiating it from others. The ‘other things’ here which an object has a relationship with refer to even more nowadays, with digitalisation and extensive networks as one of its outcomes.

Similarly, Bürdek (2015, p.14) describes design by listing some issues by which the product design process has been transformed to tackle them, too. Some of these issues include ‘visualising technological progress’, ‘simplifying or making possible the use and operation of products (hardware and software)’ and ‘promoting and communicating services’. It is easy to see how design discourse has changed recently by looking at the most recent definitions of it. For instance, the definition of industrial design by the World Design Organisation (WDO, 2020), which is formerly known as ICSID, refers to the function of design that is improving the quality of life via ‘products, systems, services and experiences’. Therefore, design does not express merely the style, form, physical or symbolic functions of a product; it also includes further processes such as its role in a system or the way it is experienced by users.

Internet of Things has one of the strongest impacts on viewing products in broader systems and networks. Most products generate an ‘Internet of Things' (IoT) comprised of physical devices and software applications, which dramatically expands their possibilities and capabilities (Greengard, 2015). It can be said that the distinction between physical and digital entities is becoming blurred. Therefore, even the categorisations on how products employ digital technology is controversial. According to the researchers, some products become present as ‘born-digital objects,’ while some are called ‘digitised objects' with some ‘physical object qualities’ that they still maintain (Pääkkönen, 2015, Owens, 2012). In any case, it is indisputable that today’s products go beyond their materiality. According to the ‘post-material’ (Folkmann, 2020, p.224) aspects of products, designing a product cannot be considered without the circumstances in which objects are more active and have more agency, anymore.

All of these changes and inclinations in design could be considered outcomes of digital culture. However, it is important to remember that the association between design and culture is not one-sided. While design is often considered a manifestation of culture, the fact that products do not only refer to culture, but also shape it actively, should not be underestimated (Verbeek, 2005,

p.207). Therefore, it can be said that in an interaction with digital culture, design acquires immaterial features and plays a mediating role in the transfer of technology into products as well as into culture and everyday life. At this point, an archaeological approach could be such a useful tool with its materialisation to comprehend immaterial features of products as well as the relations occurring in the culture.

Considering all these definitions and changing parameters of design, it is important to mention that design archaeology will refer to an investigation of this holistic view of design, in this research. The term of design may refer to various types of design during the study such as hardware, interface, graphic which might exist as subsets of a product and even though the discussions might involve industrial mass production and relations of production, it will not be strictly limited to the industrial products. This research is intended to contribute to many sub fields of design that stand out in the digital age, as well as industrial design. Furthermore, returning to the design archaeology, it may incorporate the investigation of the discursive, communicative elements and tools which evolved around the main object as archaeological digging progresses.

It should be said that design archaeology is informed and inspired by the most remarkable philosophies and approaches which are previously mentioned. Media archaeology (Parikka, 2012) and Foucault's archaeology method (Foucault, 1972) have been highly influential in the approach adopted in this research. Design archaeology aims to excavate the social, cultural conditions underlying the statement of an object and explore disruptions, transformations, discontinuities, reoccurrences, and parallels in its past. This approach might shed light on the past and alleged trajectories about the development in both technology and product design. This might also evoke the instinct for searching alternative histories and narratives or reoccurring patterns in culture. With the help of this outlook, as Foucault (1972) remarks, it is expected that archaeological digging will uncover the current situation of a specific design object.

Besides, design archaeology can take various phenomena as the materiality of products as well as the post-material aspects of designed objects at the stage of analysis. Materiality in archaeology as is discussed in the previous sections, may refer to different realms. As Parikka states (2012, p.306) there could be various materialities such as 'materialities of cultural practice' which is directly related to people's activities and experience with things or 'materialities of technologies'. Design archaeology aims to consider constitutional practices in which things materialise in addition to the materiality of things by following Parikka's suggestion (ibid., p.307).

It aims to explore designed products through their past to understand the underlying conditions and consequences of their current design and usage as well as to get insights into the connections to their predecessors and culture.

Although this study may refer to multiple theoretical backgrounds and themes or some issues in practice, design archaeological perspective will be the basis on which they will be articulated. Most of the concepts in this study will be investigated and discussed by shuttling back and forth between past and present. Investigating the products themselves and how people establish and maintain their relationship with these products will be the centre of the research. It is expected that exploring the genealogy of products, recurring patterns, or similar inclinations in the culture over time might contribute to the understanding of current phenomena based on a design object. To be able to acquire this comprehensive understanding, diverse methods will be used in this research (See Chapter 4) and design archaeology will provide them with an overarching perspective.

Design archaeology will provide insights into an object and its use in culture from different angles, including the perspectives of various actors such as the user and object itself. Moreover, it will explore different conditions of existence including the intentions or the driving forces -if there are any- behind the design process. It is possible to bring a design perspective to archaeology and to provide a new understanding of design with its agency, power, limits as a profession and discipline in the complexity of digital systems.

On the other hand, design archaeology is not exempt from contemporary views and discussions such as object-oriented ontologies in a way that will be mentioned in the following sections. It is an attempt to implement and adapt a new approach in an area which is becoming more and more transdisciplinary. In the sections below, design archaeology as an approach will be elucidated under some concepts as its components.

2.3.1 Temporality

As is seen in media archaeology, archaeological approaches question temporality in various ways. For instance, exploring repetitive patterns or recurring phenomena, discontinuities in the past and searching for ‘the old in the new’ and ‘the new in the old’ are some of those which are introduced by philosophers of media (Parikka, 2012, p.308). At this point, it is crucial to say that design archaeology aims to explore unaccustomed and unexpected relations between different temporalities through a design object and its predecessors. With this approach, it is possible to comprehend different elements in culture and explore alternative ways to see and interpret products as non-human actors.

Another crucial point about temporality is that design archaeology rejects monopolisation of any totalities, unities and linear progress in design field and makes room for unconventional mappings of both the history of design and contemporary design. This provides the opportunity to rethink the past and the present, as well as to envisage the future.

Design archaeology deals with any design object or phenomenon which it spawned retrospectively, and investigates its genealogy. Moreover, it reveals how everyday practices and patterns in the past reappear or how they could be revitalised in the present through products. On the one hand, both practices and tangible aspects of products might source discussions about past and present.

On the other hand, the tension between ephemerality of products and reoccurring patterns might lay a foundation for discussions of the modes of existence in digital culture. Also, as Parikka questions by looking at the alternative paths, obsolete and failed forms of products, it can be possible to untangle 'conditions of existence' (ibid, p.311-312) of recent products.

Furthermore, while design archaeology focuses on ever-changing conditions of being, discontinuities, ruptures, it benefits from the notion of threshold[1] which is used by Foucault (1972) mentioning discursive formations. According to Foucault (1972, p.186),

> "The moment at which a discursive practice achieves individuality and autonomy, the moment therefore at which a single system for the formation of statements is put into operation, or the moment at which this system is transformed, might be called the threshold of positivity."

This concept, at the very basic level, indicates the moments which demonstrate a fraction or transformation in discursive formations. Threshold could be considered a moment of appearance or disappearance. However, thresholds do not refer to a succession and they do not have to be single moments in time (Foucault, 1972). This concept could be useful for design archaeology when it explores unexpected, non-sequential changes or transformations in products. This might help to comprehend the conditions that make these changes possible.

As a requirement of the archaeological point of view, this approach looks into the past, not to gather information on how products chronologically or evolutionarily developed but to understand how contingencies work, and how the relationship between people and products

[1] "*The moment at which a discursive practice achieves individuality and autonomy, the moment therefore at which a single system for the formation of statements is put into operation, or the moment at which this system is transformed, might be called the threshold of positivity*." (Foucault, 1972,p.186)

changed or did not change by exploring non-linear patterns and meaningful connections between past and present. Therefore, it is inevitable for design archaeology to provide the design field with original and critical views.

Regarding the cultural, sociological contexts in which products are designed and used, design archaeology tries to recontextualise or even reconstruct the past by analysing both discursive and non-discursive elements and relations between them. In this way, it provides the opportunity to challenge the past and current phenomena together. This contextual assessment refers to Foucault's (1972) notion of episteme in terms of giving importance to all interrelations and conditions in a given period. Foucault (1972, p.191) describes this concept as "the total set of relations that unite, at a given period, the discursive practices that give rise to epistemological figures, sciences, and possibly formalized systems". He also emphasises that it is not "a form of knowledge or type of rationality which… manifests the sovereign unity of a subject, a spirit, or a period; it is the totality of relations that can be discovered, for a given period, between the sciences when one analyses them at the level of discursive regularities (ibid.)." Therefore, this concept is essential to be able to conduct a thorough archaeology regardless of what the archaeological object is as it provides a holistic understanding of relevant conditions.

2.3.2 Subjectivity and agency

Design archaeology attempts to bring different areas and perspectives together and synthesise them. Although there are parallels and similarities between design and archaeology, depending on the chosen standpoints for design, some aspects might need further discussions to clarify the position that design archaeology is going to take in some areas. Subjectivity is one of these aspects that needs some exploration and critical evaluation in both archaeological approach and contemporary design approaches.

As Krippendorff (1989) states "design is concerned with the subjective meanings of objectively existing objects". It gives objects subjective meanings or creates the conditions for the existence of various individual meanings and interpretations. Subjectivity is highly intrinsic at various levels of both design theory and practice. Therefore, the emphasis on the subject is derived from diverse conditions from a designer's creative process and their individual ideation to grounding design decisions on people's, particularly a specific group of people's, needs and demands. Although this has started to change recently with the influence of object-oriented ontologies, the widely accepted views on design were mostly human-centric for a long time.

With the extension of the actors of systems, Norman's (2013) human-centred design (HCD) which is a foundational approach has started to be viewed as deficient. One of the reasons for this is

that the interaction between human and things are more complex than ever as it contains other interactions with the invisible actants, and this changes the dynamics in terms of agency (Coulton & Lindley, 2019). IoT devices are decent examples to illustrate such situations. According to Coulton et al. (2019), not being able to track and control invisible activities involving a product's mutual dependence with other actants or the use of data diminishes human agency. They argue that there is a risk for simplicity as the most fundamental aspect of HCD to contribute to deprivilege of the user by concealing the role of data and this contradicts HCD's main commitment (ibid.). In summary, it is reasonable to say some design approaches started to emerge under the effect of new ontological approaches such as flat ontology which values every object evenly. It does not matter if the object is human, imaginary or non-human (Gurpinar, 2022).

Accordingly, some researchers called the design field to action to create novel perspectives and emphasised the need for an approach that transcends human-centred design to address contemporary issues regarding the environment and socio-cultural dimensions (Gurpinar, 2022).

Based on the recent changes in both design products and culture, it seems necessary to find new, more inclusive ways of viewing products. Gurpinar (2022, p.12) suggests that an object-oriented design ontology should be designed for a deeper exploration and understanding of 'the interconnectedness of everything'. At this point, design archaeology, with its unique approach which gives the credit to objects, could be an alternative perspective to fill this gap. The emphasis on objects in archaeology could support and demonstrate consistency with OOO-related movements in the design field. Moreover, when the chosen archaeological object is a recent technological object, it has the potential to provide some insights into the precursors of all types of actors that OOO embraces.

Therefore, giving due credit to object is something that design archaeology does; nevertheless, this does not mean that design archaeology ignores or lessens the role of the human as an equally important actor in culture. Archaeology, especially Foucault's methodology, is often accused of being structuralist and ignoring the subject and human agency. As he focuses on power, knowledge and how the subject could form itself through them in his earlier works, it is said that he did not consider the subject. Nevertheless, he did not accept it and refused that his works referred to structuralism. He tried to detach himself from structuralism in the conclusion of his book (Foucault, 1972, p.200):

> "If I suspended all reference to the speaking subject, it was not to discover laws of construction or forms that could be applied in the same way by all speaking subjects, nor was it to give voice to the great universal discourse that is common to all men at a

> particular period. On the contrary, my aim was to show what the differences consisted of, how it was possible for men, within the same discursive practice, to speak of different objects, to have contrary opinions… my aim was also to show in what way discursive practices were distinguished from one another; in short, I wanted not to exclude the problem of the subject, but to define the positions and functions that the subject could occupy in the diversity of discourse."

Additionally, he stated that he wanted to problematise power, truth and individual conduct. On the other hand, he said himself that he focused on first two more in his previous books in an interview (Foucault 2004, quoted in Souza & Furlan, 2018, p.326).

Nonetheless, Foucault's last works were concerned about the self, completing the other elements of human behaviour; power and knowledge. He drew attention to various forms of self by highlighting that the subject, so the self is ever-changing. For instance, when one votes, the self would become a different self as the subject is political in that case. As Foucault states, 'there are relations and interferences between these different forms of subject; however, we are not in the presence of the same type of subject. In each case different forms of relationship with the self are established. (Foucault 2004, quoted in Souza & Furlan, 2018, p.333).

Therefore, having addressed the discussion about the position of the subject in Foucault's works and archaeology as well as the reflection of contemporary philosophies on design field, the standpoint of design archaeology needs to be explained. Design archaeology consists of different elements and can use different methods. It starts the archaeological research by questioning something contemporary. To be able to understand a contemporary artefact or phenomenon, it looks at different actors around them. When it looks at a relationship where human is a key actor, it would never ignore human and human agency. On the other hand, it gives equal importance to non-human actors and tries to understand the blurred separation and entangled interaction between these two. It particularly finds very intriguing situations where human becomes non-human, in some respects, or a non-human actor has characteristics in common with human beings. Design archaeology does not ignore the subjective experience and gives huge importance to the self. Design archaeology pays attention to the agency of both human and non-human by considering their interaction and the given cultural settings.

Design archaeology expectedly takes a versatile position on subjectivity due to the innate subjective elements and impacts in design itself. Although its point of departure is products and it is nurtured by contemporary non-anthropocentric philosophies which provide an appreciation of objects as an actor (Latour,2005, Verbeek 2005), this approach considers this again within the scope of the human-object relationship.

Furthermore, design archaeology does not ignore the value of discourses, subjective narratives for reconstructing the past, besides non-discursive cultural forms. Thus, design archaeology can benefit from texts and narratives to recontextualise the conditions of the presence of objects in the past or in the present. Design archaeology works at the intersection of two spheres. One of them is non-discursive, which encompasses some kind of practices, actions and objects. The other one is discursive, including texts, names, and narratives as representations. In design archaeology, these two spheres are not separate; rather, they are interconnected, like a network.

Accordingly, both subjects and objects may come into prominence based on what design archaeologists investigate and discover during the process. It is intended to be an explorative and flexible approach. For instance, genealogy of a certain social phenomenon or practices could bring more emphasis on subjectivity. However, in general it cannot be easy to categorise and separate various forms of existence under today's overly complex conditions. Therefore, design archaeology mostly utilises this complexity and the tensions that occur in dualities such as object-subject, structure-agency, or past-present.

Design archaeology could follow many different paths in a very basic framework. It could naturally comprise many layers and notions, so it may be beneficial to draw a general framework to see possible ways to apply this approach (Figure 1). The framework has expanding and narrowing phases just like the design process itself. It takes the form of the double diamond, which is a description and illustration of the design process by the UK's Design Council (2019) and reverses and deconstructs it in some respects. Therefore, a similar approach to Ernst's (2011) view of media archaeology as reverse engineering is taken here. This is reasonable act since design archaeology resembles a kind of 'reverse-design'. However, it should be noted that there is no hierarchy between these phases and the research conducted in this framework does not linearly follow the phases as they all are transitive and reflexive.

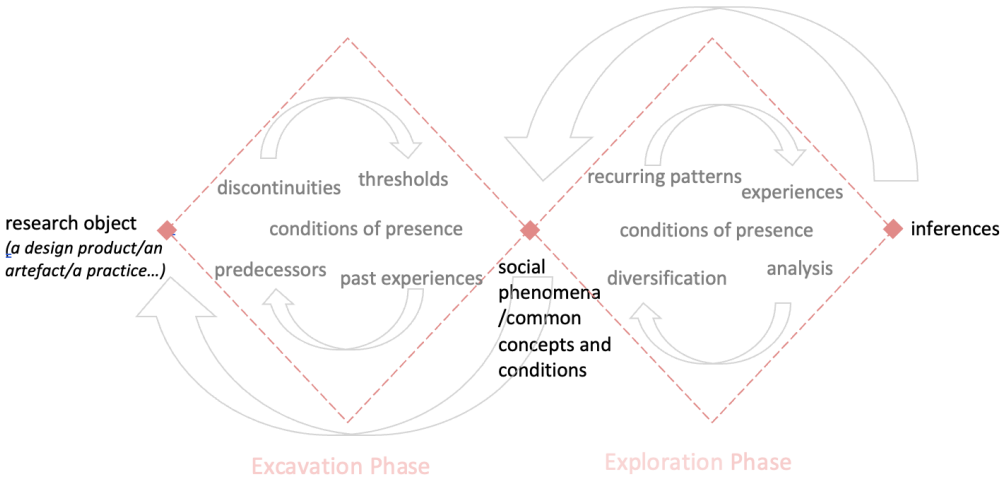


Figure 1. Framework of design archaeology

According to the framework, the design archaeologist has a contemporary research object to investigate at the beginning. This object for archaeological research can be a designed product if the focus stays on the field of product design as it is intended in this research; however, any artefacts or any concepts could be selected as a research object, too. In the excavation phase, the genealogy of the research object is explored. At this point, the past is the main temporal area in which the predecessors of the product and any alternative views of product's existence are explored. Reviewing the literature, digging into the past and finding various forms of documents could be useful. However, as is mentioned before, it is not only about looking at the past but also looking at the reflection, impact, connection of past to the present and future. Hence, there is no limitation or linearity between these phases. As an outcome of this phase, some cultural phenomena which becomes visible through the product can be explored in addition to different conditions of presence for the precursors.

In the exploration phase, recent practices and uses of the chosen product are explored under contemporary circumstances, recurring patterns and diversification of products and conditions become clearer. At this stage, some qualitative research can be implemented to explore current constitutions and interrelations between different actors of the network that is created around the archaeological object and the related social phenomena. Both phases allow the researcher to find specific phenomena to investigate further and to reflect on them and make various inferences by performing these phases iteratively. Thus, the origins of a present situation, discontinuities, disappearances, formations, and the conditions for all these to exist can be discussed. When an object is researched with this approach, instead of a linear progression and unity of its history, a diversified mapping of the past and present could be formed. This approach can also be applied to certain concepts and terms which are intrinsic to the research object to understand their origins and to provide some background and insights into the way the object is presented and depicted. For instance, in the next chapter, this has been adopted where some relevant concepts such as 'smart' are explored.

As this research identified 'smartwatches' as its research object, the next chapter provides some background to this type of digital products and technologies in addition to the relevant discourse. It includes some research on the contemporary terms, practices which are closely linked to the smartwatches, and their origins.

Chapter 3 THE SELF AND THE SMART

3.1 Self-Tracking Technologies and Prominent Concepts

Conducting research on smartwatches leads to investigating certain concepts, to be able to understand the rationale and conditions behind the presence of these devices, and the practices they involve. Alongside the concept of 'smart' which is going to be discussed later in this chapter, there are other related concepts that are used to describe a broader scope of digital technologies and practices. As they include inseparable aspects of using smartwatches, it is beneficial to explore what these different terms mean and the ways in which they relate to smartwatches. Furthermore, exploring the origins of these terms and concepts would contribute to the genealogical and exploratory approach of this research.

3.1.1 Self-tracking and technological inventions

One of the most relevant concepts in the area where smartwatches feature is self-tracking. It is a commonly used term to refer to the practice of observing and recording one's activities in daily life and parameters of their health besides other concepts such as quantified self, lifelogging and personal informatics. Although these terms are often used interchangeably, the fields that they are used in, and their foci can be diverse. Nevertheless, most of them are borne of a need to comprehend new phenomena and new practices that have occurred with the advancement and application of digital technologies such as GPS, sensors, internet and embedding of these features into mobile devices. However, these terms can be interpreted more inclusively when the basic principles and intentions behind the practices that they refer to are considered, as the majority date back to a time when digital technologies did not pervade everyday life.

Self-tracking is defined by scholars in the academic field as a 'digital media practice' in which people collect data regarding themselves and their bodies of their own accord (Vigren et al. 2021). This definition brings some questions with it related to people's agency as well as the archaeological roots of self-tracking practice, referring to the time when digital literacy was not a requirement. However, it is a reasonable description for today's conventions, and it is aligned with the scope of this research, namely the smartwatch. However, self-tracking is going to be considered an everlasting cultural phenomenon and be scrutinised with an archaeological approach to understand both the self-tracking practice itself and the trajectory of technological developments that reinforced this phenomenon.

Self-tracking can be considered a practice that has formed part of our daily lives for generations. Although, nowadays, this practice is accomplished by using digital technology and devices, it would not be wrong to describe self-tracking as a usual human activity. As an old practice, it has its archaeological roots, as people always have kept track of things they do. People observed themselves and reflected on their physical and moral conditions by using analogue tools. Recording changes in their weights and body temperatures by using scales and thermometers, keeping diaries, and recording their behaviours are good examples of this (Sysling,2019). Advanced technology has not always been necessary for self-tracking (Neff et al., 2016). People have the same intention as in the past, they aim to keep a record of their lives. However, digital devices such as smartphones, smartwatches, and other wearable computers do this recording on their behalf now.

Recently, self-tracking has come to refer to modern practices of recording one's life by using new media and tools. The fact that digital devices that are wearable or portable, and have sensors or cameras record our data for us, is analogous to our previous use of diaries for keeping information about our lives. However, as the information is recorded by these tools for people as opposed to being recorded by the people themselves, our agency is removed, to some extent. Practices such as writing a diary were physical, active processes, involving picking up a pen and creating a narrative, describing the qualities of actions. Meanwhile, self-tracking with computerisation is a process in which technology keeps the record for people by removing their agency and hence the subjectivity, biases or cultural influence that people might have. It records data and sometimes makes statistical assumptions; however, it removes any level of people's interpretations from the equation. While the genealogy of self-tracking refers to the practices that were based on perception and subjectivity, contemporary practices are more based on measuring and gathering data and facts. Therefore, the level of agency and subjectivity regarding using self-tracking technologies and smartwatches becomes something that needs to be considered during this research. These will be discussed in more depth in the next chapters, based on first-hand data.

According to this basic archaeological approach to the concept of self-tracking, it is reasonable to consider that these practices have been a part of everyday life from the past to the present. However, with the advancements in specific technologies such as GPS, the internet, sensors, smartphones and wearable computers, these practices have become more inclusive and invasive to different aspects of everyday life. The development of cloud computing, which allows people and organisations to store and access a huge amount of data without regard to time and location, also had a strong impact on the spread of self-tracking (Neff et al., 2016). With all these advancements, it became possible to track one's life every so often, to keep a record of many

aspects of an individual's life and measure various aspects of their bodily functions. This proliferation of tracking the self may illustrate that a new social phenomenon arose, and to comprehend that, it is necessary to investigate how everyday practices and new tools congregate (Neff et al., 2016), besides genealogy of these technologies penetrating devices and everyday being subject to an ambiguous natural selection.

Regarding genealogy of self-tracking devices and practices, GPS (Global Positioning System), broadly described as a group of satellites that provides information about time and location, obviously represents the most vital development. After its long-term military use, it became available to civilians in the 1980s as well as the internet (Ceruzzi, 2018, p.125). The invasion of this technology into everyday life was influenced by the existence of other technological improvements such as the internet, cell phones and, finally, smartphones (Canales, 2018). Nonetheless, as each of these technologies was related to other, former technologies, the origin of GPS and the idea of self-tracking are exceptionally multiplied (Canales, 2018).

At this point, focusing on how this technology took its place in everyday practices, the integration of GPS into smartphones is the most effective development. However, not only having GPS in the smartphones, but also having different services such as the apps where people can save information about different hotels or restaurants, caused the prevalence of GPS (Ceruzzi, 2018). Ceruzzi (2018, p.134) refers to a social need for a product that would address the difficulty of managing the 'complexities of modern life' and they claim that this need emerged from the concept of the 'young urban professional'. They refer to Filofax, which is a physical personal organiser including pages for addresses, maps and calendar, as a prominent antecedent of smartphone (Ceruzzi, 2018, p.134). Although there was a need for assistance in dealing with increasing tasks and information in modern life, the solutions are not always predictable, and they depend on what is available and feasible at that time. Sometimes, the integration of available technologies into devices are not even intended to solve pre-determined problems, but to create add-ons in existing products as it happened in the case of GPS.

Additionally, to be able to embed technologies such as GPS into products, the development of microprocessors was a contributory and critical factor. In the earlier stages, GPS was embedded as a novelty into palmtop and personal computers (Ceruzzi, 2018) that prefigured smartphones. As it was feasible to embed features into devices with microprocessors, these elements had been added to products to augment their functions with available technologies. However, the implications were not known or pre-determined most of the time. There has been an inclination to assume that products are designed in line with users' demands and needs, and that product design is dedicated to solving users' problems, especially in the context of computer systems since

1980s (Friedman and Cornford, 1989). However, this is not always the case when technological changes and novelties are considered.

In most cases, users are needed to be configured by the design of a product in which variables and limits for their actions are set, and users are even socially constructed by the new entities (Woolgar, 1990, p.61.). In the way a product is designed, users are encouraged to find some problems that the product already has offered solutions for (Woolgar, 1990, p.68.), especially in the case of uncertainty.

At this point, it can be argued that technological inventions and assemblage of new technological elements are not teleological. Under such conditions where users, and even designers, are uncertain about what a particular technology can bring to their everyday life, technological devices are developed or built without any predictions of how they might be used, such as home computers (Woolgar, 1990). In these cases, some features of technological devices become prevalent while others are removed. The products or features that are adopted by people and come to dominate have not always been predictable, as it can be seen in the case of short messaging services (SMS) in cell phones.

Users discovered the potential of SMS themselves; however, it was not intended as a significant part of GSM (Global System for Mobile Communication) (Agar, 2003,p.105). According to Trosby (2014, p.187), GSM community assumed other services to be more important and they considered SMS more of a supplementary feature which does not have any commercial potential. Nevertheless, the opposite had been proved in time. Trosby's analogy for the story of SMS illustrates the above-mentioned idea:

> "The story has a slight resemblance to those of the Norwegian fairy tale character Askeladden, who picks up all kinds of items that he encounters given the presumption that it may come to use some day. In the adventure they always do, resulting in a massive success (Trosby, 2004, p.193)."

Similar ideas regarding innovations also are modelled by other philosophers and anthropologists, such as Latour (1996). According to him, there are two models for evaluating innovations: the linear model and the whirlwind model. The description of the second one resembles the cases such as SMS:

> "In the second model, the initial idea barely counts. It's a gadget, a whatchamacallit, a weakling at best, unreal in principle, ill-conceived from birth…the initial gadget is not endowed with autonomous power, nor is it boosted into the world by a brilliant inventor. It has no inertia…the initial gadget moves only if it interests one group or

> another, and it is impossible to tell whether these groups have petty interests or broad ones, whether they are open or resolutely closed to technological progress. They are what they are, and they want what they want. Period…every time a new group becomes interested in the project, it transforms the project—a little, a lot, excessively, or not at all (Latour, 1996,p.119)"

These ideas help us to comprehend the undecided and conditional nature of technology and how technological developments, and the development of products can follow a non-linear trajectory. Since many technical capabilities had been embedded into existing products as they are available and feasible at a time, taking a more exploratory and holistic approach is reasonable when looking at the development of products and the practices they bring along to understand their presence under today's conditions.

The fact that there are instant developments in technology does not always mean invention or invasion of some products are inevitable, it is difficult to claim a linear history for technological objects. The changes in technology do not necessarily determine the products and the relationship between products and people. In this respect, exploring the emerging of technologies and the relationships between human and non-human entities is crucial as some features can be initially undervalued but then they can later become popular and be used in unexpected ways.

3.1.1.1 Emergence of technologies and relations

It could be useful to mention relevant concepts from an ontological perspective to understand the emergence of technologies and how entities potentially become useful in terms of forming meaningful relations to people and their environment.

In terms of the ontological process, the stability has been an important aspect. When technologies are examined as isolated units, it may not be easy to describe them.

Even in relation to the context and the user it is not easy to investigate a technological product, as neither the context nor the user is always stable (Simondon, 1992). All entities, or individuals, as Simondon (1992, p.301) states, are in a constant flux where they are metastable in an interaction with their milieu. Furthermore, both human and non-human individuals are in such complicated systems in which many possibilities are reflexively tied to each other. At this point, drawing on the individuation concept of Simondon (2020) and focusing on the 'individuation process' rather than the individuals themselves can be also useful in understanding these technological advances and devices.

Simondon (2020), suggests that trying to understand individuals through the assumption of stable individuals is not ideal, as it causes us to overlook the process of individuation. Therefore, he poses a concept of metastability through which individuation takes place. While he criticises hylomorphism and formalism as they depict the transformation of matter into form by excluding the genesis, Simondon (2020) states that genesis of the individual is transductive. He refers to the conditions, and actualisation of potentials of both matter and form under those conditions which are created by the congregation of various elements, actions, capacity of becoming. As it is seen in his brickmaking example, creation of a brick is not a straightforward process where clay is moulded, it is the convergence of potentials of the mould and clay. This convergence is also dependant on other conditions and transformations.

> "If we start from the two ends of the technological chain…then we can experience the impression of realising in the technical operation an encounter between two realities of heterogeneous domains and of instituting a mediation through communication between…macrophysical order larger than the individual and…microphysical order smaller than the individual (Simondon, 2020, p.22)".

The physical individual is only one of the potentialities which occur when different realities encounter and communicate with many other elements orders. It is metastable since it constantly encounters alteration within its associated milieu. Simondon considers physical individuals unbounded metastability, not finalised and settled beings. Therefore, individuation is defined as 'one of the possibilities of the being's becoming that responds to certain definite conditions (Simondon, 2020, p.52).'

In addition to the process of being, philosophy of technology has produced concepts and theories to understand what technologies become when encountered and used in various contexts. Ihde (1990) coined the term multistability in a more specialised area and from a postphenomenological perspective. It refers to technologies that can be stable in various ways, however, what they are rests unstable when they are isolated. It discusses how technologies can have multiple use trajectories or "stabilities" depending on the interaction with the user or context and individual interpretations. According to Ihde (1990), technological objects are dependent on cultural context and use which enables multistability. Ihde (1990, p.145) points out variations by mentioning how they are positioned and perceived by culture and sensory perceptions. He emphasises 'the complexities of technology-culture gestalts' (ibid., 146). While Simondon (2020) underlines internal tensions and potentials in general, Ihde's multistability implies external factors such as multiple interpretations, contexts and users. Multistability refers to functional variability and

flexibility in socio-cultural interpretations in technology. Ihde's approach is also pragmatic to understand how technology obtains use and meanings.

In addition to these useful concepts relevant to ontology of technology, there are also categories in which human-technology relations are evaluated, such as extensions, dialectics and hybridity. These are more focused on the realm where technologies and people come together.

Extensions approach sees technologies as neutral tools that enable people's actions. Dialectics, on the other hand, takes a different approach and sees technologies as important forces rather than supporting tools. This includes two perspectives; one positions technologies as oppressive and estranging and the other externalising human aspects. For the latter 'a hammer is a projection of the fist' (Verbeek, 2015, p.29).

Hybridity, as an alternative way to see human-technology relations, eliminates the duality of technologies and people seen in dialectics and extensions by emphasising entangled relations. This concept could be seen as relevant to self-tracking technologies, as they blur the distinction between technologies and human beings. Technological mediation, which is going to be explained in the next sections, is also a beneficial concept to comprehend this hybridity aspect as it suggests that technology and people shape each other (Verbeek, 2015).

When all these models and concepts are taken into consideration, it could be seen how the emergence of self-tracking technologies and the relationships between the products that enable self-tracking and people could be complicated. The right conditions needed to occur for technological products to emerge. Moreover, their emergence does not guarantee that they would be used in the intended way, in the same way by each user, or in every context. How they shape human life is not a stable condition.

In terms of self-tracking, it would be reasonable to claim that the vast industry and everyday applications of self-tracking today were not determined as such until GPS, sensors, mobile data, smartphone apps, etc. were all in place. This was only possible under certain conditions when different potentials of numerous actors encountered and fulfilled. This evaluation could be also directly adapted to smartwatches as they are an important part of the self-tracking industry.

With all these available technologies and the potentials of various actors including living and non-human individuals, self-tracking appeared as a common practice hidden in various physical entities. It was always a familiar practice, but now it is congregated with different technical and social elements. Some of the resolutions of the potentials, namely, some of the possibilities of the being's becoming became more prominent in self-tracking sphere as they are more feasible and acceptable.

3.1.1.2 Self-tracking and biometric data

As it is mentioned in the previous section, some of the resolutions of the potentials became prominent in self-tracking technologies since they are feasible and desirable under certain circumstances. For instance, numerous tools as physical entities in which self-tracking technologies are embedded are often related to health and biological readings of people's bodies. Early examples for this are the digital watches from 1980s that have a simple function charting biorhythms such as Pulsar biorhythm watch, Certina Biostar (Figure 2) and Seiko Alba (Figure 3) (Harris, 2020; Vintage Pulsar Biorhythm Digital Watch, n.d.; WatchCharts, n.d.).

Figure 2. Certina Biostar (Harris, 2020) (Image courtesy of Harris Horology)

Figure 3. Seiko Alba Bio Rhythm (WatchCharts, n.d.)

These were designed based on the theory which claims people have certain cycles in their lives including emotional, physical, intellectual cycles that repeats in every 28, 23, 33 years respectively, although this theory was proven to be not valid by scientists later (Hines, 1998). These watches used to provide some insight for people by tracking their biorhythms based on their birth dates. According to Harris (2020), especially for Certina Biostar, three rings that show these three cycles are required to be adjusted by the watchmaker in need for service and some

charts were available for them to calculate biorhythm in line with the birthdays of wearers. Moreover, this information is engraved on a specific space in the case of the watch. Although this tracking was not the most developed algorithm and did not include any direct sensing, it was obviously a novelty which can be easily implemented to watches. Especially in terms of tracking the self it can be considered a precursor to smartwatches.

Technological feasibility was one of the reasons for these products to appear. Quartz technology, digital screens, microprocessors, memory functions were influential. Additionally, cultural elements such as New Age movement and the concepts of self-transformation and healing may have been effective in appropriation of these products and affected by them (Melton, 2024).

Tracking health and providing biological readings are central aspects of both smartwatches and tracking activities. Many self-tracking products track footsteps and heart rates as accelerometers and relevant sensors can be easily built in. It can be said that as they were economically and technologically feasible, a culture and economy of activity and health tracking are established and reinforced by new applications and programmes. They are the solutions in search of a problem as it was in the case of personal computers (Woolgar, 1990).

On the other hand, self-tracking products are not limited to smartwatches. They include a variety of products both wearable and not wearable. There are products such as smart medical devices that provide people with the opportunity of monitoring their health at home and communicate the readings with their doctors through an app (Neff et al., 2016). Withings's (2022) 'blood pressure cuff' that includes integrated digital stethoscope, and the 'under-mattress sleep tracker' are other examples. The main motivation for having these products as a user is configured as to observe and make sense of the self through measurable units without any interruption and doubt, although interruption is possible with some products. These self-tracking technologies generally focus on measurable biological aspects and functions of the body and the idea of fulfilling one's potential in terms of productivity. Therefore, to be healthy and productive were the core features of the configuration of ideal user for these devices.

Besides these non-linear and non-teleological approaches to the self-tracking technologies and devices, researchers suggest that the expansion of the self-tracking sector is a result of 'measuring mania' in which one obtains knowledge about their health in the form of numerical representations that seems objective (Cifor & Garcia, 2019). However, it is also reasonable to consider measuring as something that appeared and was adopted by the integration of accelerometers into portable products. Therefore, to claim that measuring mania caused self-tracking sector to expand may not be necessarily the case. On the contrary, embedding the available elements into products such as accelerometers and sensors might have offered users

the opportunity to measure themselves. From this perspective, the novelties that people adopted might have been the ones that were available. Nonetheless, these are all complex conditions and cannot be understood without considering the elements of social construction, as there is also a possibility of rejection and ignorance besides adoption.

Simanowski (2014) presents another view on the tracking technologies which depicts self-tracking as 'unconditional data love'. He uses love as a metaphor to express people's enthusiasm and excitement for gaining scientific insights about themselves and the social elements including sharing their data publicly to help others. This view tends to assume the drive for self-tracking stems from the aspiration of consumers or product designers for such functions. However, as it is exemplified previously, these functions can be only the answers in search of a problem. Therefore, these concepts can be interpreted as more like the illustrations of the later stages of how regimes and cultures are built up through the applications and variations of these capabilities of devices.

To be able to account for the surge in popularity of self-tracking devices, in addition to the 'measuring mania' and 'data love', some researchers imply a similar but broader cultural framework which is called 'biomedicalisation' to refer to a significant shift in culture and in the ways of seeing the world (Neff et al, 2016, p.18). Biomedicalisation is described as a way of rationalising as many things as possible with medicine or biology. In the biomedicalised vision of the world, explaining a specific behaviour with the effect of neurons would be preferable than explaining it with the effect of society (Neff, et al., 2016). One of the reasons for that is the fact that explicable and quantifiable forms of the facts seem more manageable and easily changeable. This biomedicalised view is interpreted by some as a 'social force' that reflects on the features of technological devices (Neff et al., 2016).

Regarding the biomedicalised view of the world, Neff et al. (2016) states that health has turned into a euphemism, meaning more than the statement of the body, that is used to express if one's behaviour is desirable or not, according to the society that is formed by this view. If one's behaviour is described as unhealthy, it may be improper (Neff, et al., 2016). Thus, 'Healthism' and 'wellness syndrome' are other concepts coined by researchers to explain this cultural framework (Cederström, et al., 2015).

These concepts are defined by such strong social drives that contribute to this research, not necessarily as determining forces but as cultural modes built up through products. When increasing self-tracking practices in society are considered, it is reasonable to say that new motives are invented for this old practice now. However, it is still possible to find parallels and similar motives in the past, in the context of biomedicalisation. From an archaeological

perspective, smartwatches collecting biometric data by sensors appears as a remediation of biorhythm watches, in that both highlight relevant biological information.

3.1.2 Lifelogging and mediation

Turning back to the archaeological perspective on self-tracking, this retrospective leads us to another concept in this area, lifelogging, which is a very similar practice to keeping diaries. Lifelogging denotes the practice of recording personal information for future generations. Although this can be achieved in various ways, as diarist (life logger) Robert Shields did by recording every moment of his life for 5 years manually, lifelogging has been referred to as collecting data specifically by using devices such as cameras to computerise information (Lupton, 2016). Starting from late 1980s, different experiments and projects started to be launched in the scope of lifelogging (Mann, 1997, Pedersen, 2013).

Steve Mann has conducted remarkable research on wearable computers for personal imaging and he captured data of his life 24/7 for a period. He suggested that "computer clothing" could be used as a "visual memory prosthetic" and "perception enhancer" (Mann, 1997) (Figure 4). This foresight of having computers as wearables to substitute for our memory could date back to the time when digital watches such as Casio Databank employed memory to save basic information such as phone numbers and birthdays (See Section 5.1). Also, the idea of carrying a computer system including head-mounted displays with cameras on his body and recording what he sees in his daily life led to the development of wearable cameras such as SenseCam (Microsoft, 2022).

Figure 4. Mann's apparatus for wearable computer-mediated reality including two cameras, antennas, transmitters etc. from 1990s (Mann, 1997),

In line with the idea of replacing our memory with wearable computers, SenseCam was intended to be an assistant for people who have dementia. Microsoft started a trial in collaboration with The Memory Clinic and asked a patient who has dementia to wear a SenseCam when she expects an event she wants to remember. She reviewed images in certain intervals over a period. By using this camera as an assistant to recall events, she had a better ability to recall the events at the end. Microsoft even claimed that this was more effective than keeping a written diary. Besides this example, which is about literally replacing memory with a computer, this camera has also been used by many life loggers (Microsoft, 2022) (Figure 5 and Figure 6).

Figure 5. SenseCam photo, licensed by Rama (2009) under CC BY-SA 2.0 fr

Figure 6. Kings College Cambridge captured by SenseCam (SenseCam, 2003), licensed by SenseCam under CC BY-SA 3.0

Regarding these types of unique interaction and relationships between users, technological objects and the environment, technological mediation as a frequently applied notion (McLuhan, 1985; Ihde, 1990; Latour, 1999) and technological mediation theory (Verbeek,2005,2011), that this concept led to, could be insightful. This differs from conventional approaches that consider people and technologies as two opposite ends of the relationships or see technological objects as merely extensions of people. It rather suggests that technologies are mediators of the relations between people and the world.

Mediation approach is built on Don Ihde's (1990) post-phenomenological philosophy of technology. Verbeek later expanded Ihde's mediation theory as current digital products offer unique and complex human-technology-world relations (Verbeek 2015, Verbeek, n.d.) as seen in the example above.

The relationship between technological objects and human beings is considered a reciprocal relationship by this approach. It does not alienate or isolate them from each other. It suggests technologies and people constantly shape each other and alter the relationships between people and the world. According to Verbeek (2015, p.29), technology shapes and mediate people's actions, practices, perception and experience. Mann's wearable computer and SenseCam are highly relevant cases to illustrate this.

How mediation takes place can be assessed with the help of three main dimensions; the relations between technologies, people and the world, the 'points of contact' where technologies impact people from, and 'types of influence' that technologies have on people's activities and judgements (Verbeek, 2015, p.29).

Ihde's categorisation of relations refers to the ways technologies influence people's relationship with their world; by 'being embodied', 'being read', being interacted with', and 'being in the background' (Ihde, 1990). However, this has been expanded by Verbeek by including cyborg/fusion relations, immersion and augmentation in line with new technologies (Verbeek, 2015). To understand these different relations can be beneficial in analysing self-tracking and lifelogging projects and successive products.

Embodiment relations refer to a situation where technologies and people create a unit which is oriented towards the world. In this case, people see the world through these technologies. In the example of a pair of glasses, the technology is in a mediator role between 'the seer and the seen' (Ihde, 1990, p. 73.) As Verbeek (2005, p.125) states 'human beings take technological artifacts into their experiencing and thereby broaden the area of sensitivity of their bodies to the world.'

Hermeneutics relations are based on reading the representations of the world by technologies. Technologies create a unity with the world. For instance, the noise of a metal detector represents the presence of metal. In these relations technology mediates people's interpretations of the world (Verbeek, 2015).

Alterity relations point out the instances where people interact with technology, with the world in the background. Using an ATM is a common example. In this relation, technology is experienced as 'quasi-other', as it appears to 'behave as an other, with its own agency' (Verbeek, 2005, p.127).

Background relations is used to describe the relations when technology functions as the context of the acts and experience of individuals. The sound of a refrigerator is given as an example for this (Verbeek, 2015). People do not experience technologies directly in this relation, but technologies subsidiarily shape their experience.

As Verbeek (2015, p.29-30) points out, these categories may not be enough to explain new technologies and products as they create more complex and multifaceted relations. Therefore, he expanded these relations by adding new categories such as 'immersion', 'augmentation' and 'cyborg relations'. Cyborg/fusion relations are used for the relations that are more intimate than embodiment such as a 'brain implant', whereas immersive relations indicate more powerful and interactive contextual relations than background relations, such as 'smart environments' that recognise and interact with people. When there is immersion, technology merges with the environment. Intentionality is reciprocal, as people are directed at technology, but technology is also directed at them (University of Twente, n.d.).

On the other hand, augmentation is used for another configuration that combines embodiment and hermeneutic relations such as Google Glass (ibid.). In this example, users both can experience the world via the product and see a representation of the world.

Concerning these various relations, Mann's wearable computer projects provide an intertwined illustration. They combine embodiment relations and hermeneutic relations. Embodiment relation is seen as the user experiences the world through the wearable computer system and it becomes an extension of their body and mind, especially as a 'memory prosthetic'. However, the computer's display has different functions such as showing digital overlays or visual filtering which could augment or diminish the user's vision and perception of the world. On the other hand, by displaying websites and various data such as location, this product also generates hermeneutical relations by turning user into interpreter. The computer mediates their perception, experience and their interpretation of the environment. Communication is also a practice that this system mediated, as Mann (2014) also managed to stream a live video of what he was seeing for the viewers of his website, who were able annotate them as if they could "scribble on his retina".

Another project, LifeLog, was launched in 2003 by DARPA (Defense Advanced Research Projects Agency). As a project of the research institution of the United States's Department of Defense, LifeLog aimed to collect and store as much information of one's life as possible with the help of cameras and sensors. The data that they gathered included many types of data from everyday conversations to health-related data (Pedersen, 2013). By creating a digital diary which includes every bit of information of one's life, this was a daunting project of surveillance in its fullest sense. Even though it is obvious that this could be considered an attempt to create a tool for profiling, it

was rationalised and promoted by its advocates as an upgrade on human memory; a digital assistant capable of retaining memories flawlessly (Pedersen, 2013).

Lifelog project aimed to develop software which can draw on people's everyday actions by monitoring them to create some patterns regarding their behaviours. It also aimed to use this data to improve training in military and commanders' memory (Sniffen, 2003). The data was collected by equipping the volunteers with sensors and microphones. The software filed locations, conversations, messages, emails, phone calls, online activities, TV shows; basically, anything they hear and see (Sniffen, 2003). Safire (2003, para. 6-7) described this project as a 'cyberdiary' and stated that it offers a 'lifelong partner in memory'. Expectedly, this project was very controversial and criticised in terms of privacy. Although it stated that users were in control of sensors and could turn them off in the project description, its use and sharing of data with other parties was questioned, especially the data obtained from their interactions with others (Safire, 2003). When this project was cancelled in 2004, artificial intelligence researchers were disappointed, as they thought this would contribute to the development of cognitive science and AI by providing a way to seize and organise unstructured nature of human experience (Wired, 2004).

This monitoring project recalls the Mass Observation project which started in the UK in 1937. This social research project aimed at providing an 'anthropology of ourselves' (Harrisson et al., 1986). Similar to the LifeLog project, it was based on the idea of collecting data from 'everyday person'. However, its aim and methods were distinctive. The research idea was based on the claim that the government and media make assumptions about ordinary people but are not aware of perspectives and habits of people in the street. The aim was recording everyday life by using methods such as observation, day surveys and keeping diaries (Pollen, 2013). This included recording people's behaviours and conversations by eavesdropping and inviting people to write diaries without any special instructions, which resulted in having such an enormous and eclectic amount of data but also being criticised in terms of privacy (Pollen, 2013; Mair, 2022). Although this was not a governmental project and anonymously collected data, the concern of privacy was reasonable as there was such an atmosphere of espionage, reinforced by World War II. Furthermore, it is known that Mass observation collaborated with the British Ministry of Information for a short time and tried to influence them and 'performed an ambivalent form of care on the home front under contract with Home Intelligence' (Mair, 2022, p. 43). Home intelligence wanted to monitor public resistance and response to incidents to be able to create a resonance with official campaigns in favour of war efforts (Mair, 2022). In addition to this contextual difference between Mass Observation and LifeLog project, the fundamental differences were the use of tools and the way of collecting and processing data.

While LifeLog captured data such as emails, online transactions, etc., mass observation gathered data from observers mostly in the form of diaries. Lifelog took the data and processed it to create various episodes and content which is similar to diaries. However, in mass observation, the agency of people was more prominent. The intervention and mediation of technology and non-human agents were obvious in DARPA's project, although both projects collected similar information such as daily conversations. In LifeLog project, the data was more quantitative as it was processed through technical objects such as sensors, while mass observation included aspects of daily life including personal interpretations of experiences. This eclectic nature of Mass Observation was criticised in terms of methodology and representativeness (Pollen, 2013); however, it provided rich qualitative data regarding many respects of everyday life. Nevertheless, both projects were criticised in terms of privacy and potential use of the collected data by other parties.

These could be considered precursors of mass tracking that appear in use of today's self-tracking technologies. They were based on the idea of self-tracking, but in fact, in these examples, individuals were observed by institutions regardless of whether the aim was academic or political. These instances illustrate how tracking and monitoring were subjects of interest also in the past, and how easily they can become controversial and political.

As seen in these examples, technologies both created new practices and reproduced some long-standing socio-cultural and political patterns. In all cases, technological objects, whether a pen or a portable camera, mediated people's practices, experience and perception. The software, sensors and microphones used in LifeLog project could be considered in the context of background relations, in addition to embodiment and hermeneutics, as they collect data in the background without the user's direct engagement.

Additionally, another dimension of mediation, 'points of contact' that are categorised by Dorrestijn et.al. (2014) could be useful at this point to understand how these technologies and projects impact people from different domains. These categories are 'to the hand (physical)', 'before the eye(cognitive)', 'behind the back(environmental)', and 'above the head(abstract)'. 'To the hand' refers to physical interaction, direct effect on decisions and coercion. Technology directly influences people's movements such as a speed bump (ibid.).

'Before the eye' points out cognitive interaction and interpretation of what technology communicates such as 'stopping at a red traffic light' (Verbeek, 2015). 'Behind the back' is environmental and relevant to the material infrastructure and its effect on people's behaviours and experience. An example can be people using the train in case of the presence of suitable connections between their home and the station (ibid.). 'Above the head', on the other hand,

explains the impact of technology on our thinking. This encompasses having utopian or dystopian perspectives towards the outcomes of technology in social life (ibid.). Contemporary mediation theory approaches this with the 'ambivalent hybridity' perspective which considers both the hybridity of people and technologies without being seized by two extreme ends (Dorrestijn et.al., 2014). At this point, the way DARPA used technology in LifeLog project can be assessed both in utopian and dystopian perspectives. While DARPA promoted this as an upgrade on human memory and an assistant to retain memories, one can see it as a tool for mass surveillance. In either case, it is obvious that technology shaped people's abstract conceptualisation of the world and society, just as they shaped technology.

Turning back to lifelogging practices, being able to embed digital novelties in products contributed to the emergence of new practices and motives. To be able to record and recall all the experience of one's life was one of the motives offered to people for carrying computers, sensors or cameras on their bodies. However, it was not possible to predict what the result of inclusion of cameras in everyday life and especially with phones would be beforehand. These explorative and experimental approaches to designing products created new cultures and habits whenever they resonated with people. For instance, recording one's life also was a common practice in the past. This can be related to the instinct of human nature to leave a trace. This desire contributes to adoption of the tools that enable people to save everything they do, in a sense, immortalise themselves through their computerised lives.

Lifelogging has been a controversial concept in many aspects including surveillance. However, similar practices are visible and even more prevalent in culture now with the inclusion of various apps and technical features in smartphones. It can be stated that the essence of lifelogging has become a stronger element of everyday life, particularly with the effect of social media. People can record their everyday lives including their actions and emotions on their mobile devices and immediately share them with others.

Besides lifelogging, personal informatics is another term used in the similar context as self-tracking and lifelogging. However, this term is used more in academia in the context of human-computer interaction (HCI) (Lupton, 2016), referring to both software and hardware systems that provide people with tools to gather information about themselves and improve their behaviours and create self-control (Li et al, 2012). These systems can provide people with information on a wide variety of subjects from wellness to eco-conscious behaviours (Buchanan et al., 2014).

3.1.3 Quantified Self

The practice of one collecting information about themselves and seeing them in computerised and digitalised forms has created a novel perception of the self. Therefore, the 'Quantified Self' is one of the most common concepts that is used in the context of self-tracking technologies and devices. This term was coined when two magazine editors created a website in 2007 and launched 'Quantified Self' as a community for users and creators of 'self-tracking' tools (Wolf, 2011). It is inspired by the idea that collecting measurable data about the self is beneficial for individuals to understand how well they live their lives (Yang, 2014). They aimed to gather "self-knowledge through numbers" (Wolf, 2011). The meaning and scope of quantified self then have been extended by sociologists such as Lupton (2016, p.3):

> "While the quantified self overtly refers to using numbers as means of monitoring and measuring elements of everyday life and embodiment, it can be interpreted more broadly as an ethos and apparatus of practices that has gathered momentum in this era of mobile and wearable digital devices and of increasing sensor-saturated physical environments."

After the term was first coined, it generated a movement, became a cultural phenomenon and more research started to be conducted about this in academia. It draws attention to a situation where all the practices in everyday life are digitised, and the human being has turned into a being that produces data by 'performing' everyday practices. These kinds of definitions have revived the view of the body as a 'machine-like entity' (Lupton, 2013, p.26). Measuring and monitoring body functions, counting the steps that are taken in a day to see the level of activity all formed an understanding which is more focused on the self and particularly its quantifiable aspects.

One of the creators of Quantified Self movement, asserts that people's everyday experiences will turn into materials for experiential studies with the help of data gathered from self-tracker tools (Wolf, 2009). In this way, people extend knowledge about human life, although there is a possibility of lessening human life to numbers (Neff, et al.,2016 p.6). Moreover, this quantified view of the self led to an everlasting motive for self-improvement. People who see themselves through numbers inevitably have the desire to increase their numerable self-accomplishments. Therefore, the concept of quantified self is versatile, and can be associated with various issues such as productivity, wellbeing, and it could even go back to Cartesian dualism and Taylorism (Moore, et al., 2016).

From a theoretical point, quantified self inevitably recalls rationalism and Cartesian dualism between mind and body. People are incited to use their minds to dominate their bodies through

numbers. With self-tracking technologies, they can use the information which comes from the body, process and rationalise it to improve themselves. This process blurs the distinction between mind and body to as they are integrated and dependant on each other (Moore, et al. 2016).

At this point, the body becomes objectified, it is transformed into 'an informational object', 'a readable text' and it is seen as a source of 'storable and processable data' (Ajana, 2013, p.90). Therefore, normally mysterious elements and movements of body become more understandable and tangible with quantification. Furthermore, when people want to know more about themselves in an objective way, quantification provides them with reliability. Quantified data provides authority as it is perceived as objective, technical, instant and thorough. People see digital data having 'scientific authority' in contrast with subjective knowledge obtained from their observations and sensations (Lupton, 2016, p.56).

As mentioned above, quantified self influences and shapes people's perception of and relationship with their bodies and environment. It refers to datafication of various practices such as walking, sleeping and bodily functions such as heart rate. Accordingly, any products that enable quantified self can be also scrutinised through mediation theory. Quantification of steps and heart rates, for instance, mediates users' understanding of their health. Displaying the visualisation of numbers and metrics forms hermeneutic relations which people need to interpret to assess their health. The technology recontextualises the concept of health as quantifiable targets and shapes behaviours.

Besides these relations, mediation theory has another dimension, which comprises types of influences that people are subject to. Tromp et al. (2011) categorised two dimensions as visibility and force to evaluate the influence of technology on individuals and their experience with the world. They state that 'a product can coerce, persuade, seduce, or decide for somebody (ibid., p.12)'.

Coercive influences such as the influence of cars that do not start without the user wearing their safety belt are described as forceful and evident (Verbeek, 2015). According to Tromp et al. (2011) people are externally motivated in this category.

Verbeek (2015) states that there are also persuasive influences which are not that powerful but visible such as the readings from smart energy meters.

Tromp et al. (2011) mentions that seductive influence is another category that is weak and hidden. It causes to regard their own behaviours as intrinsically motivated. The impact of microwaves on family suppers can be given as an example. Influences which are both strong and implicit, such as a building design without lifts, are characterised as decisive (Tromp et al., 2011).

These various influences of technology are apparent in self-tracking and quantified self practices, as can further be seen in the following chapters. Depending on the features of specific products, these various influences occur. For instance, the visual representation of quantified data such as step counts can be considered persuasive, as it may lead the user to be more active. On the other hand, the fall detection in smartwatches can be considered decisive, as the watch initiates an action on behalf of the user and makes an emergency call. Nevertheless, it should be remembered that sometimes users can assign a different category to the same product, depending on their individual experience (Tromp, et al., 2011).

Quantified self inevitably requires an examination with a good understanding of current technologies. However, it is also insightful to explore the genealogy of the concept of quantification. This is also useful to identify how similar acts and perspectives shape people's perception and behaviours from the past to the present. Looking at the idea of quantifying self with an archaeological approach, it is seen that measuring and counting have always been a part of everyday life. Using numbers had started to penetrate the everyday, long before self-tracking technologies advanced. Seeing time as quantified units with the spread of clocks is an example for this, and it reveals how quantifying changes the perception of a certain phenomenon such as time and reorganise ordinary life (See Section 5.2). Besides clocks, from calendars to calculators many objects brought new types of counting practices to everyday life. Using numbers and specific units can be considered antecedent of computing.

When the genealogy of counting and computing is considered, mechanical calculators in 18th century can be considered as the first precursors of computing machines even of artificial intelligence as they imitate a function of human intelligence (Lister et al., 2009, p.363). They were designed as mechanical devices without any embedded digital elements. However, the intent of developing some of these devices was the same as that of computers. The intent was to automate intelligence and as a result, to delegate human tasks that requires intelligence to these objects as well as reducing possible errors. However, some early mechanical calculators were intended only to save time rather than automating the intelligence such as the 'semi-automatic calculator by Blaise Pascal'(ibid.).

The ones that can perform without any intervention of their users are considered machines instead of tools or instruments (Lister et al., 2009, p. 364-365). As today's self-tracking devices offer people a certainty of flawless information contributing to the quantified self, there were some machines such as Charles Babbage's Difference Engine in the past that guaranteed the 'unerring certainty of mechanism' (ibid., p.367). This machine was devised for estimating and printing mathematical tables related to annuities, navigation, etc. (ibid.).

Moreover, Leibniz's design of a calculator was not intended to reduce labour, but to automate reasoning. The idea was creating a logic to enable automation of reasoning for problems related not only to numbers but also the concepts. It was an attempt to form a 'language of thought' and to outline the main concepts numerically (Lister et al., 2009, p.365). In this case, the purpose was to quantify thoughts to express them numerically, and subject them to calculation rules to create a reasoning machine. He invented binary notation and designed a calculator that uses this arithmetic (Lister et al., 2009). He considered this a machine that could 'increase the power of the human mind' (Leibniz 1677 quoted in Lister et al. 2009). This was about not only delegating human tasks to machines but also increasing their performance. This idea also resonates with the underlying idea of quantified self. Furthermore, since this idea referred to a level that supersedes the idea of automating human intelligence, it is accepted 'as forerunner of programming, computer construction and…artificial intelligence' (Lister et al., 2009, p.366).

Accordingly, the Analytical Engine, 'the Difference Engine's successor', was able to decide which formula to use besides merely calculating. It can be considered a kind of programmable computer 'whose programs could include instructions for the utilisation of subsequent programs without human intervention (Lister et al., 2009, p. 368). In terms of not having particular function set and being able to get programmed to fulfil any computable task, it was similar to the 'universal machine' by Alan Turing, hence, it is considered the precursor of 'contemporary computing' (Lister et al., 2009, p.368).

The variety of programmes that are embedded in tracking devices have their antecedents in a range of products without regard to being mechanical, manual or digital. Similarly, the core ideas of quantified-self such as quantifying concepts and improving one's capabilities can be traced back to these devices in the past.

Accordingly, today, quantified self has changed the way people see and assess themselves and others by creating a performance-based view of the self. It has been a lens we see ourselves and others through. Although quantified self and self-tracking seem like individual quests, they are not isolated from other people, institutions or the structure (Neff et al, 2016, p.9). It is even more difficult to consider it an individual action, when various kinds of self-tracking such as 'pushed self-tracking', 'imposed self-tracking', 'exploited self-tracking' etc. are taken into consideration (Lupton, 2014).

These are based on the drivers of self-tracking activities and refer to power dynamics in self-tracking practices. For instance, 'Pushed self-tracking' refers to the situation where people start self-tracking with an initial encouragement and incentive from an external actor (Lupton, 2014, p.7). People can be incentivised financially for self-tracking in workplaces or self-tracking might be

a requirement for health insurance. ‘Imposed self-tracking’ (Lupton, 2014, p.9) states the conditions where people are not provided with any choices but to do self-tracking, and it is imposed by others for their profits such as schools or workplaces that try to increase workers’ productivity by observing them.

On the other hand, ‘exploited self-tracking’ mentions the situation where people’s data is repurposed, and even sold for others’ interests, especially for marketing purposes. (Lupton, 2014, p.10). As Neff et al. (2016, p.25) emphasises, when self-tracking is driven by others’ interests or requests it turns into ‘other-tracking’.

As self-tracking and the quantified provide people with novel ways of seeing themselves and others, they have been inexorably influential on society and culture. The constant production of apps and the huge industry which is based on social media also contribute to the establishment and monetisation of communities of self-trackers. Some examples of these communities and platforms are Strava, Nike+, Peleton.

Quantified self term is transformed into a subculture alongside the quantified self-movement, and it has become a term which is used in the cultural lexicon. It now refers to character and tools of practices that have increased in this epoch of advanced sensors and wearables (Lupton, 2016). This concept and self-tracking are explored in the scope of smartwatches by examining the uses and motives behind them both in the present and the past.

The prominent concepts and terms that are briefly mentioned in this section, have been used to explain the cultural phenomena. Their ethos and apparatus that evolved around wearable and smart technology are also discussed in the following section. These above-mentioned terms are used and referred while exploring the relationship between smartwatches and people in cultural contexts. Quantified self inevitably is explored more, since it is relatable to the main and most adopted function of smartwatches. They are indispensable complementary concepts of both archaeological investigation of the smartwatch and exploration of the relationship between the smartwatch, the user and their milieu.

3.2 Wearables and the Concept of Smart

Related to the concept of the self and initial attempts for wearable computers and cameras that are mentioned in the previous section, this part is dedicated to understanding wearables, the significance of the concept of wearability and the crucial aspects of smart wearables. This initially starts by exploring the concept of wearables and the way it changes everyday life, before moving on the concept of smart which is the main promise of smartwatches.

3.2.1 Wearables

Based on the first lexical meaning of 'wearable', anything which is 'suitable to be worn' can be considered wearable ('Wearable', 2023). Although this is a very broad definition, it mainly refers to the commodities that can be carried on people's bodies covering them to some extent for different purposes including regulating the temperature of the body or adorning it ('Wear', 2023). Therefore, it can be said that the origin of this term refers to the history of clothes, but it is not limited to clothes. It also includes ornaments and various portable products that can be attached to the body or to garments.

Watches are one of those portable products that people have carried on their bodies for a remarkable period of time, even though the main purpose of carrying them on the body constantly changed in time from ornamentation to organisation of everyday life and vice versa. For instance, the portability and subsequently the wearability of watches caused many alterations in the sense of time and in the way the society organises everyday life. The fact that people had become able to see the time constantly created time discipline in everyday life (Thompson, 1967) (see Section 5.2). On the other hand, the ability to craft smaller and wearable watches provided people, particularly women, with the opportunity to wear them as accessories and to express themselves as they did with their garments.

As an example of wearables, watches have been representative of the culture in terms of reflecting both the identity of the wearer and the societal changes in the way of living, regardless of whether they are worn as accessories or timepieces. Furthermore, people wearing watches as timepieces and so for their function does not only demonstrate how watches change the organisation of everyday life but also how people are motivated or coerced to wear them. Even though people wear things only because they must for practical reasons, the decision to carry a specific object on their bodies has always had a subjective element.

This subjectivity can give clues regarding people's rationale and motivations behind their decisions that are related to these items and the way they adopt them. Therefore, wearables

often mean more than their functions since their use requires a certain level of agency. On the other hand, there is the possibility of decisions being formed by 'normative influence' (Myers, 2014, p.285) which is about conformity and addressing society's expectations to be accepted. Consequently, it can be said that wearables, in the most general sense, represent the social values and practices besides individuality. They take form under the influence of social norms, and they are inevitably influential on the culture by creating potential for new values and practices.

On the other hand, the proximity of wearables to the body is one of the most idiosyncratic aspects of them. Wearability differentiates itself from portability or mobility as it is directly related to the human body. Wearable devices reflect a certain level of intimacy and privacy, as clothing does. When something is worn, it becomes personal and creates different possibilities of meanings by getting converged with the body. Silverman (1986) states that the body becomes manifested and discernible in cultural terms through ornaments and clothes. Similarly, Eugenie Lemoine-Luccioni (1983, quoted in Silverman, 1986, p.145) remarks that 'clothing draws the body so that it can be culturally seen and articulates it as a meaningful form'. The act of wearing can be considered one of the most significant realisations of culture through the body.

The idea of articulating the body with clothes and making it culturally visible may be the precursor to the contemporary idea of enhancing and augmenting the body with technology as technology is also wearable now. This phenomenon can be seen in various media products, with characters in movies and videogames, wearing their powers on their bodies. Pedersen (2013) exemplifies this via Iron Man, and the fact that his augmented armour gives him the status of a hero. Although this is an example from an imaginary world, the premise of wearables adding to people's abilities or changing their images is valid in real life. Therefore, 'wearables' is a term now mostly referring to products with digital entities that enhance people's abilities in various ways.

In a world where people have been dressed to be 'culturally visible' and to create meanings and convey them (Silverman, 1986, p. 145), today's wearables provide people with the opportunity to be visible in digital culture. Furthermore, as Ryan (2014, p.1) states, wearing technological devices combines the language of the garment with the cultural aspects of technology and takes it forward such that it may be culturally seen within a technologically literate setting.

Since modern wearable devices have both physical and digital entities, in contrast with the clothes or wristwatches in the past, wearers have representations of their presence and identities in both physical and digital realms. Therefore, wearable technology is an essential part of the communication of the self and eventually culture itself. The idea of communication of the self has a reflective account that enables people to see themselves in a digitalised way and redesign themselves by using this technological apparatus.

In addition to the fact that wearables are means of communication of the culture and enhancement of the human body, they also have everyday reality altered and amplified. Wearing particularly technological devices is a way to augment everyday reality. The smartwatch is a good example of this, as it alters people's experience in different basic everyday situations, such as walking. For instance, it creates a virtual coach who talks to the user and encourages them, regardless of the setting in which they are.

Although this 'reality shifting', which refers to the technology that makes promises about enhancing the actual environment with virtual elements, had become prominent with the Sony Walkman, today's wearable gadgets stand out by being closer to the body and becoming more and more personalised (Pedersen, 2013, p.2). The idea that the Walkman enabled people to wear their favourite pieces of music (Pedersen, 2013) is even more diverse and powerfully valid with wearable devices today. People wear not only their favourite music but also their data, relating to their body movements, health, communication, work, and daily tasks. They wear technology not only for entertainment, but to track themselves and gather their own data.

These latest wearable devices have become almost like parts of the body in terms of intimacy and physical proximity, rather than being a part of the clothing. Most of them are positioned directly on the skin. Therefore, it can be said that wearability is superior to mobility especially when it refers to the devices that are really worn by people. However, 'wearable' as a term occasionally can also refer to small-sized technological products which fit in pockets or are held in hands. Sony's wearable air conditioner (Byford 2020) which fits into the inner pocket of its special vest, or many conceptual designs such as Samsung's Gear S3 smart pocket watch (Boxall, 2017) are some examples of these portable and compact products.

In terms of terminology, 'wearable technology' is an overarching concept with different meanings. It originated from the term 'wearable computing' which started to be used for a 'pocket-sized analogue computer' (Ryan, 2014, p.95) that estimates results in roulette games (Ryan, 2014; Thorp, 1998). This term was later contracted to 'wearables', and used both for wearable computers and other mobile devices. Although the word 'wearable' had been associated with clothing, as mentioned above, the meaning which is assigned to this term has been altered from clothing to ubiquitous technological devices. It can be said that these wearable technological devices prioritise rationalist systems and utilitarianism instead of the connotations of clothing by superseding mind over body. However, some aspects of clothing such as intimacy or the opportunity to express identity remained the same. The term itself now primarily connotes technological devices. This shift in the terminology demonstrates how cultural changes and technological discourse also influenced the concepts in everyday language (Ryan, 2014).

Wearables, as a contemporary term, indicates the technological devices that aim to give users more power in various ways such as augmenting their perception of reality, providing easier access to information, or improving their physical abilities (Ryan, 2014). These devices generally are worn by people either integrated into clothes or as individual wearable products (Xue, 2019, p.288). In terms of achieving the above-mentioned aims such as enhancing the capabilities of the body or providing information, omnipresence, and digital identities, the smart aspects of these devices are essential. As these aspects are the most indispensable and ground-in qualities of wearables, 'smart' or 'intelligent' come along with the term of wearables as inseparable adjectives. Wearables are mostly mentioned in the literature as smart wearables (Dian et al., 2020; Niknejad et al. 2020) or intelligent wearables (Xue, 2019).

Thus, it is crucial to comprehend the aspects that make these wearable products smart and/or intelligent. To do so, it is necessary to review the literature and see how the concepts of smart or smart products are defined. In addition to the meaning of 'smart', questioning if there is a difference between the terms 'smart' and 'intelligent' is also reasonable since this is a controversial issue.

3.2.2 The Concept of Smart

Although there are some systematic literature reviews that investigate if there is a consensus on definitions of 'smart' and 'intelligent' concepts or identify some criteria in the past years (Gutiérrez et al.,2013; Raff et al.,2020), there is still need for a consensus on both concepts.

To start with the concept of smart, looking at the definitions of the word 'smart' could be useful as the first step. Smart is described as 'clever, intelligent, knowledgeable; capable; quick at learning, responding intelligently to a situation, etc. (Smart, 2023)'.

Moreover, when it is used to portray a person, it means 'neatly or (relatively) formally dressed; appearing neat and stylish; tidy, fashionable, elegant, sophisticated; belonging to or associated with fashionable or high society (Smart, 2023)'. The connotations here which refer to dressing and fashion are interesting, having mentioned wearables in this context previously. This may be considered an implicit interpretation of the 'smart' as a part of smart products such as smartwatches. Nevertheless, these connotations may demonstrate that there are still connections to clothing and expressing the self through wearing smart products. Even though the connection to being fashionable is not the strongest, the idea of belonging to high society seems highly possible in relation to this specific definition of smart. Wearing a smart product may give a sense of having a higher status in society as it means having access to knowledge and using state-of-the-art technology.

This idea is indirectly supported by the outcomes of the research that suggests having the most recent models of smartwatches helps users to illustrate their ‘intellectual superiority’ as it demonstrates how someone could provide financial resources to own the products which are expensive because of advanced technology (Shin et al., 2018, p.882). The ability to use advanced technology may also refer to intellectual capability, depending on the context. Furthermore, when smartwatches are used as a tool for ‘identity formation’ by the users, having a more advanced version contributes to the aim of differentiating themselves from others (Shin et al., 2018, p.888).

Regarding the meaning of smart as being stylish, elegant, or fashionable, smartwatches are peculiar examples that have some fashion-related, symbolic aspects in accordance with the term ‘fashionology’ (Rauschnabel et al. 2016, p.180). This term refers to the way people perceive these types of devices as a mixture of "fashion" and "technology" (ibid.) Furthermore, Chuah et al. (2016) illustrate that ‘visibility’, an individual’s perception of how smartwatches are seen by others, is a significant factor in the adoption of smartwatches and is also related to image creation. Therefore, the physical aspect of these products lays the foundations of social meanings and the formation of the image (Chuah et al., 2016). Therefore, taking this secondary meaning of ‘smart’ into consideration seems reasonable in this context.

On the other hand, ‘smart’ is described as below in the Oxford dictionary (2023) in relation to devices or machines:

> “Of a device or machine: appearing to have a degree of intelligence; able to react or respond to differing requirements, varying situations, or past events; programmed so as to be capable of some independent action; (in later use) spec. containing a microprocessor (opposed to dumb adj. 7c). Of a material, medicine, etc.: designed to act or respond to conditions in a more sophisticated way than is typical.”

Smart devices are associated with having a level of intelligence and being able to respond to numerous situations in an uncustomary way. On the other hand, Miller et al. (2021) state that smart is derived from the abbreviation S.M.A.R.T., that stands for ‘Self-Monitoring, Analysis, and Reporting Technology' which was coined by IBM in 1995 when they produced discs that warn users about the risk of failure in advance. This self-monitoring aspect seems to be expanded to user-monitoring today in smart products.

In line with the meanings of the ‘smart’ adjective, there are various definitions for smart products. According to Porter and Heppelmann (2014), classifying a product as 'smart' is only reasonable if the product is embedded with some smart elements like sensors, software, processors, and connection. This is an alternative description and criteria from more of a technical perspective.

Similarly, 'smart' could be considered as referring to being connected to smartphones. For instance, the smartwatch is described as a ‘small smartphone-like device worn on the wrist’, which is connected to a smartphone and shares notifications with the user, in encyclopaedia Britannica (Gregersen, 2022). In this respect, being connected to different devices and being a part of a network are prominent aspects of smart products. A prime example of this is the IoT, a system network in which smart products as ‘augmented everyday objects’ (Mühlhäuser, 2007, p.163) communicate and collaborate with various entities such as other devices and systems and users sending and receiving data (Internet of Things, 2023; Raff et al.,2020; Wang et al. 2021).

Nevertheless, there is still no consensus on the descriptive criteria of smart products (Raff et al.,2020). Each current definition emphasizes different elements of smart products. Porter and Heppelmann (2015, p.98) identified three main elements of smart products such as physical, smart, and connectivity components. Smart components include ‘sensors, microprocessors, data storage, an embedded operating system, a digital user interface’, while connectivity components refer to ‘ports, antennae, protocols, and networks that enable communication between the product and the product cloud, which runs on remote servers and contains the product’s external operating system’ (Porter and Heppelmann, 2015, p.98). On the other hand, some researchers describe smart products with different dimensions such as ‘autonomy, adaptability, reactivity, multifunctionality, ability to cooperate, humanlike interaction, and personality’ (Rijsdijk and Hultink, 2009, p.25). According to Rijsdijk and Hultink (2009), to what extent smart products have these aspects can differ, so that each product’s smartness can be evaluated on the whole depending on that. Also, ordinary products are categorised as non-smart even if they have these aspects to some extent since they are not grounded in information technologies. For instance, the washing machine could be considered autonomous but not smart (Rijsdijk et al., 2009).

Nonetheless, more inclusive approaches could be used to define the concept of smart. This is possible when the characteristics of smart products are taken into consideration. In this case, multifunctionality comes into sight as one of the main characteristics of smart products. There is always an emphasis on the superiority of ‘smart’ products against the standard versions of them. A smart home is superior to a conventional home, smartwatches are cleverer than mechanical wristwatches with their additional functions and capabilities. The prominent idea of smart products is to be able to fulfil more tasks than usual as smartwatches achieve more than merely telling the time. In this case, calling them watches is not adequate, so the ‘smart’ adjective represents and highlights the aspects which surpass the function of telling the time. This appeal of surpassing the only function and expanding capabilities is obvious in various watches in the past. Although they were not called smartwatches, their additional functionalities proposed delegation for some mental tasks that a smart person would perform such as calculating and memorising.

The names of the watches demonstrate these attempts to make watches smarter by expanding their functions: calculator watches, MessageWatch (Gregersen, 2022), Seiko TV watch (Shapiro, 1983), Sinclair FM Wristwatch Radio (Lamkin, 2023).

As regards the confusion and controversy about the difference between intelligent and smart, it is worth starting with dictionary definitions again. Nonetheless, when the primary meanings of these words are taken into consideration, it seems highly understandable that these words are used interchangeably. As both have similar meanings as adjectives, it can be slightly confusing to use them to refer to different meanings, although intelligent may indicate a higher potential in terms of intellectual capacity. This can be even more complicated when it comes to different languages in which they have only one phrase which corresponds to these two words (Wang et al, 2021).

In the Oxford dictionary, there are different meanings of the word 'intelligent' in different contexts, although some of them are obsolete. As an adjective it is described as 'having a high degree…of understanding; quick to understand; knowing, sagacious' and 'bearing or conveying information or intelligence; informative; communicative.' On the other hand, the Latin and French etymologies of 'intelligent' referred to a person who is 'well-versed in an art or skill' for some time in the past, as well as someone who 'understands or knows (a subject)', 'understand quickly', or 'having the faculty of understanding' (Intelligent, 2023). In terms of assigning some aspects to a person, the meaning of intelligent seems very similar to the meaning of smart.

Nonetheless, some of the obsolete or rarely used meanings of intelligent are 'a person who receives or takes in information; a listener' and 'a bringer of news or information; an intelligencer; a spy' (Intelligent, 2023). The former of these two meanings demonstrates how a humane aspect is delegated to 'intelligent' devices as they listen to the environment and receive information. On the other hand, the second uncommon meaning, a spy, could be very interesting in the context of surveillance debates around self-tracking intelligent devices. The description of this word that is related to a device or machine on the dictionary directs you to the definition of 'smart', mentioned above.

Despite all these commonalities, in the context of technological devices, some researchers and practitioners identify and remark on differences between smart and intelligent products. This is a matter worth mentioning since whether there is a difference between the two has been a controversial issue. On the one hand, it is generally accepted that smart devices have the ability to 'act in an independent way using computer' (Horseman, 2019). They have software to perform tasks automatically without input from users. Moreover, the intelligent ones have the ability to 'adapt and react to different situations, in a similar way to humans' and learn from previous

usages and data to advance their behaviours (Horseman, 2019; Dolan, 2019). The latter strongly refers to artificial intelligence and machine learning with an emphasis on the ability of learning.

On the other hand, Miller et al. (2021) claim that the term "smart" is now considered a type of intelligence depending on autonomous learning, since artificial intelligence has started to increase recently. It is due to the idea that products have the ability to adjust themselves to users by autonomous surveillants and operating on the data. Similarly, it is seen that in academic studies, these terms tend to be equated. According to the ways researchers identify the main aspects and requirements for smart and intelligent products, they are described very similarly (Gutiérrez et al., 2013). For instance, McFarlane et al. (2002, p.53) include the aspects of being 'capable of communicating with its environment and participating in or making decisions relevant to its own destiny' in the definition of intelligent products. Similarly, Mühlhäuser (2007) identifies some features of smart products such as context-awareness and proactive actions. Therefore, some authors concluded that these terms can be used interchangeably while others try to suggest different solutions to this confusion.

For instance, Gutiérrez et al. (2013) invented an umbrella term 'smart thing' to overarch all those overlapping or compatible definitions while Kiritsis (2011) identifies different levels of intelligence with the inspiration of the way people learn and improve their intelligence. The overarching term 'Smart Thing' is characterised as products that meet some of the established criteria of Smart Products and Intelligent Products by other authors (Gutiérrez et al., 2013). Alternatively, according to Kiritsis (2011), there are different levels of intelligence.

Intelligence level 1 refers to physical products which do not communicate with the environment and do not include embedded systems (e.g. software). Intelligence level 2 includes products with basic sensors such as a fridge with a thermostat that adjust its internal temperature. Level 3 refers to 'physical products with embedded sensors, memory, and data processing capabilities'. These products can adapt themselves to complex unstable environments. A car with a system that allows changing the route depending on the sudden changes in conditions of the road is given as an example for this category. Lastly, level 4 indicates the products with 'Product Embedded Information Devices' (Kiritsis, 2011,p.481). Therefore, the significant element of this level is 'identification and communication capabilities' in the product characteristics, with the help of IoT technologies such as 'NFC (Near Field Communication) and Wireless Sensor Networks'. A good example of this level is an aeroplane 'with tagged components and sensor networks that allow for Predictive Maintenance' (Kiritsis, 2011, p.481).

Similar to this system of levels, Raff et al. (2020) identified four different archetypes for smart products based on the identification of capabilities and their systematic review. These four

archetypes are ‘digital’, ‘connected’, ‘responsive’, and ‘intelligent’ (Raff et al., 2020, p.379), and the complexity and capabilities increase from the first one towards the last one. For instance, connected products have the capability of ‘information exchange’, while responsive products have ‘real-time context-awareness’. The intelligent archetype becomes prominent with the autonomy and the ability to anticipate and learn (Raff et al., 2020) (Figure 7)

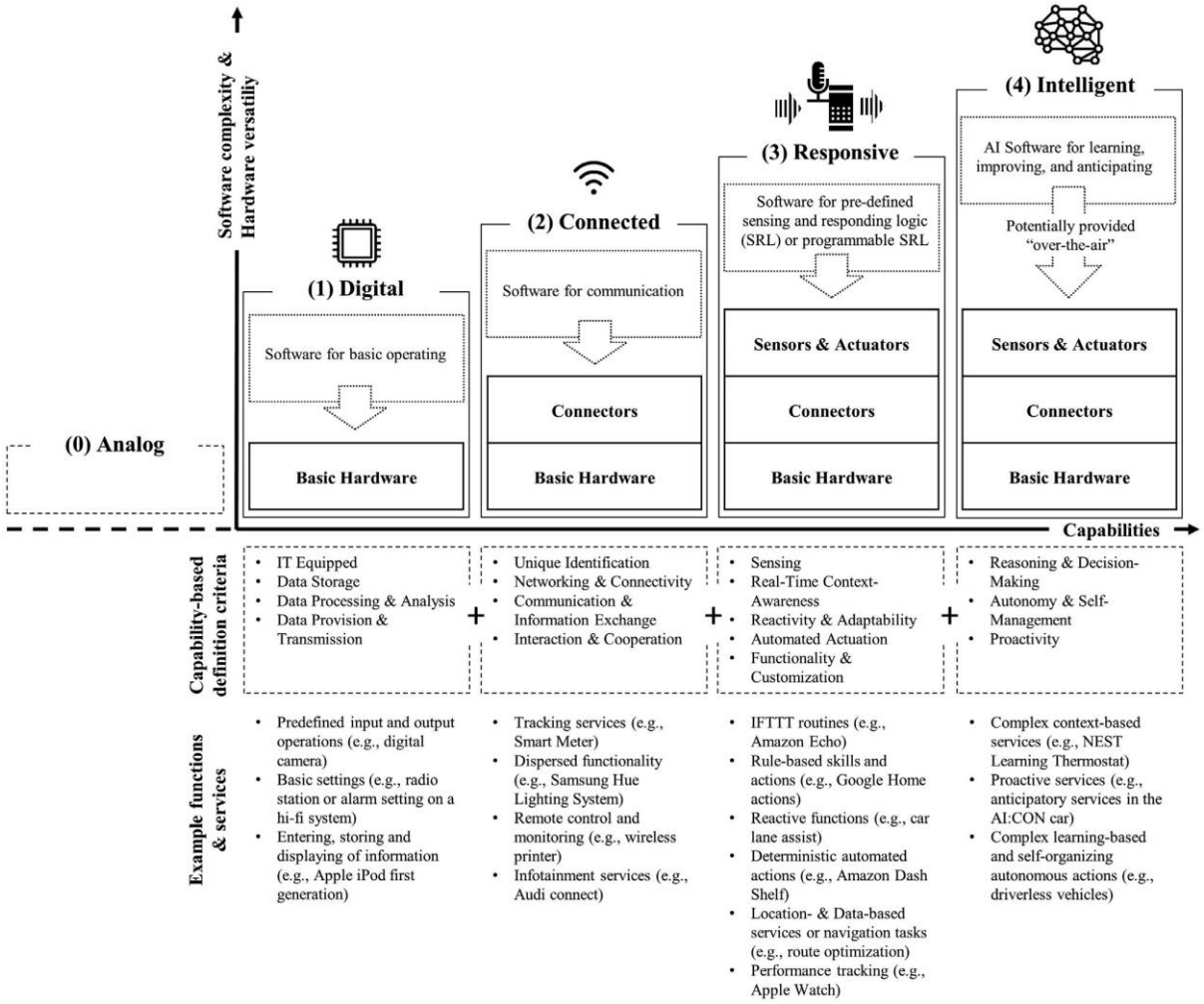


Figure 7. Framework of Smart Product Archetypes (Raff et al., 2020), licensed by Raff et al. under CC BY 4.0

It seems like the tendency of categorising smart and intelligent products differently comes from the idea of them having different levels of intelligence. Therefore, distinguishing smart and intelligent products is possible when their levels of capabilities are compared, although they are described with very similar aspects by various researchers. This explains why some designers and researchers state that intelligent products are different or superior to smart products.

One of the holders of that idea, Tobias Berneth (2016), who is the founder of the 'Things to be' design studio, claims that there is a difference between smart and intelligent products. He states that the information which is received and delivered by smart products comes from a database using the internet or the server. Nevertheless, these products cannot recognise what the user does exactly, they depend on user inputs. For instance, some wearable smart products can tell that you move but cannot tell if you dance or exercise. On the other hand, Berneth (2016) finds intelligence different than smartness, with an emphasis on recognising redundancies and patterns besides learning ability. Intelligent products proactively make suggestions as they learn from the users' behaviours. Therefore, these capabilities such as recognising patterns and anticipating users' future behaviours make intelligent products superior to smart products. Obviously, these capabilities are more likely to appear when machine learning is embedded. With the rise of the application of artificial intelligence, it seems that the future holds numerous possibilities for more intelligent products.

Regarding the subject of this research, the smartwatch is not excluded from this controversy. As a product that is called 'smart', it is important to explore its definitions. In the context of going beyond its main function, the smartwatch can be certainly identified as smarter than other wristwatches. Besides being a timekeeper, the smartwatch is also a tracker, an organiser, a payment tool, and an ECG machine with the help of its technological components such as sensors. Correspondingly, the smartwatch (2021) is described in the Oxford dictionary as

> "(originally) any of various watches equipped with a microchip that extends its functionality beyond timekeeping; (now usually) a mobile telecommunications device designed to be worn on the wrist, typically with a touch screen display and the ability to connect to a smartphone."

Based on this description, one could claim that the watches which extend their functionality beyond timekeeping could be accounted smart to some extent. In addition to smartwatches, the before-mentioned watch designs which made watches somehow smarter were in also accordance with Pentland's (1998) foresight that augmenting ordinary items that people wear all the time such as clothes and watches with tiny computers would be the best way to advance intelligence. In fact, Pentland (1998) referred to the intelligence of people in his statement by mentioning the idea of making society smarter. As in the example of the Casio databank watch from the 1980s, there were some aspects of the watch that enhance intelligence such as calculating, and storing numbers and addresses (Chander,2019). However, whether these additional aspects make people smarter seems debatable as the case of having smarter devices mean delegating the tasks that require the use of people's intelligence to these products at the same time. Although today's

smartwatches make so much information constantly accessible to people, it does not necessarily mean that this accessible information will be turned into knowledge and integrated into people's lives by improving their intelligence. In this part, the aim is to elaborate on the concept of smart with respect to smartwatches. Therefore, the focus is on how intelligent smartwatches are and why we call them smart.

In this respect, the definition of smartwatch provides us with some other ideas besides extended functions. Connectivity and having a microchip and a display are other determinants for a smartwatch according to this lexical definition. Being connected relates to the definitions of smart products that are mentioned before. Furthermore, it is seen that the smartwatch is categorised under the 'responsive' archetype of smart product archetypes in the diagram of Raff et al. (2020) (Figure 6). This means with the sensors, actuators, and connectors, smartwatches have real time context-awareness, reactivity and adaptability (Raff et al.,2020).

In terms of intelligence levels of Kiritsis (2011), it might be possible to consider that the smartwatch could have intelligence level 3 since it has memory and data process. However, we should state that the level of intelligence can vary depending on different models of watches. Especially in the case that AI is embedded into some watches, or in case enabled AI is at present for some of their functions, the intelligence might be at a higher level. However, in general, 'smart' would be a sufficient quality to describe smartwatches.

Looking at dictionary definitions of the 'smartwatch' is useful in terms of seeing the cultural roots of this compound word since it is going to be used throughout the thesis to answer questions related to the relationship between technology and people. Regarding exploring the meaning of the smartwatch, in addition to the smart part, the 'watch' is the other equally important part of this word. Although it is an old word for a well-known object, it is worth reconsidering it in this context. The dictionary search for the word 'watch' unexpectedly gives some insights into the specific aspects of today's smartwatches. As a word that prevailed in everyday life before smartwatches, it has strong connections to the culture.

When the etymological roots of the watch are examined, the fact that it is all about observation becomes clear. The word 'watch' comes from monitoring or observing because of the guards who watch and ward streets at night. Hence, it is about being watched that is different to the clock which needs to be listened to (Weekley, 2012). The word 'watch' is related to the act of patrolling and watching streets during the night in the past in reference to watchmen in addition to being something that needs to be watched. Nevertheless, it is highly obvious even in the definitions that people are the ones who are being watched more than the watches when the tracking aspect of smartwatches is considered. Although smartwatches are not only watches, this idea of being

watched points out the possible common thread between traditional watches and smartwatches from the very beginning.

3.2.2.1 Assigned meanings of smartwatches

Apart from the dictionary definitions, there are different meanings of ‘smartwatch’ which are constructed by manufacturers and marketers. Whenever they introduce a smartwatch and the idea of having a smartwatch, they connotate other meanings to this product in order to create a unique perception in the eyes of the audience. By encoding these meanings into their communicated messages, they let these messages be decoded, adopted, and spread by people. These connotative meanings are verbally, visually, or experientially constructed based on the type of chosen media.

Furthermore, people also assign meanings to the products based on their perceptions, experience, and culture. Therefore, this is a complex, simultaneous, and reciprocal process that constructs meanings socially. When the promises of products are created in the messages by companies or agencies, the discourses of smartwatches are formed. For instance, the premise of smartness can be seen expressed in various ways in the print advertisements of digital watches, approving the points that are discussed in this section (Figure 8).

Figure 8. 1986 Casio Databank print advertisement (Fargo, 2025)

In Figure 8, we see the premise of the Casio watch is to help people remember things and find information by providing them with a memory to store information. It directly expresses the idea that ‘no matter how good your memory’. As an indication of intelligence, the ability to memorise numbers or dates is no longer necessary for people as it is overtaken by this product. In terms of acquiring knowledge, smartwatches are also introduced by similar but progressive premises. This is exemplified in Samsung’s webpage for Galaxy Watch 4 since ‘The watch that knows you best’ is

used as the first tagline (Samsung, 2023a). The promise of having knowledge continues here but with the shift of the focus to the self, the promise has transformed into having knowledge about yourself.

Correspondingly, in the Apple Watch Series 8 commercial (Apple, 2022), the progress of these smartwatches is explained by drawing attention to how deeper the knowledge about the user that the product has is. Some statements in the advert such as 'First it tracked your distance, now it is tracking your stride length' and 'It learns your favourite route then lets you race against yourself' highlights the fact that the watch knows about the users to a great extent (Apple, 2022). Smartness is measured and represented by the level of knowledge in these cases.

On the other hand, smartness also appears as multifunctionality both in past and present advertisements. For instance, the Casio calculator chronograph was presented as something that replaces everything, including calculators and stopwatches, in an advertisement from 1980 (Figure 9).

Figure 9. The C-80 Calculator chronograph (Vintage advertisements, 2017)

Figure 9 demonstrates the emphasis on the ability to fulfil different tasks. Moreover, it describes this product –'amongst other things'- as 'a clever calculator'. The convergence of intelligence and multifunctionality constitutes the image of the product. Similarly, we see this type of discourse in the commercials of smartwatches. A notable example of this type of discourse is the Apple Watch Series 5 advertisement (Tech Talks, 2020). The advert opens with the sentence 'This watch tells time', and after a short pause continues with 'and takes phone calls'. Then it counts all the functions by using this structure such as 'this watch tells time and turns on lights', 'it tells time and opens up doors, wakes you up, sets your pace, warns you when it's too loud, text your friends, reminds you to breath, etc.'. The commercial ends with the statement 'So, in conclusion, just to iterate this watch tells time among other things (Tech Talks, 2020).' During the video, all

the functions of the watch have been demonstrated visually and supported by verbal statements. The headline of the advertisement for Casio watch, 'The watch that replaces everything', could have been a completely suitable slogan for this Apple watch commercial.

As it is discussed previously, there are various aspects and criteria for smart products such as having autonomy, being responsive, and being able to learn. Some of these aspects or related concepts are seen in the commercials. Sometimes one aspect becomes prominent in an advertisement while sometimes all aspects are briefly mentioned as is in the previous example. In the Apple Watch Series 8 advertisement, some expressions refer to machine learning and autonomy. One expression states that the watch learns the user's favourite route, while another one mentions how the watch dries itself off after the user swims (Apple, 2022).

Similarly, the commercial for the Apple Watch Series 6 starts with the statement 'Imagine a future where one day machine learning will give you the power to track your sleep'. Then a woman interrupts this voice and says 'This already does that' by showing her apple watch (Adforum, n.d). The main concept is based on the future and how this product fulfils the futuristic expectations of people with various functions. It also refers to the advanced technology, AI, and so the high level of capabilities and intelligence of the product.

The shift in the connotations of smartwatches can be seen in the series of adverts. This change in the meanings of smartwatches seemed to be happening from mobility and multifunctionality to health. While the advert of Apple Series 3 illustrates the concepts of freedom and mobility by introducing cellular connectivity, Series 6 and 8 refer to different functions including the ones that are specific to a certain type of sports and use the slogan 'The future of health is on your wrist' (Adforum, n.d.; Apple, 2022). In the meanwhile, Samsung introduces Galaxy Watch 5 with snore detection as another aspect of the watch which is related to health in their official video (Samsung, 2022). They keep highlighting the capability of the watch to track health and wellness on their website with taglines such as 'Check your health around the clock' or 'Watch your heart' (Samsung, 2023b).

It is seen that meaning of having a smartwatch has been more associated with health recently. Moreover, Apple even took it a stage further by positioning the Apple Watch as a lifesaver in their 911 campaign (Contagious Communications, 2022). It is designed to demonstrate how an Apple watch can save people's lives in cases they fall and cannot reach their phones. The videos in the campaign include real 911 emergency call recordings and fall detection recordings that are very affective (Dandad, 2022). Nevertheless, this campaign reasonably has been very controversial (Watson, 2022). As the fear appeal is used in the campaign, some think this advert tries to convince people that they must have the product to avoid dying alone (Hollister, 2022).

Moreover, the use of real traumas also conflicts with ethical values. This is also an example of how technology influences human morality, by demonstrating the problems in the areas of technology, privacy and capitalism. Considering the ethical implications of design is crucial, as technology affects not only people's actions, but also their judgement of right and wrong (Verbeek, 2011). Nevertheless, this case is certainly a dramatic illustration of the numerous meanings that are attributed to smartwatches. It proves that there can be many distinct criteria to evaluate smartness and various interpretations of how products are described as smart.

New meanings are being created by the use of smart products in everyday life and the way people experience them as well as people's exposure to these different campaigns and promises. For this reason, knowing different conceptualisations of smartness and wearables is crucial to be able to investigate these phenomena. Regarding this project, smartwatches are explored in terms of all possible meanings in the context of the relationship between the user and the smartwatch in everyday life. In terms of smartness, the smartwatch, as the name implies, is considered a smart product. Nonetheless, the word 'smart' is used as an overarching term without neglecting the aspects that are related to machine learning or a higher level of intelligence.

Chapter 4 METHODOLOGY

As the design archaeology approach, which is mentioned in the previous sections requires, there is a need for different research methods to do design archaeology on the smartwatch. According to the research questions of this project, gathering data about smartwatches, their predecessors and the relationship between smartwatches and people is crucial to get a comprehensive understanding. Since the project aims to understand the present from an archaeological perspective, methods are diverse depending on whether the data will be acquired from the past or present.

Therefore, the research will use multiple research strategy and gather data from different sources, including focus group participants, autoethnography, and other materials such as images and print media. This research will mostly apply an interpretivist approach. In terms of data analysis, as it is qualitative research, it will have 'theory after' approach attempting to construct meanings based on the findings emerged from data. Additionally, a strong reflexive account will be provided, particularly in autoethnography research.

4.1 Research Philosophy

This research has adopted interpretivism as the philosophical approach, as it aims to explore human experience and behaviours. As the research investigates the relationship between smartwatches and people, and the culture in which they are formed, it is crucial to understand individual interpretations and how meaning is constructed through these relationships. Interpretivism as a philosophy that sees 'reality as socially constructed through shared meanings' (Largan and Morris,2019, p.61.) provides the most appropriate paradigm for this research. Interpretivism also sees reality as something that can be transformed and modified (ibid.), and this also coincides with the nature of digital culture as the subject of the research.

Understanding reality as subjective and multiple enhances the potential of this research to explore such complicated phenomena. Exploring subjective interpretations enriches understanding of the research subject and outcomes. It places high importance on the ways people experience the world and make sense of it. Accordingly, phenomenological and hermeneutic approaches are prominent in the research.

As Bevir and Blakely (2018) state, anybody who wants to understand human behaviour needs to adopt hermeneutics. Since hermeneutics also suggests that actions and beliefs of people are

'historical, cultural and narrative in form' (ibid., p.2), it also aligns with the perspective of design archaeology.

Understanding human agency also necessitates interpreting human actions, practices and what is meant by them (ibid.). As this research examines such a large web of meaning around technological objects and people, this approach is suitable to handle the complex reality and its volatile nature.

Furthermore, this research takes into consideration all actors including technological objects in relation to subjective interpretations. As Ihde (1990) points out, people's approach to the world is always mediated, which causes technologies to be intrinsically hermeneutic. Technology provides representations of the world that people need to interpret. Moreover, technologies are 'multistable' (Ihde, 1990) and their uses and influences depend on cultural contexts. Therefore, hermeneutics is also critical to analyse these different effects.

Romele (2020), on the other hand, draws attention to the risk of the world being reduced to its digital representations. Therefore, it is important to employ hermeneutics carefully and to consider the effect of the materiality of objects in creating or communicating meanings in line with Ihde's (1990) material hermeneutics.

In accordance with the interpretivist approach that values subjectivity and the differences in people's experience and interpretations, this research employs multiple research methods such as focus group and autoethnography.

4.2 Research Methods

The research methods which will be used in this study are built on qualitative research since the project aims to obtain data about socio-cultural issues whose all aspects need to be examined deeply rather than gathering measurable or statistical data. Qualitative research has frequently been stated as an approach which is intended to understand the world 'out there' -not in laboratories- and to enlighten social phenomena 'from the inside' in numerous ways (Barbour, 2008). Concerning these ways, designing research studies which involve human participants such as focus groups and autoethnographic research is the most appropriate method since they provide a chance to observe people's behavioural patterns and understand their views on the subject. This also is useful to see the discourses on the topic.

On the other hand, the literature review is used firstly to find a gap amongst academic works and then, to obtain information on theories, methodologies, and the archaeology of smartwatches. At this point, textual analysis was useful to analyse documents such as texts, images, or

advertisements where predecessors of smartwatches or significant cultural issues are illustrated. These documents are also depictions of the ways of communication and making sense of a certain period. Therefore, this method is used in various phases of research.

Considering the fact that the existence of a product cannot be distinguished from the ways in which it is used by people and the aim of understanding relations between users and products, there is a need for ethnographic methods which are characterised as learning from people rather than studying them (Spradley, 2016). To explore and understand people's perceptions, experiences, and discourses on objects, focus groups and autoethnography each make valuable contributions. In this sense, it was appropriate to conduct focus group research at the first stage of the study since it provided various basic ideas that can led the study to further methods and contexts. Moreover, to provide both insider and outsider views, besides focus groups, the researcher conducted autoethnographic research and enrich the sorts of data by collecting them from various sources in different ways. All these methods are explained more in the next parts.

4.2.1 Focus Groups

Focus group research is used as the first step for the investigation of the relationship between smartwatches and people. This method is selected since it allows the researcher to observe participants from a distance to some extent and provides a wide range of voices and insights into participants' ideas on what they do in their everyday life. Moreover, the fact that this method also allows participants to interact and discuss with each other and notice different conceptions or common points is very useful to open new horizons (Barbour,2008).

Although this method is sometimes called by different terms such as 'group interviews', its approach is based on creating and analysing the interaction amongst the participants than asking each participant to answer the same questions (Barbour,2008). Therefore, it is possible not only to acquire data about each participant's thoughts and experiences but also to observe the interaction between them and how the meaning is socially constructed through the conversation on the topic.

To get personal narratives, one-to-one interviews seem more appropriate; however, some researchers claim that small focus groups are also beneficial for that (Barbour, 2008). Indeed, every research method has its own advantages and disadvantages, therefore, harmonising different techniques is useful in some cases. Therefore, in this study focus group research is used for exploring individual perspectives and experience as well as creating a basis to deepen the investigation. The results of focus group research crafted the nature of next research which is autoethnography as it demonstrated how the relationship between users and smartwatches are

very personal, subjective, and intimate. Moreover, the pandemic was another factor that makes autoethnography preferable under those circumstances.

Thematic analysis is used to analyse the focus group research. As the qualitative data which is gathered form the focus group was rich, thematic analysis helped to categorise numerous subjects and explore them further. More details about the analysis methods are be included in Section 5.3.

4.2.2 Autoethnography

Ethnography can be described as the art of unfolding the social behaviours, beliefs, productions, and institutions of a group of people (Angrosino,2008; Eriksson et al. 2008). Ethnographic research which has its roots in anthropology is primarily involved in the everyday lives of people and their routines (ibid.). Now, ethnographic research takes place in many disciplines and anywhere, even familiar surroundings or social media. However, the fundamental goal of ethnographers is to see and evaluate how people relate and interact with their surroundings and others to understand the culture (Eriksson et al. 2008).

Ethnographers gather data on the 'lived human experience' by trying to be both a 'subjective participant' and 'objective observer' to identify patterns in the experience. Ethnography is a holistic method that analyses details to arrive at various patterns and explanatory theories rather than testing any hypotheses, and whose results can be interpreted and changed as research continues (Angrosino, 2008, p.15). In this respect, any applicable form of ethnographic study would be indispensable for this research since the aim of the research is to understand the position of smartwatches today and how this position has occurred.

However, in the smartwatch context, it is understood that the relationship between smartwatches and people has many personal qualities and intimacy from the focus group data. This relationship is entangled with the self. Therefore, conducting an autoethnography is the best method as it provides deeper insights and observations on the self.

Autoethnography differs from ethnography with the observations and analyses that the researcher makes by focusing on the 'private sphere of the self' (Chang, 2008, p.43), self-experience, and results in a kind of self-reflection in the simplest terms. However, as a qualitative approach, autoethnography not only provides a personal narrative but also enables the researcher to comprehend the socio-cultural context through herself and to make cultural interpretations about the connections between herself and her surroundings by using the data obtained from the self (Chang et al. 2012). While this method offers a chance of connecting

personal and cultural phenomenon to each other, it also allows the researcher to conduct detailed analysis due to the comprehensive and intimate view on the 'familiar data' (Chang, 2008, p.52).

On the other hand, the autoethnography which will be used in this study, also draws on contemporary object-oriented approaches as well as the microethology concept (Giddings, 2009). As there are some instances where a human behaves like a non-human actor, and the smartwatch behaves in a similar way to a human being, not taking a completely anthropocentric approach seems reasonable in the context of this research.

Furthermore, in line with the importance that design archaeology gives to subjectivity, and the results of the focus group study such as the fact that the smartwatch collects data on the self and establishes an intimate relationship with the user at the same time, it is thought applying such a research method will provide more in-depth interpretations on this subject.

Autoethnography has been conducted by using various tools and approaches during the research. Photos, screenshots, video recordings, voice recordings, digital and hand-written notes are used to capture the moment including my thoughts and feelings. Analysing this data incorporated strong personal reflection with the thematic and emotion-based analysis of the content.

4.2.3 Limitations

Despite the advantages of the chosen research methods, there were some limitations to the methodology; some derive from the nature of the specific methods and some due to the specific circumstances of that moment.

The focus group provided such rich data in terms of unfolding the subjective experiences and interpretations of people. However, the recruitment and sampling were inevitably influenced by the circumstances under lockdown for Covid-19. The focus group had to be conducted online, during a period where people were overly exposed to digital tools, leading to digital fatigue. Therefore, the recruitment process was challenging. The snowball sampling technique was used, and participants were acquaintances from the same academic circle as the researcher. This produced some advantages and disadvantages. While participants were in a more familiar and friendly setting which they would not be otherwise, their academic background should be considered an influential factor in their perceptions of the smartwatches as well-educated individuals. This sometimes caused us to come across academic terms that we might not have heard otherwise. Although the data is invaluable and mirrors the crucial aspects of experiencing

smartwatches as human beings, this is an aspect to reflect on, as participants' backgrounds are always important factors in analyses.

On the other hand, the dynamic social interactions, which is the strength of focus groups, worked very well. Group dynamics including participants responding to each other and generating spontaneous ideas (Holloway and Glavin, 2016) were prominent during the meeting.

The group effect is important as it can lead to conformity or convergent in the ideas (Carey and Smith, 1994). However, the familiarity between participants prevented this from happening. Furthermore, as Merton and King (1990) states, homogeneity in the educational background of participants increases the potential contribution from them. Also, belonging to the similar socio-economic class and being in similar age group helped the study to be more specific and focused. The group climate in general was stimulating and generated fruitful data.

Besides the focus group, autoethnography has some limitations due to the nature of the method itself. The most prominent is the emotional involvement of the researcher and its impact on sustaining analytical distance from the data. The other is also an advantage of this method; the context-dependency and subjectivity of data. While this may not be a complete limitation, it is something to consider, as the analysis may not be applicable to different contexts.

Chapter 5 DESIGN ARCHAEOLOGY: ON THE SMARTWATCH

This chapter includes all stages and diverse ways of doing design archaeology. It expands some examples and discussions which are presented in Chapter 3 but with more emphasis on the objects themselves rather than etymology and terms. Furthermore, it attempts to experiment some of the archaeological approaches that are mentioned in Chapter 2. This chapter digs into the past and explore the present by various methods.

In the next section, there will be an attempt to excavate the past through both the predecessors of the smartwatch and the related concepts that they are in relation with, such as the apprehension of time, productivity, and information. These concepts will mostly be explained in the context of everyday life and culture since one of the objectives of the project is to explore how this contemporary product is experienced by people. Therefore, any discursive or non-discursive materials from the past might be used if they demonstrate any patterns, cultural connections or transformations.

Regarding the past forms of smartwatches, as it is said in the previous chapters, smarter namely multifunctional watches were always present since there are various underlying motivations of producing and using them in all periods. Therefore, their antecedents and connections to the past sometimes may even extend to pocket watches and contribute to the understanding of some phenomena which still endure today. However, in terms of having many similar promises and motivations, the digital watches starting from the 1970s could be considered prominent predecessors of smartwatches besides many other products such as calculators, navigators, and smartphones. Moreover, the disruptions in different temporalities, various forms of watches and thresholds in the past will be searched to gain insights into the conditions, alterations and transitions in culture.

5.1 Predecessors of the Smartwatch and the Effects of Disruptions

The first products that comes to mind as predecessors of smartwatches are expectedly the other types of watches some of which are still very similar to smartwatches in terms of form and function. Although watches are clear examples of products which are progressed from immovable to transportable and wearable (Martin, 2002), the idea of that the transition from the first inventions to wearable smartwatches was linear is approached vigilantly in this research in line with the archaeological approach. These technological developments might not have happened by following a steady, linear path, and some steps in early history might have remained in obscurity. However, the changes that stood out most in the past of watches has been their size and portability.

Regarding initial forms of watches, the technical capabilities seem to be the most determinative element for their designs and the matter of mobility. There were portable clocks in a form of a cylinder in the past. The improvement that enables these clocks to be mobile was the invention of the mainspring, which sets clocks free from being weight-driven like wall clocks or tower clocks (Usher, 1988, p.305). This innovation moved the act of timekeeping from the interior spaces such as houses or plants to the outside. However, this invention was not designed and used for watches at first. Springs were components of other automatic machines, then they were used in locks and were seen in pendent watches (White, 1962, p.126). This is only one example for the contingencies that lead embedding technical novelties in different products. Moreover, it demonstrates the way design changes everyday life not always intentionally but also coincidentally. Regardless of the motivation behind it, the fact that the watch became portable has affected and transformed daily life, also individualism was stimulated by having portable timepieces (Landes, 2000). Moreover, the fact that people carry watches with them wherever they go has led to the spread of watches in different domains of life.

On the other hand, in the 17th century, those clock-watches evolved into pocket watches and in parallel with the introduction of waistcoats, they became a part of men's clothing (Perez, 2001). Since the women did not have pockets, they wore pendant watches mostly as accessories until the industrial age, in which they engaged in public lives more and needed to be aware of the time (Ryan, 2014). Possessing a watch was associated with managerial and technological professions since it required knowing and measuring time precisely. Toward the end of the nineteenth century, industry leaders and managers began to see and use watches as an inseparable element of their professional identity (Oakley, 2015). So, as it is seen in the past, many social and cultural domains were in juxtaposition, and this supported some products to be adopted by users for complex reasons which include both the structures and contingencies to some extent.

Moreover, in the military tasks, some challenges of using pocket watches were revealed such as the risk and difficulty for soldiers to take the pocket watches out of their pockets. Once men needed a watch substituted for pocket watches for military purposes, one of the first solutions was covering the pocket watch with a leather piece namely making the wristlet (Figure 10 and 11). While these objects were designed to put the watch back in the pocket after soldiers leave the war zone, generally soldiers used the watch and the wristlet as if they were a single object. These two objects were then fixed together (Boettcher, 2023).

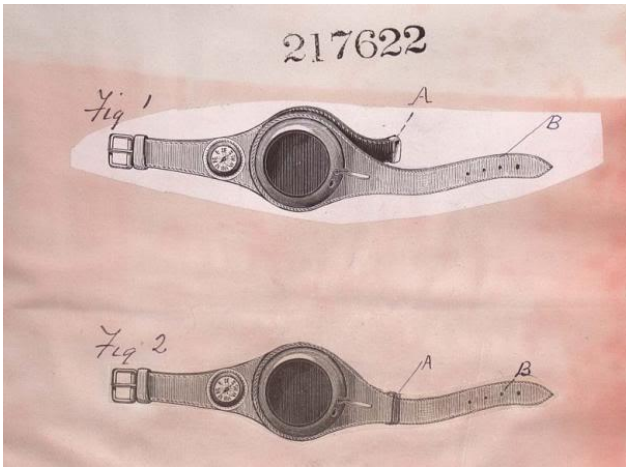


Figure 10. Wrist Strap for Pocket Watch with integrated compass, Board of Trade Registered Design RD 217622, granted to Arthur Garstin and dated 2 September 1893 (Garstin, 1893; Boettcher, 2025)

Figure 11. Wristlets (Boettcher, 2025), © David Boettcher 2005-2025, All Rights Reserved.

Trench watch was another product which looks similar to pocket watches but has metal grips to attach leather straps (Kelly,2017). This product is described as 'transitional' product as its design is intermediary. Wristwatches became widespread in a short time with the effect of World War I

and were considered indispensable as military equipment, especially for aviators (Oakley, 2015) (Figure 12).

Figure 12. Omega ad during the WW1 (Omega Watches UK, 2025), © Omega, 1916, All Rights Reserved.

The ad which includes 'For his safety, we need to know the exact time of day and night' statement demonstrates how warfare was effective on the transformation of watches and how the connotations of watches altered in this context. Therefore, it can be said that some connotations such as safety, punctuality, technical proficiency, and bravery attributed to the wristwatches indirectly, became stronger (Oakley, 2015). World War I might be the most explicit threshold as the point at which a product was transformed into a different form in an ever-changing context. This design decision which defines the new place of watches as wrist, namely body, is an ongoing feature today for the smartwatches. The position of the watch had come this close to the body after pocket watches. The aim of this was to make watches more visible and accessible to users, however, this new situation can be seen as a starting point for watches to be omnipresent objects and offer a more intimate relation between users and watches.

This is also an important milestone in terms of the fact that a self-operating object is carried on the body, except for hand-wound ones. The relationship between watches and people had started to change to some extent, and watches became more autonomous objects when automatic watches were created. However, they offered a different kind of dependency between users and objects such as the fact that the watch obtains energy from the users' movements.

Although these kinds of disruptions are not instantaneous and independent events, as another effective rupture, quartz crisis could be accounted for. Quartz crisis illustrates how wristwatches have penetrated people's lives with different strategies in terms of both practicality and meaning.

After the mid of the twentieth century, watches which became a part of people's clothing began to differ in the quality of their materials and mechanisms. Users used to choose them according to the recognition of the brands, and Swiss brands used to dominate the market (Oakley, 2015). Nevertheless, the quartz crisis started when electronic circuits provided an opportunity to abandon the intricate, hand-crafted mechanical construction of timepieces in the 1970s. Before this technological advancement, wristwatches were regarded as ornaments, so the first endeavours were to design new watches in the same way despite the new technology. However, the idea of considering watches as jewellery with electronic components failed (Norman et al., 2013). So, at that point, the technological development did not result in huge acceptance and adoption. Early applications of this change in technology and design did not supersede its predecessors, as is generally assumed to have happened. However, when these watches with this technology are designed and communicated as tools instead of luxury items, with some embedded functions such as timers, alarms and calculators, they became popular and favoured by users (Norman et al., 2013). This strategy of embedding many novelties and functions without a real dedicated purpose is something that can still be seen in contemporary products.

Turning back to electronic watches, Pulsar watch was the first electronic wristwatch produced in the USA in 1972. This watch model, which was heavily influenced by the space age, has a LED display that was first used in calculators (Figure 13). Thus, even only in terms of this element, calculators could be considered as an antecedent of electronic watches so smartwatches.

In this product, time was indicated by an image of the numerical form instead of hands on dials, and a LED screen substituted for crystals. There were no moving parts, no gears, and no need to wind up; therefore, it was highly revolutionary so that it was given the name 'wrist computer' by the company. It was a complete transition from analogue to digital (Thompson, 2018).

Figure 13. An advertisement for Pulsar LED watch (Thompson, 2018)

Furthermore, the visual aspects were not the only thing that changed; auditory features changed, too. This watch was introduced with the feature of being as silent as space, according to the

conditions of the period when the first step is taken to the moon (Thompson, 2018). With this feature that assigned to this product, the perception of that advanced technology should be silent and seamless was also reinforced.

In terms of parallels between this watch and today's smartwatches, first of all, having a screen on the wristwatch instead of a dial is a quite important incident and reference to today's touchscreens. Not being able to see the back of the wristwatches was an accustomed situation, however, to see a black screen that hides the working mechanism, so in this case the technology was new. Furthermore, the fact that the watch shows the time when the user flicks their wrist is exactly the same way of interaction that users have with smartwatches. Besides, when the copy is examined in this advert, it seems the autonomy becomes more and more prominent with the emphasis of the fact that the watch does not need any maintenance and it has a 'high IQ calendar' knows the difference between 30 and 31-day months and adjusts itself. These choices of words and features such as the durability which is emphasised by using numbers illustrates the discourse and cultural setting in which the product's existence was possible.

As it is mentioned earlier, some Japanese manufacturers redefined and repositioned quartz watches as tools rather than jewellery by using the new technology. The watches they produced were keeping time more accurately and they were cheaper than the mechanical watches. They also added various functions such as calculators, phone books, timers, etc. to highlight and support the feature of being a useful tool like smartwatches (Figure 14). Among the watch brands in Japan, Casio, which was founded to produce calculators and launched the first personal calculator, installed similar functions on the watches. By merging calculators and watches, they strengthened the idea of that calculators were the origins of computing, which is a core element of smartwatches, and led to the practice of counting and tracking penetrated everyday life and culture as it is embedded in a product which is always carried on the body. This could be considered a recurring cyclical phenomenon that Huhtamo (1997) referred to as it is seen in today's information culture, too. In fact, embedding calculators on a wearable product refers to the increased accessibility of information although the type and the amount of information that people carry on the smartwatches is comparably huge today.

Figure 14. Casio databank (Casio, 2025), © Casio Computer Co., Ltd., 2025. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

While Japanese companies changed the meaning of the watch with the above-mentioned multifunctional watches and dominated the market, the Swiss industry was able to cope with this situation by transforming the wristwatch into a 'high fashion' product by bringing moods and emotions forefront (Glasmeier, 1991). Furthermore, this separation altered the perception of physical aspects of watches such as weight. Previously, mechanical watches were thin and light but after light and low-priced quartz watches, their weight became a sign of their quality (Barber, 2012 quoted in Oakley, 2015). However, efforts are being made now to make all products in which technology is embedded smaller and lighter. Light and thin products now demonstrate the quality and how advanced the technology that they used is. As these issues are still valid today, it can be inferred that quartz watches paved the way for smartwatches in some respects.

Consequently, it could be said that the quartz crisis was a kind of threshold where a technological novelty came into play and changed the forms of being for watches and formed new ways of presence such as the new category: luxury watches. Then it is tried to produce more multifunctional watches that go beyond keeping time as the concept of 'smart' is defined in the earlier chapters.

Another influence on watches was directly linked to computer technology and telecommunications. There were many attempts to link the watch to the computer and add a feature that enables the watch to make calls. Moreover, some products started to use GPS technology. Many features of today's smartwatches were introduced with the aim of becoming prevalent. However, most of them were not successful on the market. There might have been many reasons for those failures including the lack of technical capabilities and difficulties in using.

For instance, in 1982, Suwa Seikosha company which was a former branch of the Seiko Group released the TV-wristwatch (Figure 15 and 16). The watch had an LCD screen and was displaying

TV channels; however, it had a TV receiver box to be able to show channels similar to the need for a smartphone to be able to use smartwatches to the full extent.

Figure 15. Seiko TV watch (Shapiro, 1983), © Popular mechanics, 1983. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

Figure 16. Seiko TV Watch packaging 1982 (Seiko, 2025), © Seiko, 1982, All Rights Reserved.

Through the 1990s, some of the most outstanding products were Timex Datalink (Figure 17), and Samsung the watch phone SPH-WP10 (Figure 19), which were introduced in 1994 and 1999, respectively. While Timex had the ability to transfer data by communicating with a computer, the Samsung watch phone had 90 minutes to talk with its integrated microphone, speaker, and antenna (Jaye, 2015). Timex Datalink which was an outcome of the collaboration between Microsoft and Timex was very important in terms of the ability to transfer data from the PC to the watch without any cables. It used to do that by facing the watch at the flashing bars of light on the

computer for an optical sensor in the watch to receive the data (Figure 18). This process seemed similar to scanning barcodes (Computer World, 1996; Prof. Manonera, 2024). Also, this was an early attempt to connect watches to computers wirelessly that was going to happen between the smartwatch and smartphone later.

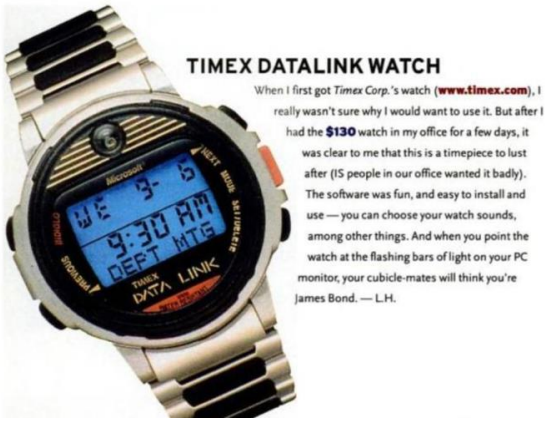


Figure 17. Timex Datalink (Computer World, 1996), © Computer World, 1996. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

Figure 18. Timex Datalink (Prof. Manonera, 2024)

Figure 19. Samsung watch phone (Samsung Electronics, 2015)

On the other hand, Samsung watch phone was an interesting design that allows the user to use it as a phone. In terms of form and physical attributes, it looks very similar to cell phones. This mixture might be one of the first instances where the boundary between mobile phones and watches was blurred. Similarly, the intricate relationship between smartwatches and smartphones will be discussed in the next sections more.

Unlike the latter example which is also a phone with its microphone and antenna, the connections to other products sometimes were implicit in product designs. There is no clear linearity in the way they influence each other. Therefore, it is difficult to identify which one influenced the other. Sometimes products can be seen as a mixture of two different objects. Similarities can occur in their appearance besides the functions. Casio's phone design may demonstrate this situation with its water and shock-resistant features such as a round urethane bezel to cover the LCD screen (Figure 20). In this example, a form that is normally assigned to a watch is used for a cellular phone, and this proves the before-mentioned idea that embedding some features to different products is not a linear and one-way process. Moreover, this example also demonstrates how design identity could be traced reversely. Therefore, an archaeological approach could reveal unexpected connections and applications in design.

Figure 20. Casio phone (Casio, 2021), © Casio Computer Co., Ltd., 2025. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

On the other hand, cell phones enabled users to see the time on their screen like they used to see on the watches. Additionally, cell phones were carried in the pockets similarly to pocket watches. Checking the time on the phones might be considered a kind of disruption in the uses of watches although the effect of it was not measured. Seeing the time on the mobile phones might have reduced the need for a watch for some users. Therefore, the proliferation of mobile phones may be the starting point at which the interchangeability between phones and watches discloses. In the meanwhile, as it is seen in the previous product, the watches were becoming tools for communication to some extent. There always have been this kind of complicated network of transitivity between technological devices. Another example of this is Seiko's Voice Note which is launched in 1983 with 'an audio recording and playback function' (Seiko Design 140, n.d.)(Figure 21).

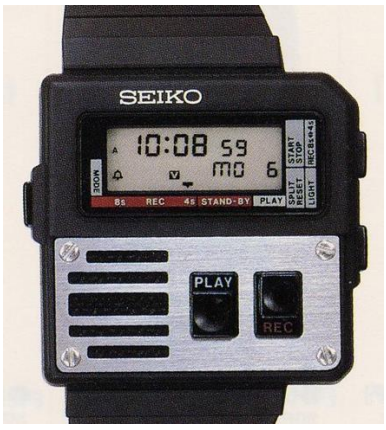


Figure 21. Seiko Voice Note (Seiko, 2025) © Seiko, 1983, All Rights Reserved.

Looking at the past again, besides the connections to the computer and the phone, some watches had GPS, which is also invented first for military use. For some products, it could be said that they evolved from navigators. Similar to the Casio's calculator case, TomTom is a brand which used to produce navigators, then they started to produce smartwatches. However, an older example of watches with GPS had been released as a running watch by Seiko in 1999 (Figure 22).

Figure 22. Seiko running watch (Delivering_kindness, n.d.)

The reasons for having a watch seem to change from keeping time to keeping distances and measuring performance in this product. In fact, from the names of above-mentioned products such as TV-watch, wrist computer, running watch the changing purposes of wearing a watch may be easily understood.

Moreover, in the recent past, there were lots of efforts to develop a wearable computer which also tells the time. However, many of them failed since the technology was not improved enough, or there is a lack of adoption by users. Fossil wrist PDA (personal digital assistant) (Figure 23) and IBM/Citizen Linux watch 'WatchPad' (Figure 24) were some of these failed watches, although they were significant developments for that time (Rawassizadeh et al., 2015). The WatchPad which used to run Linux OS had an LCD touch screen, fingerprint scanner, Bluetooth, microphone, and speaker.

On the other hand, Fossil wrist PDA used to run Palm OS and had a stylus and touch screen. Consequently, they can be considered almost identical designs to today's smartwatches in terms of their features and product language (Charlton, 2013).

Figure 23. Fossil wrist PDA (Charlton, 2013), © Copyright 2025 IBTimes LLC, All Rights Reserved. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

Figure 24. IBM/Citizen Linux watchpad (LinuxDevices Archive, 2001), © 1999-2012 QuinStreet Inc., All Rights Reserved. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

In the following years, these attempts continued, and well-accepted products have been launched. The functions of these watches have expanded from simply organizing dates to recording personal data as well. Besides, with the help of technological advancements and increasing adoption of technological devices in everyday life, smartwatches have started to transfer from niche markets to the mainstream in recent years (Rawassizadeh et al., 2015). In 2012, the Pebble watch (Figure 25) which was a crowdfunded project became one of the first fully independent smartwatches.

Figure 25. Pebble Smartwatch (Pebble Technology, 2015), licenced by Pebble Technology under CC BY-SA 1.0

Finally, when we look at the present, many companies have smartwatches in their product ranges. These smartwatches have a wide range of features such as receiving calls or messages, sending notifications of social media, counting steps, and recording health data which most of them were seen in their antecedents to some extent. Considering the fact that some products are designed only as fitness trackers, it can be thought that the main function of smartwatches became tracking and gathering data about users and present them to the users. Moreover, users can share their data and send instant messages to each other through smartwatches and various applications. Therefore, the occurrence of social media which is 'a phenomenon that has transformed the interaction and communication of individuals' (Edosomwan et al., 2011) in the 21st century can be considered as another threshold for smartwatches. The state of being in touch and being accessible anytime anywhere has reached its peak at this time, and smartwatches inevitably have become integral parts of this phenomenon.

Back to the topic of data, which is directly obtained from the body, the latest apple watch (Figure 26) becomes prominent with the capability of measuring the blood oxygen level of users (Apple, 2020). Similarly, the Fitbit sense calculates the electrical current of the skin by an electrodermal activity (EDA) sensor and detects any emotional arousal which could indicate anxiety of the user (Kozuch, 2020). These kinds of features take the relationship between users and smartwatches to a whole new dimension and make it more intimate both physically and emotionally. Moreover, including information about the body indicates that there are reoccurrences of different concepts that some early watches such as Bio Rhythm watches which are mentioned in Chapter 3 tried to address.

Figure 26. Apple Watch Series 6 (Apple, 2020), © Apple Inc., 2025, All Rights Reserved. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

In addition to keeping time, at the last point reached regarding smartwatches, it is clearly seen that various layers of meaning have been added to this product, and it has reached a different stage in the contemporary culture. However, some of the basic motivations underlying the smartwatches and their predecessors have remained the same or their alternative forms have appeared in the present. Among these, there are patterns of synchronising, effective use of time, being always accessible, measuring performance, controlling the body, increasing productivity and efficiency by obtaining information through various calculations. Rationalism and industrialisation might be accounted as the basis of them since this way of thinking takes place at the centre of these macro changes in culture and society.

All this prompts us to scrutinise how the perception of time has changed as well as the perception and usage of watches. Also, considering how the information culture has been effective in that becomes important in order to better understand how the relationship between people and smartwatches has been established and altered in daily life. Furthermore, to envisage how these kinds of objects have been adopted and internalised by individuals may be crucial in terms of the future of smartwatches. Therefore, the changing apprehension of time and information discipline will be explored in the next section with an archaeological approach.

5.2 From Time Discipline to Information Discipline

Time, which cannot be separated from any watch regardless of its type and capacities, emerges as a concept brought to the fore and overvalued by modernism. Therefore, it is necessary to trace the perception of time back since it plays an active role in the establishment of the relationship between watches and individuals. Considering the period when portable clocks and wristwatches started to take place in everyday life, it is reasonable to refer to the 18th and 19th centuries, industrial age, and mechanisation. Moreover, regarding smartwatches, the information age would be a period to explore its paradigm. In order to understand the change in the perception of time, it may be necessary to consult the conditions in different areas of life.

For instance, as McLuhan stated (1987, p.146), with the effect of the changes in mathematics, the perception of time altered to a sense of duration which is fixed between the start and the end point. The clock was producing units of time 'on an assembly-line pattern' as a modern time machine (McLuhan, 1987). Machinery was a representation of discipline for industrial processes, and it culminated in the calculation becoming a new habit (Thompson, 1967). So, it was referring to an image of the universe that can be quantified. This image of time became more intimate with the spread of clocks in the 18th century.

Standardizing and marking time were criticised by many authors like Stewart (1993, p. 14) and she questioned the act of counting and the standard routine of modern life as below:

> "The pages falling off the calendar, the notches marked in a tree that no longer stands – these are the signs of the everyday, the effort to articulate difference through counting. Yet it is precisely this counting that reduces differences to similarities, that is designed to be 'lost track of.' Such 'counting', such signifying, is drowned out by the silence of the ordinary."

This clarifies how counting and so quantifying could be degrading in terms of the unique aspects of everyday that cannot be measured. Counting has survived to the present day in different forms, and it is seen that it continues in smartwatches and trackers nowadays with the concept of the quantified self. This concept might have been brought a kind of anxiety into everyday life similar to the fact that counting time caused the notion of impatience (McLuhan, 1987).

This way of sensing time changed everyday life because the basis of time started to disintegrate from everyday chores or pastoral tasks, it stemmed from the new industrial society (Thompson, 1967). This required a different kind of measurement of time for every sphere of life. The fact that watches with LED screens show even the split seconds after many years from the invasion of clocks might be a sign of how the abstract units of time and our perception of time have changed.

It might be seen as relevant to the mutated perception of time in this age in which we accomplish a task just in a second by tapping on touchscreens.

As before industrialisation, task-orientation is the key term for notation of time, people were focused on the amount of work. Time did not mean the same thing as it does in a condition that work time is calculated; because the notion of productivity which leads to quantification of time was unknown, the work needs to be completed used to dictate the schedule, rather than time dictating the amount of work to be done (Bourdieu, 1962). The value of time, when it is converted to income, became more significant than the task. Thus, time became currency, and it is spent rather than passed (Thompson, 1967).

Since this new perception of time was mostly related to industrialisation, it influenced the work-life, and then blurred the distinction between work and life. Especially in workplaces, this time discipline was used to enhance productivity, for instance, the stopwatch of Frederick Winslow Taylor, as one of the symbols of industrialization, aimed to measure and optimize the speed of workers' performances. According to the anonymous 'Chapters in the Life of a Dundee Factory Boy', clocks were used for cheating workers by moving clocks forward and back in the plants. In this way they exploited the workers. However, any of the workers did not dare to speak about that or wear a watch because of the risk of dismissal (Thompson, 1967). Subsequently, the proliferation of watches and their accessibility to workers sorted this problem out. Nevertheless, it might be considered that this approach has extended today's workplaces and applied with the help of wearable devices such as smartwatches. Nonetheless, the use of these products is not limited to workplaces because of their inherent ubiquitous aspect (Moore, 2016). Controlling the productivity expanded to other domains of life and went beyond the limits of workplace.

On the other hand, besides work discipline, the matter of time influenced social life, too. The proliferation of clocks and watches brought time discipline to various domains of everyday. With the foundation of World Standard Time, which was required by increased train services, the experience of time changed just like the telephone changed the sense of space (Kern, 1983). Moreover, the uniform public time became controversial and discussed as an authority element. The conflict between private time and public time also took place in literature. As McLuhan (1987, p.156) mentions '…modern man feels obligated to be punctual and conservative of time…'. In the metamorphosis (Kafka, 2014), the oppressive feeling that Gregor Samsa felt was a decent illustration of the anxiety of missing the train and so being late. Breaking out of the routine of public time was representing his disconnection with the world (Kern, 1983).

Moreover, with the uniform way of processing, time was not related to 'the rhythms of human experience' anymore (McLuhan, 1987, p.146). Measuring time in this way caused disassociation of

daily activities from people's biological needs and every activity including sleeping had to happen at a specific time. While the public clocks had become more common, there were also bell-ringers because most church clocks did not point out the time by stroke. Also, the sound was more effective than sight to access the people who live in industry districts (Thompson, 1967). The church clocks, curfew bells and the bells ringing in the mornings prove that the main function of timepieces always has been alarming people about their daily duties, and they even organised their sleeping patterns just as it happens by smartwatches now.

Nonetheless, sleep is even a more controversial issue now as we live in a 24/7 society in which time is not something passes, but a mutated concept that surpasses clock time. Sleep is not even a real relief from relentless capitalist system anymore. It is only a different mode of presence, the 'sleep mode', where the accessibility and operations continue in the background (Crary, 2013, p.13). Similar to the way the concept of productivity in modernity affected the organisation of everyday life and sleep, 24/7 capitalism and ubiquitous social presence have affected and turned sleep into a different experience recently. Furthermore, the facts that many people wake up at night and check their messages, and they have insomnia could be considered symptoms of this 24/7 consumption. However, the idea that sleep in neoliberal paradigm is perceived as something for losers (ibid., p.14) shows that being productive is still a motivation. This brings similar patterns to the productivity driven approaches in modernity.

Furthermore, a similar connection to the one between technological innovations and military regarding the wristwatches could be found in the idea of sleepless consumers, too. Crary (2013) mentions the efforts of military scientists in finding ways to have soldiers awake for a longer time in his book. As he points out (ibid, p.3), '…war-related innovations are inevitably assimilated into a broader social sphere, and the sleepless soldier would be the forerunner of the sleepless worker or consumer'.

Turning back to the past again, regarding the everyday, there were also some changes in the language. Besides the fact that language about time sounds competitive, some phrases had been appeared such as being on time, wasting time, saving time, etc. So, watches became omnipresent objects that remind people about the passage of time in daily life (Martin, 2002). Given this situation, it is undeniable that the concept of 'being on time' started to organize everyday life and changed its rhythm from cyclical (natural) to linear (acquired and rational) (Lefebvre, 1991). However, the idea of keeping the clock on the body, presumably, was the strongest sign of taking over the everyday life of individuals by the watches.

Today, the smartwatch, which is a crucial product for the knowledge era like the computer, distinguishes itself from the other watches with the amount of information that it keeps as well as

many other unique aspects. Although keeping not only time but also information is not a completely novel idea and was implemented in previous watches, the variety and amount of knowledge that the smartwatch stores is a big difference. In this respect, it seems to maintain some of the values of the modernisation and rationalisation period. It keeps fragmenting and counting the time but also the self. As it is seen in the previous section, although predecessors of smartwatches also used to convey some kind of information to users, in this period, this information tends to be obtained from the body and presented to users. Users get information about themselves and strive to become 'better' and measure their productivity on their own (Figure 27). Now, the discipline in everyday life does not stem from only the measurement of time but also the information about the self. This is a new type of discipline, the 'information discipline', that can be seen as an extension of time discipline (Gilmore, 2017, p.199) or reoccurrence of fortified time discipline in new forms. Information discipline is unavoidably related to the concept of 'quantified self' as it puts emphasis on the information about the self.

Figure 27. Advertisement of Apple Watch Series 6 including the expression 'knowledge is power' (Apple, 2021), © Apple Inc., 2021, All Rights Reserved. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

This discipline is put into practice in design of smart products, and it obliges users to deal with instant pieces of information continuously. For instance, smartwatches interact with bodies directly with the haptic notifications and make them move with instructions. Hence, the key is getting precise knowledge now in addition to accurate time.

Receiving information from watches or storing the data in watches has roots in the past with the impact of rationalism. However, the way companies promoted and expressed the promise of a multifunctional digital watch was using the idea of 'making life easier' by performing some duties on behalf of users (Figure 28) with reference to the 'delegation' term which explains how human

activity is delegated to a nonhuman (Latour, 1992). Nevertheless, now, it seems that the emphasis shifted to reminding them of their tasks and dictating them to accomplish their goals.

Figure 28. Advertisement poster of Casio Databank watches including the expression 'no matter how good your memory' (Fargo, 2025)

As it is seen in the advertisement of the smartwatch (Figure 27), Apple, which is the company that dominates the smartwatch market, mostly uses encouraging language and urge users to be productive and competitive as their slogan '*We pushed it further, to push you further*' manifests. It seems that the smartwatch wants users to be better. On the other hand, Casio states that '*no matter how good your memory, there is probably room for improvement'* in its advertisement (Figure 28). Therefore, in terms of the discursive elements, it could be said that the mission of the watch as a useful tool which helps users or substitute them, has been transformed into a self-improving.

This approach that is used in promoting the smartwatch slightly recalls the idea of Thompson (1967) which was about the fact that Puritanism was the agent of internalisation of new appraisal of time by people through the transition to industrial capitalism. He was questioning in his article how people internalise this new time discipline and addressing the development of 'the Puritan ethic' which depends on the belief that hard work is salvation for people, and it is pleasant for God. Although the moral criticism of indolence was not new, there was a different insistence on being hardworking since the moralists adopted this discipline on themselves and enforced it on the working class. This propaganda of using time efficiently had been perpetuated through the 19th century. Then, the leisured class had been noticed as a problem since the capitalist society is expected to be used and promoted continuously, and wasted time is unacceptable (Thompson, 1967, p. 90).

This new value of using time efficiently was imposed in a variety of domains, including education, work, etc. with the help of timepieces. It was not surprising that the industrial revolution required synchronisation at work, and clocks and watches became widespread in the meanwhile. When it is compared to the present which seems a transitional period, too, new values are being both adopted or resisted by society, this time, through the smartwatches. At this point, to investigate what is the most common phenomena and how they penetrated everyday life could be valuable. Also, it should be noted that the term 'transition' here, as Crary (2013, p.36) notes, does not mean passing from one period to another completely as technology and all conditions are constantly changing, and it is not possible to have a complete transition either at an individual or at a collective level. The state of transition seems like an endless and ongoing process especially in today's digital realm.

As Thompson (1967) states, in these kinds of transition periods, it is the entire culture from which the resistance or acceptance arises. Therefore, neither using new economic terms nor technologically determined models are enough to understand since there is no single form of transition, and the condition of possibilities keeps changing. Therefore, exploring unique experiences at micro level is invaluable. To comprehend the latest situation and the relationship between people and the smartwatch which is a product that represents and shapes the today's paradigm, focus group research has been conducted in the earlier stages of this study. The next chapter includes the details and findings of this research.

5.3 Analysis of the Focus Group Discussion

5.3.1 General Overview

Focus group research, approved by the Faculty Research Ethics Committee (ERGO number 61244), had been carried out with three participants, with the purpose of getting insights into people's perceptions, ideas, and experiences regarding smartwatches. Due to the Covid-19 restrictions, research was conducted online via Microsoft Teams software. For the recruitment, the snowball sampling technique is used, and the recruitment criteria were being older than 18 and using a smartwatch. The participants -two males and one female- were acquaintances from the same academic circle. Hence, this snowballing technique used for recruitment allowed participants to talk in a familiar and friendly setting. Participants' ages were 46, 43, and 54, their professions are academics, and they had used their smartwatches for 8, 8, and 5 years, respectively. As there was no limitation about the brands of smartwatches that participants had been using, each participant had a different model smartwatch which are Apple Watch, Garmin, and TomTom Spark. This

situation not only enriched the scope of the research and the conversation but also enabled the participants to make some comparisons and judgements among themselves.

The questions were divided into four categories: general questions, and questions concerning ‘practices’, ‘interaction’, and ‘meaning’ (See Appendix A). The questions were open-ended in order to obtain more in-depth, detailed and subjective answers. Although the questions were prepared and ordered before, all of the aspects of four categories had been discussed through the natural flow of conversation. Participants made explanations on these issues during their speeches naturally, often without even asking. In accordance with the inherent attributes of focus groups, this was a good opportunity to see how people tend to feel and talk about smartwatches and which aspects they get involved with more. While the online setting was limiting the profits of in-person discussions such as observing how participants use the objects and letting them demonstrate what they meant, the discussion was highly natural and content-rich. So, this intricate content of the conversation will be summarised and interpreted in the following paragraphs briefly.

Firstly, the discussion started with ice-breaking cartoons and general questions about the types of watches participants have used, and how attendees describe and categorised them as objects. In answers to these questions, they described their smartwatches as an ‘exercise buddy’, ‘a transhuman device’, and an ‘auto surveillance device’ which are all notable expressions. These definitions will be discussed later under the themes that are created from all data, separately. However, in general terms, it can be said that there is a commitment to use these objects in spite of the cases in which they seem invasive. The fact that two of the participants categorized their smartwatches as essential needs supports this argument, too. Furthermore, describing them as a buddy and a part of the human reveals the intimate relation between smartwatches and people from the very beginning. The discussion included a wide range of subjects from functionality issues to aesthetics. As some dominant and critical themes will be discussed in separate sections, general inferences are described in this part.

As it is understood from the data obtained, smartwatches mostly seem associated with exercising and recording related data as well as being used as personal assistants who organise and remind daily tasks and events to users. It was often revealed at many stages of the conversation that the most basic functions that a smartwatch is expected to provide are having a long battery life and giving as accurate information as possible. Regarding this recording and providing information feature, participants find smartwatches encouraging most of the time. Although they mentioned a few occasions where getting the information with constant notifications might get annoying, they

expressed that they don't feel the smartwatch has authority, in general. Also, they stated that they disable notifications when they become annoying.

There were lots of conversations around recording their progress in exercising, but this issue was mostly spoken about in a competitive kind of sense. Being competitive both against themselves and the others seems to matter to some extent. This also provides a base for a different kind of communication through the data. They send some symbols through the apps to their friends or family members to communicate and they can celebrate with each other their performances. Besides this kind of communication, some everyday cases which are affected by smartwatches were also spoken in the discussion within the 'practices' part of the questions. These cases varied between working environment and domestic activities. However, under the Covid-19 restrictions, participants were working from home and their usual everyday routines had changed. Therefore, the discussion inevitably includes how participants started to use their devices differently because of the lockdown and they often refer to this situation by comparing the past during the conversation.

Smartwatches occasionally were considered distracting and disturbing objects with the notifications in some cases as well as transformative for some daily routines like sleeping. Some participants stated that they do not take their smartwatches off when they sleep to be able to monitor their sleep patterns and quality. Moreover, although they are well aware that they are being monitored all the time, they seem to accept this and do not care if what they get in return is satisfactory. However, some of them stated that they try to keep their data as private as possible.

While smartwatches are omnipresent objects and they tend to be used as tracking devices, they do not seem to be perceived as completely independent objects as participants often refer to mobile phones and computers while they are explaining different aspects of using smartwatches. They often compare smartwatches and smartphones and explain the need and the ways of using smartwatches depending on smartphones. They describe a kind of transition from smartphones to smartwatches. However, there were also lots of participants' statements which prove this is not a straight transition and the distinction between these objects is still vague.

When all these outcomes are taken into consideration, using smartwatches obviously is a sophisticated practice and incorporates many controversial topics such as surveillance, privacy, productivity, quantified self, etc. Therefore, smartwatches as tangible, industrial products which embody intangible elements are decent examples to apprehend the culture of this very moment.

5.3.2 Analysis Method

As initial research, this focus group research aimed to understand what kinds of issues are being discussed when people think about smartwatches, and which themes become prominent. Additionally, this research method allows to observe how these issues are discussed, shows if there is consensus or contradiction on a topic, and can reveal unforeseen sub-topics. Therefore, in order to understand which topics were discussed and how they were embedded in the discussion, thematic analysis which is described as 'a process for encoding qualitative information' (Boyatzis, 1998, p.4) has been used to analyse the data. Also, an inductive approach is applied in the implementation of this method. As Braun and Clarke (2006, p.87) mentions, there are six phases of thematic analysis: 'familiarizing yourself with your data' by transcribing and reading, 'generating initial codes', 'searching for themes', 'reviewing themes', 'defining and naming themes' and 'producing the report.

As it is seen, the thematic analysis requires explicit codes, and this may be a list of themes, qualifications, or indicators. Themes are the patterns which can be found in the data that illustrate and organise potential observations and explain features of the phenomenon. However, a theme can both directly manifest itself in data or be hidden behind the phenomenon (Boyatzis, 1998). In this analysis, the focus group discussion namely all conversations have been transcribed first and edited as two kinds of verbatim such as intelligent verbatim and true verbatim. While the true verbatim provides a good understanding of the ways participants express themselves, their feelings, and determination on what they are talking about, having an intelligent verbatim enabled us to see the frequency of certain expressions or concepts without misleading words when it is uploaded into the NVivo software for analysis.

After the transcription was loaded into the NVivo, some codes are created according to the issues in the conversation. The statements of participants had been assigned to the appropriate codes. Most of the time a statement was related to more than one code, and some codes were closely related. Therefore, some of them are brought together. On the other hand, the software was beneficial to see the word frequency (Figure 29) and the numbers of references to each code (Table 1). Despite the data were qualitative, a quantitative assessment was also obtained, thus giving a rough idea of what topics were most discussed (Figure 30).

Figure 29. Word cloud based on frequency

The initial codes, which were numerous, and how many times the participants referred to these codes are as below:

recording data-quantifying- information	30
Intimacy	24
activity and exercise	19
Agency	17
functionality issues	16
Smartphone	15
social interaction-communication	15
sentimental values	15
surveillance-data privacy	13
Time	11
Health	10
mechanical watch- luxury	10
physical interaction	9
Aesthetics	9
location- space	8

covid-19	7
Tactics	7
planned obsolescence- upgrade culture	6
distraction- disturbance	6
Indispensability	6
Competitiveness	6
transhumanism- augmentation	5
productivity- planning	4
Status	4
Mobility	4
integration (Siri- earphones-tv)	3
Ignorance	3
Computer	3

Table 1. Codes and the number of references under these codes

These codes were initial attempts to organise information and to compare the number of references for different codes identifying prominent themes in the discussion (Figure 30). However, this is considered a starting point to have a rough idea rather than a summative evaluation since the qualitative aspects of the data are the most crucial elements for this study. The authentic way of participants expressing their ideas about an issue which falls under a code which are not referenced so often could be still valuable for this research.

In addition to categorising the statements, the codes are examined in terms of the intersections between them to see the relations and which codes have the most common references. By looking at intersections, it is seen that most codes are discussed together and have some dependency on each other. For instance, where we see expressions that call intimacy, we also see the quantifying issue was referred.

The codes were observed when participants state their opinions, sometimes with explicit acknowledgment of those topics and sometimes unwittingly. Some of them were articulated in response to the questions directly, while some of them emerged spontaneously. Hence, the quantitative outcomes were not the only parameter in creating themes which is the next step of thematic analysis.

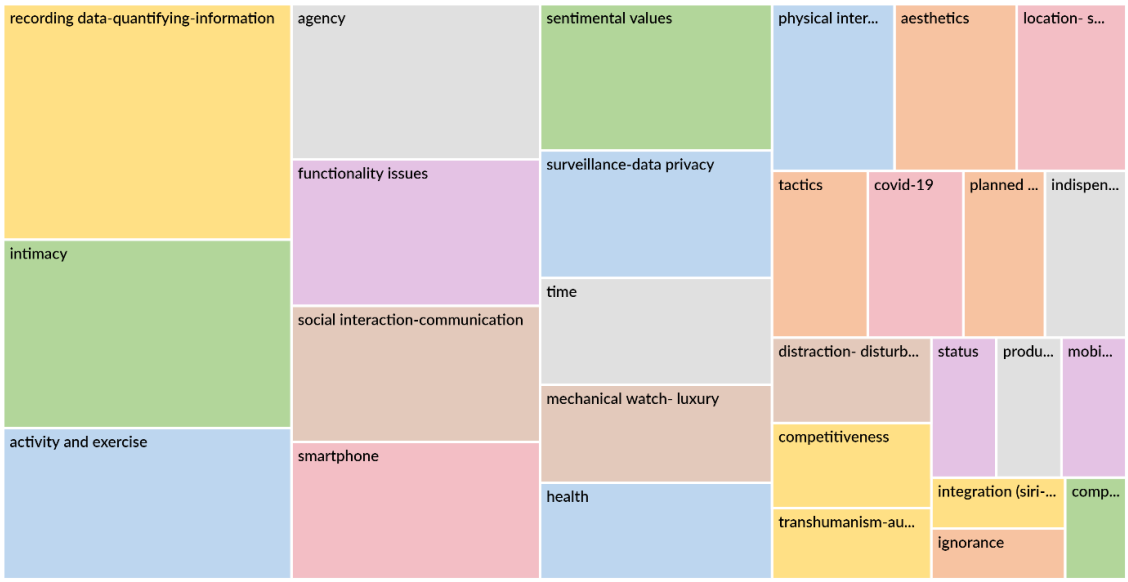


Figure 30. Hierarchy chart of the initial codes

As Boyatzis states, the themes may emerge from the raw material or theory and previous research (Boyatzis, 1998). Additionally, the literature may give insights into the potential formation of themes, as Boyatzis (1998, p.37) notes. For this research, main themes have been created in a data-driven approach by using the transcription and codes. There were not any pre-defined categories. At this point, it might be worth to note that the researcher had not used any smartwatches when this focus group was conducted. Nevertheless, the analysis process might have been indirectly informed by the current literature to some extent although this was an early period of the research.

5.3.3 Main Themes

As it is seen in the previous sections, the focus group study provided a comprehensive understanding of the issues and concepts related to smartwatches. As one of the most important steps of thematic analysis, some themes were searched and defined by drawing on the data and by clustering or abstracting the codes.

A few concepts were selected to get investigated further, and some others were eliminated. In determining these concepts, their prominence during the discussion, the qualitative aspects of the way participants express them, and the gaps identified in the literature were effective. In addition, attention was paid to the fact that the concepts are related, support, and foster each other. Thus, a few themes which are 'overarching conceptual constructs that group together sets of codes at a broader level of abstraction' (Coolican, 2014, p.312) have emerged.

When the codes started to be grouped, it was noticed that the codes mostly refer to obtaining numerical data in accordance with the information age, to obtain information and to quantify all kinds of activities and experiences, and they are discussed in this context. Moreover, many of the issues that the participants complained about or were satisfied with were because of whether this function was performed most accurately or not. They also tend to narrate the other concepts by emphasising the importance of quantifying, measuring, and challenging themselves. Therefore, one of the most featured themes has been 'Quantified Self'. This theme gathered the concepts such as competitiveness, exercising, functionality issues, indispensability, etc. under itself.

Intimacy, which was the second most discussed subject even implicitly, has been formed as another theme when both the intimacy and the relations between codes, and the fact that participants often talk about smartwatches with sincerity and personification are taken into account. Some topics such as social interaction, physical interaction, health, or sentimental values were included in the scope of intimacy. These codes were sometimes the reasons or factors that support the intimate relationships between smartwatches and participants.

Lastly, the other theme arose from the conversation and the gap in the literature about the issue contributed to the identification and formation of this theme. This theme seems unsearched and ties to the archaeological approach more tangibly than the other themes. The theme which is called 'archaeological traces' mostly covers the references of participants to smartphones, computers, particularly to the past. Although smartphones were never mentioned in the questions, the participants frequently referred to it during the discussion. These references were not limited to smartphones only, they also extended to mechanical watches to some extent. These three main themes will be explained and discussed more in detail in the following sections.

5.3.3.1 Archaeological Traces: Contiguity of the Smartphone and the Smartwatch

This section focuses on the references of participants to mobile phones, watches or the features that might be traced back to the past and searches for insights into the apprehension of the relations between smartwatches and their predecessors such as smartphones, computers, and mechanical watches. As it is seen in the previous chapters, archaeological approaches demonstrate that there are connections between these objects and smartwatches as well as their use. Also, there were reciprocal influences on the design of these technological devices. So, it could even be discussed if the smartwatch is a combination or a mutant of them. In this chapter, by looking at how the participants referred to these products while talking about smartwatches, the current reflections on these connections will be questioned from different perspectives.

At the beginning of the discussion, regarding the question of which kinds of objects are smartwatches for you, Participant B and Participant C mentioned unhesitatingly that having a smartwatch is a necessity for them, and Participant C (02:15-02:22) described her smartwatch as:

> "Essential and a computer, basically a computer on my wrist."

This description of smartwatches as portable computers mirrors that of smartphones. In addition to that, when the participant talked about her old broken smartwatch, she said that the app on her smartphone was not as good as her new smartwatch's app, and it did not give the information she wanted. Afterwards, she stated that the time function of her smartwatch is almost useless now as she could see the time on the computer screen, and she no longer needs a watch or phone to check the time since she sits in front of a computer all the time because of the lockdown (07:07- 08:36). So, this supported her description of the smartwatch as a substitution for a computer when the user is mobile. These statements show there might be interchangeability among these products to some extent. When her smartwatch is broken, the participant switches to her smartphone even though it is not sufficient on giving accurate data of her activities. Moreover, the smartwatch and the mobility it provides become useless when the user cannot go outside and move. It is then obvious that the smartwatch is an extension of the smartphone or a portable version of the computer for the user.

Similarly, some participants also explained smartwatches' significance by referring to the ability to move and getting free from mobile phones:

> "Yeah, for me it is essential, and the Apple Watch is the first smartwatch I had. For me, it was all about moving. Notifications and things to be less distracting because the watch will allow me to not keep picking my phone out of my pocket (Participant B, 02:24-02:41)."

> "I guess, to me, it is not essential, but I do like to have a watch on my wrist, I like to be able to check the time, particularly when I'm teaching. I like to be able to just, to not have to look around the room or get my phone out. So, I can keep the track of time (Participant A, 02:46- 03:01)."

The case of not taking the phone out of the pocket, mentioned in the first quote, reminds us of the switch from pocket watches to wristwatches in the past. It seems that a similar transition took place here, but this time it is not because of the warfare. It is because of the desire to be more productive and to avoid wasting time. Nonetheless, it is still possible to find a common ground for these two situations as synchronisation and using time efficiently seem to be the motive. It also seems important to be able to see the most accurate data which depicts the self more easily.

Using smartwatches is not only about the orientation to the external world as it happened when people began to use watches but also about the self. For instance, getting used to timetables was one of the instances where people adopted watches. However, the smartwatch emphasises dealing with one's internal world through the self-knowledge. Or, in fact, smartwatches connect users to their new selves, which emerge with much greater internalisation of the outer world.

On the other hand, according to the extracts, it is claimed that the smartwatch reduces the dependency on mobile phones to some extent but there were also some conflicts:

> "…and I've never had the one with cell. Because I never go anywhere without my phone, so I was like why would I? Because some people like to run with just the wristwatch and not the phone, so... (Participant B, 41:26- 41:45)"

Needing smartphones while using smartwatches seems to vary from person to person. Also, it depends on the type of smartwatch. Nevertheless, it is also seen that there is still some dependency on mobile phones as we see in the last extract. Participant B indicates that he never goes anywhere without his phone, so he uses his smartwatch in cooperation with his smartphone. He could make calls through his smartwatch (17:10-17:23), but he does not prefer a completely independent watch as he always keeps his phone with him.

Despite the fact that references to mobility and accessibility to the information are associated with smartphones and the claim that smartwatches make people free from smartphones, the dependency of some smartwatches on the smartphones was also discussed by the attendees later on:

> "…it dies like halfway through the day or whatever, or Apple make it obsolete by the match between the phone and the watch. 'cause obviously… it has to have a phone…these two things no longer talk to each other. 'cause smartphone is a lot newer and will be upgraded more often, although again I'm not upgrading my phone… (Participant B, 40:30-40:47)"

> "…the other thing it's ever done, which I didn't realize it did, is if my phone's got the Bluetooth on, I get a text, a part of the text will come up on the screen of the watch, which made me jump because I didn't know it did that and it was just felt like it was some kind of…being possessed in some way. And it wasn't very helpful because then it only showed a bit of the text and then it disappeared from the screen, and it doesn't seem to be any way of retrieving it, it's just a prompt to get you to look at your phone… (Participant A, 10:35- 11:00)"

Referring to the smartphone was not limited to these statements during the conversation. It was also mentioned in the contexts of social interactions and communication. One of the participants stated that taking his phone out of his pocket and looking at it can be rude at the meeting, and he explains that he had the same discomfort with his first smartwatch. He states that when he looked at his smartwatch instead of looking at his phone in a meeting, he said that people thought that he checked the time, as if he was in a hurry or bored (Participant B, 11:55- 12:12). This is not a common situation now because of the always-on screen that enables users to see the time at a glance without touching the smartwatch. Besides this issue, the smartwatch had been related to the smartphone since it has the same function as making calls. However, this feature was criticised in terms of the physical and social difficulties in using it:

> "…obviously my watch does allow me to talk to it, to do phone calls and it allows me to do the Siri with it. But again, since getting…like Apple AirPods, I rarely use that function. And the thing I found out that was it's nice to be like Dick Tracy, to begin with, talking to your wrist, it's really a pain to do a call like that, 'cause it's like... to have your arms out for a while. But also, even because it comes out the little speaker in the watch, everyone hears the other side of the conversation, and I don't like that. So, I just phone on my earphones. Now if I'm walking but prior to having the earphones if I was out and about and a call came through, I would literally do that, but it was kind of a case of like how long can I hold my arm like this? [laughing]… (Participant B, 17:10-17:56)"

In this extract, another product -Bluetooth earphones- appears by being included in the communicative experience and verifies the redundancy of that feature for this case. All these products complement each other and provide an integrated experience and increase the number of products that people might need to use although the smartwatch is envisioned to gather many functions in it. The earphones and the Bluetooth technology which appeared in the past in different forms, have become integral parts of the use of smartwatch to experience it to the full extent.

Regarding practical uses and functionality, while the smartphone has been accused of not providing as accurate data as a smartwatch can do by the participants (Participant C, 07:43-07:56, and Participant B, 13:39- 13:44), the ambivalent relationship between smartwatch and smartphone reveals itself in the conversations again. From an archaeological point of view, a connection can already be seen between the smartphone and the smartwatch, but from the expressions of the participants, it was also understood that the distinction between smartphone and smartwatch has been blurred:

> "…So, what's interesting here is that so there was the phone first, which we all took out to check our messages and the time, right? Then there was the watch and now the watch does the messages as well. So, and then we kind of are we reverting back to the phone or, to nothing? or are we stopping the messages that we… I mean, my watch also has the ability to get my messages, and I've disabled that because as (Participant A) said it's just a bit of a nuisance. It's very useful on the Apple Watch, but on this it's kind of simple. But it's interesting, isn't it? That I never wore a watch while I had a phone, you know, it could tell me the time and all the other things. And then now I have the phone that can tell me the time and all the other things are now disabled… and I just, you know, use it for something else (Participant C, (12:45- 13:38)."

As Participant C mentioned, it can be said that people might have not used watches as often as they used to because they had mobile phones and started to check the time on their phones. However, with the smartwatch people might have returned to watches again, even though Participant B (12:31-12:37) looks at his smartwatch to check the time only when Siri failed and did not tell him what time it is.

Notwithstanding, it seems most of the features of smartphones appear in smartwatches. While the transfer of incoming messages and notifications to the smartwatch causes discomfort to Participant C, probably because it is always on the body, Participant B (11:18- 11:35) finds these notifications very useful and Participant A (18:00-18:08) states that the smartwatches not about calls or messages for him. However, he describes a different way of communication through his smartwatches:

> "I mean, for me it has no relation to phone calls or messages like that, but just occurs to me. There is a way I do use it for communication, but it's just one-to-one 'cause it's linked up to TomTom Sports and then to Strava, so it uploads any runs I do to Strava. I've only got two people who follow me on Strava. One of them is my brother who is a very keen runner, so really, I'm only on Strava so that my brother can see I have done a run and give me a thumbs up- the kudos symbol in Strava... So, it's like sending a text to him just saying, hi, how you doing, and I just follow him and do the same although he runs a lot more than me. So yeah, it's a very elaborate way when I could just text him, but…I don't know it tickles me (Participant A, 18:00- 18:57)."

It is obvious that smartwatches maintain and support instant communication in a similar way to smartphones, but it also changes the context and catalyses the process. Here smartwatches mediate social connections and communication. This also includes a reward which will be discussed further in the next sections.

The contiguity between smartwatches and smartphones also becomes evident through the GPS function. This function relates to the navigators which can be considered an example of the predecessors of the smartwatch in previous chapters. Participant B (48:02- 48:34) and Participant C (48:36-48:51) narrate how they use GPS function through their phones and watches in the context of privacy and surveillance as below:

> "Well, for example, I took my [name of their son], my youngest backup to University in Leeds at the weekend, which, according to the regulations, they're not supposed to go back. He's not doing biology or anything, but most students aren't going back there gonna be at home. So feasibly, my phone could, Google could tell the police or whatever that I drove up to Leeds, but I don't think my watch would do anymore. I only turn on the GPS when I'm running, so if anyone wants to know I've run around the park than us…"

> "I mean, what's funny for me is that I don't have any location services activated on any of my apps, but I'm quite happy for my phone to record where I go running and where I do my exercise, and then I kind of think I don't want to think about it."

It seems that smartphones are adopted more as navigators in travel, while smartwatches are associated more with measuring distance and performance in case of exercising.

Furthermore, Participant B (23:00- 23:05) mentioned that he also has a GPS device on his dog, and he compares the walking distance by looking at this GPS in addition to his smartwatch:

> "Now it's more about have I walked the dog enough, and I've got that on my wrist to see if I think I've walked enough. I've also got a GPS thing on the dog that tells me how much he's walking so I can compare the two pieces of information."

Participant C also added that she put GPS on her kittens. At this point, these occasions support the archaeological approach which is explored in the earlier chapters and the idea of that GPS and the devices with GPS are key in the genealogy of the smartwatch. Furthermore, the fact that the use of the smartwatch can involve many non-human actors including animals confirms the need for an inclusive approach to understand products such as smartwatches that create a vast ecosystem around them.

Additionally, the importance of accuracy also becomes visible here again with the participant's act of combining two sets of data from two different devices to calculate the most accurate number regarding his dog's steps.

Lastly, the archaeological references were not limited to smartphones and computers, there were also a few remarks about mechanical watches in the discussion. That was because of the questions in the meaning part most of the time, but sometimes it was spoken naturally. Mechanical watches were mentioned mostly in terms of their working principle as a self-moving machine (Participant A, 35:30- 36:00) and interactivity with users. Participant B (06:03- 07:07) told a story about his only mechanical watch as below:

> "…I have a mechanical watch, but I never wear it anymore but that was a Seiko watch that was powered by the movement of your wrist…It's the only product that I ever bought because I was seduced by an advert, so I went to watch the film Fight Club a long time ago, in a cinema, and it had adverts before the film... Anyway, there was one advert where they basically everyone was in space and they were cryogenically frozen, but they had these watches where they're able to sort of flick their wrist and the time would reset. And it because it had this motion where you would charge it through the walking. If you stopped using it for a while, it would pause the hands. But then if you shook your wrist, it would spin round to the correct time. And that's the only other watch I've ever worn. But they all do something quite interesting in terms of relation to, I guess in relation to time, which is quite funny, but I quite like, so, yeah."

It was very intriguing to hear this anecdote from a participant since it has a very similar element to the feature of Pulsar watch that is mentioned in section 5.1. where some of the predecessors of smartwatches were explored. For the Pulsar digital watch, the feature was actually a gesture where the user flicks their wrist to see the time. Similarly, here shaking their wrist resets the time. Also, there is the dependency of the watch on the user's body and movements. The same move still works with the smartwatch, too, although smartwatches have more haptic interaction with users through both the touchscreen and budges or nudges. The fact that this narrative took place in the discussion although there was not a question which is relevant to the archaeology might support the idea of that past and present are not separate and could overlap on some occasions. It is possible that past could revive in the present in different forms including narratives, discourses, or products. There could be implicit connections between the past and the present as archaeology claims.

Moreover, given the participant's words and the advertisement he mentioned, there was a connection to the idea that watches are parts of people's bodies even they were not 'smart'. Obviously, this Seiko watch does not relate only to the time and shows time in an abstract form but also relates to the space and walking as a human activity. It might have the potential to be a part of the body as it synchronises with the body. There are archaeological traces here in terms of

the physical interaction and dependency between the wearer and the watch. Although the smartwatch seems more autonomous than the above-mentioned Seiko watch, they all depend on bodily movements in different ways.

5.3.3.2 Quantified Self: through the Smartwatch

Quantified self as one of the main themes that became prominent in the focus group research has been also a controversial topic since 2007. This term was coined when two magazine editors created a website and launched 'Quantified Self' as a community for users and creators of 'self-tracking' tools (Wolf, 2011). It was supporting the idea that collecting measurable data of oneself is beneficial to understand how well that person lives their life (Yang, 2014). As it is seen on their website, they aimed to gather "self-knowledge through numbers." However, Lupton (2016, p.3) extends this term by describing it as follows:

> "While the quantified self overtly refers to using numbers as means of monitoring and measuring elements of everyday life and embodiment, it can be interpreted more broadly as an ethos and apparatus of practices that has gathered momentum in this era of mobile and wearable digital devices and of increasing sensor-saturated physical environments."

After the term was first coined, it generated a movement, became a cultural phenomenon and more research started to be done about this in academia. It draws attention to a situation where all the practices in everyday life are digitized, as the smartwatches do, and the human being has turned into a being that produces data by 'performing' all the practices of everyday life. These kinds of definitions have been revived the view of the body as a 'machine-like entity' (Lupton, 2013, p.26). However, this machine contributes to big data in this age.

The use of these self-tracking products in various fields, especially in work life, has led the concept to be associated with various issues such as productivity, Taylorism, Cartesian dualism, etc. (Moore and Robinson, 2016) Accordingly, this section will focus on the implicit reflections of the participants on this issue in many aspects. Obviously, participants were not asked about quantifying themselves, but they inevitably touched on this issue so often by explaining their experiences with smartwatches. This allows us to see how this concept is implemented in their lives and how do they react and adapt to this concept. This theme is created as an overarching title for the codes such as recording data, getting information, productivity, etc. Therefore, examples can be diversified according to the contexts.

Firstly, regarding productivity, Participant B (09:20- 10:15) explained how he used his smartwatch to organise his day when he was actually asked about the authority of smartwatches on them. He

was explaining how the smartwatch dictates him to do something, but it was obvious that he was glad to use these kinds of features and apps that he mentioned below:

> "I would say, I mean things have changed. Obviously, in like Participant C says, we're stuck in this situation where our time is in one location, but prior to all of this, my watch was the thing told me what to do because I've got Fantastical that's the biggest thing on my watch, which tells you what events are coming up next, what I'm teaching. I think, I look at it now, what is it? Although that's on 10% power which does my head in. It's the biggest thing then it's got like a visual representation of my calendar, a thing to play podcasts, a thing for tasks that I never sign off, and the Move, the ring telling me if I've done any moving. Yeah, so it would dictate to me what to do. A lot of time, now I'm turning everything on to do not disturb because I'm on zoom, Teams, Slack, web and they all go off on every device and it's all around me."

This description and the way of using a smartwatch is directly about both getting self-knowledge and productivity. Here the application, which is a calendar, seems the most important function of the smartwatch for the participant, so the distinction between work and private life has become blurred via the watch and the impact of the pandemic on this is undeniable. Having this digital calendar, on the other hand, reminds us of the physical personal organisers with calendars such as Filofax that are mentioned in Chapter 3 regarding of the genealogy of smartphone and self-tracking.

Moreover, the participant states that his watch dictates what he is going to do like a boss, recalls a kind of power relations. The fact that he never signs off the app that helps him fulfil his tasks shows a well-disciplined every day. Furthermore, the reaction of the participant when the smartwatch runs out of battery may manifest that he adheres strictly to this discipline. Therefore, this excerpt easily could relate back to the concepts such as time discipline and information discipline which are discussed in earlier sections.

On the other hand, Participant C did not agree with the idea that the watch tells her what to do. She described her relationship with her smartwatch from a pragmatic perspective and focused on the sense of reward:

> "…I don't feel it's in authority. I have actually disabled the move function, it drives me mad and I'm in the middle of meeting so I can't get up and walk around, but, no, it doesn't tell me what to do. But it allows me to kind of keep a record of what I do and therefore sort of almost feels like a reward in a sense (Participant C, 08:52-09:15)"

As it is seen in the last statement, besides the enthusiasm to be productive and thrifty with time which was also seen when the clock began to become widespread in daily life, attendees also indicated that they tend to record information to be able to see their progression. Some of them also like to share their performance with other people. When they were asked about the main purpose of using their smartwatches, the answers of two participants were about exercising and recording the exercising data.

> "…I really got into the habit of using it for exercise and recording exercise. Not that I exercise as much as I should do [laughing]…So, at one point I'll be able to look back in and have a look at my progress if I ever make any (Participant A, (03:06-03:20)."

> "If I go out for a run it tracks, I set it up so it uploads my movements to the web so that people can see what I've been working on (Participant A, 05:01- 05:14)."

It can be understood from the first statement above that there is a level that needs to be reached. Smartwatches provide new goals to users and then reward them. While sometimes this could be a graphic symbol like stars (Participant A, 10:23- 10:29) or a text that congratulates people, sometimes making the performance visible to the others can be considered as a reward.

Additionally, all participants expressed a sense of competition to some extent. Although this competition happens mostly when participants share their data through the apps, for participant C (19:27- 20:35), this comparison is beyond her control.

> "I don't share any of my data, I don't. I'm not on Strava. I'm on another app but I still private, so, I don't share any of that, but, so, that's interesting. 'cause I don't have that kind of level of communication that you're talking about. I'm just like... I don't care about people knowing how much I've done and judge me, but what I do is, there is an indirect kind of communication, I guess because it measures your VO_2 Max. You know your fitness and so it collects…and anonymizes data from all the users, and it tells you in what quartile you are of the population in your age and size so, that kind of thing is... You know that comparison… competition is on at that stage. Even though I don't share directly any of that information. Of course, it gets. It gets shared indirectly and it kind of feeds back, so that's, I guess the only kind of communication which is very indirect."

Participant A (20:35- 20:45) supports her argument by saying "yeah, I mean the Tomtom app is kind of a simpler, more rudimentary version of that, and it will just happily tell me how I'm not as fit as most men my age [laughing]". After this, the participants desperately discussed among themselves whether they can disable it or not. During the discussion it seemed that quantifying self was crucial both in terms of knowing about self and improving self:

> "I connect mine to Runkeeper, which is a similar thing to Strava, right, but that was just for push bike riding. I only ever used it for that although it did improve running or whatever, and I again connected to a couple of people. But…the competition I found was more a case of like seeing the following, when I was doing it in the summer, if I could get to work like slightly quicker than next week and I was competing against myself, but that might be 'cause I'm into games... It's almost like chasing my ghost car, I quite like that…that was a weird thing 'cause I wasn't expecting that and so… I'd be riding and check the wrist to see like OK, I'm gonna hit that segment and I wasn't even going fast (Participant B, 21:07- 21:50)."

After these discussions, the question about how they feel if they cannot record this data when they forget to wear their smartwatches or do not have enough charge came up. By asking this question, how participants are adhered to the idea of quantifying was enlightened. Participant C directly announced that she gets worried about the data she missed (Participant C, 38:18- 38:21) and she replied to the question by saying "Drama major drama (Participant C, 42:06- 42:09)." Participant B supports this feeling and answers as below:

> "Yeah, hate it. If I forget to charge it and I'll get up in the morning and I'm gonna go for a walk. I'm like, oh no, I've blown it! My walk is not going to be recorded. Yeah, it doesn't matter I'm gonna go for like a two-minute walk, I'm just like, damn like now it's gonna think I didn't walk, and it's something's gonna like complain or I just I hate it yeah (Participant B, 42:09- 42:29)."

> "The thing that really annoys me actually about mine is it won't start. I'll start, I do a warmup walk and I'll set it, you know, to get going, and then it won't, it'll just say 'please wait' and then I'll start running and it will be like a half a kilometre before it kicks in. And that's what I have to add it Strava to say, you know, I actually did 5 kilometres [laughing] bastard watch [laughing] didn't play ball (Participant A, 43:05-43:30)"

All these expressions seem like highly genuine acknowledgements about how the quantified self, so the quantitative information means a lot to the participants. The numerical or visual representations of these activities are deeply significant so that their absence even reduces the value of the actions. In addition, there is again a sense of pressure as well as personification of the smartwatch by attributing some human characteristics or acts like thinking. This issue will be discussed more in the next sections.

Concerning a kind of pressure or getting a constant flow of quantified data, an attendee's advice for the others who do not track their sleeping data is below:

> "My advice would be, do not get into that because you will start wearing it at night, compulsively. Take it off because how many hours did I sleep, and did I wake up and for how long was I awake and was my sleep deep or light? (Participant C, 44:40- 44:54)"

This situation could be considered a representation of how sleep, which normally is the only time that capitalism cannot steal from people, eroded if not completely taken over (Crary, 2013). Therefore, as in line with Crary (2013, p.3), 'sleepless consumer' is getting formed by the system in which the digital products such as smartwatches are used. This shows that smartwatches organise everyday practices including sleeping as watches did in the past, but even in a more pervasive and manipulative way.

On the other hand, the use of the word 'compulsively' is thought-provoking, and in line with this, Participant B (45:12- 45:48) remarks that he would be distressed if he allowed the smartwatch to track his sleeping.

> "…Yeah it did say oh you slept for so many hours and I thought and I actually felt like it'd be quite oppressive and felt like oh now I should wear it to bed so[..] I know how long I sleep tonight what time I go to bed and I know what time I wake up in the morning. So, I don't need a watch to tell me, but this was a sense of…Because I can know that there's then that sort of pressure, you know, to know it..."

Based on the discussion, it could be said that while getting accurate information and seeing themselves in quantified, numerical forms are vital, users can ignore how these kinds of products work and generate the data on specific issues:

> "I've never really understood how it tracks sleep yet. Anyway. (Participant B, 44:09- 44:11)"

Unlike mechanical watches, smartwatches are mostly digital products, and their working principles and structural elements are not visible to users. Their design aim to be seamless and look like black boxes with an image of high technology. Consequently, they are enigmatic for most users. Likewise, smartwatches summarise and process the data and transform it into basic infographics most of the time and the user do not need to know about the technical process.

5.3.3.3 Intimacy: between Smartwatches and Users

The intimacy which is defined as 'the state of being personally intimate; intimate friendship or acquaintance; familiar intercourse; close familiarity', 'closeness of observation, knowledge, or the like' and 'close connection or union' (OED, 2021) has expanded its meaning beyond human-to-human relationship and become more visible in the interaction between human and non-human.

Since intimacy is about knowing and caring for someone (Jamieson,1998) it would not be so wrong to make an analogy between the people who know someone and care about them and smartwatches that know people by generating data about them and constantly interacting with them. Intimacy is seen at different levels in this relationship as smartwatches not only enable people to communicate with their relatives and friends but also stay close to the human body itself and send it constant stimuli, which is considered as an enhancing factor for intimacy. This section explores the reflections of participants on smartwatches in respect to the intimacy concept by looking for a variety of indicators.

Firstly, as it is mentioned in previous sections, participants tried to describe their smartwatches by giving them different names. This is the first time when a kind of intimacy became visible at the beginning of the research as one of the answers was "Exercise buddy (Participant C, 03:54-04:00)". Calling 'buddy' to a smartwatch shows that there are some emotional bonds and loyalty between the user and the product. This statement may also indicate that the existence of the smartwatch alone can be a potential way of coping with the possibility of solitude.

Another participant described his smartwatch alternatively as "For me, it's a transhuman device, it's about augmenting me. I don't know why…I don't know what I call that, it is part of me (Participant B, 04:02- 04:14)" With this statement, the proximity of the smartwatch to the user appears as an extension of the body. Classification of the smartwatch as a transhuman device ascribes another meaning and function to the smartwatch like giving the user some abilities beyond the ones which people normally have. All of these seem highly sensible given that people carry these products on their bodies all day long with the goal of improving their health and performance.

On the other hand, participants were mostly talking about their smartwatches as they talk to their friends and personalised them. They were complaining about them, getting angry with them. However, in general, they see the smartwatch as a friend who encourages them to become better.

> "…when I got to that stage where that data was available, I found it useful to encourage me. To walk, to get up to do things and so occasionally I would see myself going […] I mean it's always moaning at me all the time to stand up at the moment for obvious reasons [laughing]… (Participant B, 05:26- 05:55)."

There is an obvious personification of the smartwatch here by assigning the act of moaning to them. The notifications and warnings take the form of complaints which are actually elements of

personal relationships among people. Moreover, reactions to smartwatches and talking to them demonstrate how people find ways to deal with smartwatches and create tactics.

> "…I have actually disabled the move function it drives me mad and I'm in the middle of meeting so I can't get up and walk around… (Participant C, 08:53- 09:01)"

Participants expressed very strong emotions and confirm the assumption that they have a deep connection with their smartwatches. The fact that these products are not actively with them long enough affects them adversely.

> "I don't need much more functionality, but I definitely know the battery will eventually go and there's nothing I can do about it now, and that will be the thing that pushes me over the edge, so that's really annoying... (Participant B, 40:03-40:16)"

Another factor that causes intimacy is the feeling that you are safe and in touch with people who care about you. This applies both in emergencies and in social interactions in everyday life. While this seems very useful in general, it can cause problems in some cases just like in the anecdote of Participant B (13:46-14:26):

> "…I mean, I hardly ever do the ECG thing. But the fact that it will do that, the fact it'll like phone somebody if I fall over…or it'll tell me if I'm gonna have a heart attack or whatever. It's never done that [laughing]. I quite like that, although I do remember one time in one meeting that someone else had an Apple Watch got numerous alerts to say that her heart rate was in a really bad way. I suppose it was a very stressful meeting. Afterwards, I kind of had to say look, it was a stressful meeting, but you were sitting down so the watch thinks you're running but you're sitting down… so I don't think you're gonna have a heart attack [laughing]. It was like oh my word, yes. So, if your watch starts going off in a meeting, get worried."

Although this story was narrated in a fun way at the meeting, it points to the discussion that this feature of smartwatches may be more harmful than beneficial. The possibility of such devices to cause anxiety, which is also confirmed by recent research (Andersen et al.,2020), is increasing due to this feature and these kinds of stimuli.

In addition to feeling safe or anxious especially about health, smartwatches provide another intimate relationship by mediating a new kind of communication instead of face-to-face interaction. This connectivity helps people to stay connected and feel a sense of belonging to some extent. As it is seen in previous chapters, sending some symbols through an app can be seen the same as texting messages and asking people how they are. In this view, for example, seeing

that his brother is running can provide relief for Participant A since he understands her brother is healthy and safe in this way. These kinds of instant communication might enforce the dependency of people on smartwatches. However, there can be also some sentimental values as is seen in the narratives of participants:

> “For me, my Apple Watch has big sentimental value because my dad gave it to me when I left for New Zealand and my dad recently passed away. So, lots of very sentimental value and I love it and I actually think it looks great on my wrist and I feel so guilty because I don't wear it and my mum will ask me where is it? Where is your dad's watch? You know, so, I feel terribly guilty and yet. So, it's a total addiction... I don't want to take it off. I'm worried about the data that I'm missing. It's ridiculous, I'll say it I’m addicted (Participant C, 37:44- 38:24)”

> “I got my mechanical watch… I‘ve had it for a long time…It wasn't a gift or anything, but it's just been with me and it's, you know, there's something about watches I think is there in the luxury watch as well. The idea that the mechanic ones is that they persist over time…whereas my smartwatch was a 50th birthday present from my brother and sister. So, it has a kind of sentimental value that really is at odds with the upgrade culture that we've been talking about here, where I should really be getting a Garmin…(laughs) it's like do I tell them, do they care? You know they probably don't. You know, they just expect it to last for it a few years and then you know…the batteries winding down quite quickly as well now, which again is different from mechanical watch where you just get other. You know you would get their battery replaced, just last years (Participant A, 36:44- 37:39).”

These two expressions were generated in the meaning part that starts with a comic in which there is a comparison of a smartwatch and a luxury watch. When a participant talked about his mechanical watch, he was asked to compare the values of his different watches for him, and then other participants were asked about sentimental value of their watches. These statements may be considered as an indication that the tradition of buying luxury watches as gifts may extend to smartwatches. However, this attempt could not be successful due to endurance problems. Although this situation contradicts the planned obsolescence of which smartwatches are a part, being addicted to these objects still visible in conversations.

> “I actually go to bed with mine, so I actually do not take it off. I take it off when I charge it, but it's when I'm sitting at the desk or when I'm in the shower. So, I could wear it in the shower, but I figured it doesn't really matter. But yeah, I actually do not take mine off (Participant C, 43:38- 43:56).”

When Participant C (44:24-44:26) told that she goes to bed with her smartwatch to track her sleep quality and describe this situation as ‘a well of joy’ by clapping her hands happily, a discussion started among participants. While Participant A thought that he would be stressed if he wears his smartwatch in bed and said that ‘…You might be aware of the watch so you're waking up to check if it's working [laughing]…(45:12-45:18)’, Participant B (45:00- 45:10) was more interested in this feature. He said that it would be good if he has a good sleep for stress and he should think about using this function. However, Participant C (44:40- 44:54) strongly suggests not getting into that since it becomes an obsession. Going to bed with smartwatches demonstrates a high level of intimacy since it is one of the most private spaces for people. It is usually where people be alone or with the most loved ones. Such closeness can be the best sign of the penetration of smartwatches into daily life and the private sphere.

The aspects and situations reviewed so far include emotional, social, and physical intimacy to some extent. However, these different levels of intimacy often emerge all together, evoke and intensify each other. The last excerpts which are arranged in order below exemplify this clearly:

> “ Participant B: Mine does wake me up now if I'm wearing it on the days when I can sleep with it, it slowly taps direct your wrist wake you up which is like, which is actually quite nice, to be honest [laughs]. That's like 20 minutes before the alarm that goes off like a klaxon [laughing]. It's a traditional one, but it's quite nice on…Oh yeah, OK in 20 minutes, time there’s going to be a really loud sound, I'm getting ready (45:52- 46:12).
>
> Participant C: Brilliant.
>
> Researcher: As if somebody touches you to wake you up.
>
> Participant B: Yeah, in a nice way, you know, I quite like it (46:24- 46:28).”

In this example, a physical interaction becomes prominent and provokes emotional intimacy. Concerning this physical contact, since the smartwatch taps to Participant B’s wrist like a human to wake him up, it could be meaningful to say that there is a delegation of a human action to a non-human again. It could be also said that the distinction between human and non-human is getting unclear at some points. For instance, the fact that human is constantly turning into numbers and data and its performance is regularly measured like a machine. On the other hand, the non-human behaves like a human and turns into a friend for people to some extent.

5.3.4 Discussion

The initial analysis of the data indicates that participants' perceptions of smartwatches, their thoughts, and experiences about them vary depending on their purposes and motivations in using these objects although there are many common issues. On the basis of the focus group discussion, one of the subjects on which there is consensus is being able to obtain the most accurate information about the self. Recording the data about their activities, tracking themselves, and see their progress as quantified is very important for participants so that they do not resist being monitored and mostly accept this even though they sometimes feel uncomfortable and try to restrict data sharing to some extent. They are aware that they're getting transformed into small pieces of big data, but they do not give up quantifying themselves for the sake of being in progress, more productive, and more accessible.

This quantified way of living had begun, as McLuhan (1987) stated, with the effect of the alteration in the perception of time towards a sense of duration. Clocks provided people with an image of the universe that can be quantified (McLuhan, 1987). Therefore, quantifying time and so the everyday practices began a long time ago. As it is discussed in the earlier sections, social and individual practices including sleeping became disassociated from people's biological needs and were organised under the time discipline. However, time discipline seems to be altered and expanded to more specific qualities and various metrics beyond time. In addition to the perception of time, the perception of the self is also prominent. The self is being more and more fragmented and temporalized. People now depend on data to understand what they need besides when they need to do something.

On the other hand, as participants sometimes mentioned they feel under pressure about having the most accurate data just as people used to get worried about the accuracy of their wristwatches in the past. At this point, there is a conflict between feeling good to access all the data and feeling oppressed by it. For instance, one participant expressed that she does not feel the smartwatch is in authority, she sees this device as a buddy who helps her. She has a high level of intimate relationship with it as well. However, she also explains that she disables the notifications since they disturb her. Moreover, she admits that she feels obliged to go to bed with her smartwatch almost every night. So, the agency of users occurs to be another issue that could be explored. Similarly, another participant thinks that he would not use the watch to track his sleep, and he generally seems to be more wary about being monitored. Concerning feeling stressed or disturbed, the other participant seems very happy with the notifications and his approach to smartwatches generally was more pragmatic when data privacy was discussed.

On the other hand, there is a strong tension and relation between the notion of intimacy and quantified self as the two themes which have the most common references in the analysis. Participants most of the time talked about their pleasure or complaints about smartwatches relating to quantifying themselves. They express their emotions about their smartwatches depending on quantifying function. Sometimes this ability of recording data causes intimacy as it happens about measuring heartbeat rates. Sometimes physical/emotional intimacy allows the smartwatch to rule on the participant's body. Furthermore, the feature of sharing their data with other people may help users to maintain intimate relationships, too.

Another dilemma is about being happy with the benefits of smartwatches or feeling anxious about not being good or productive enough. With an archaeological view, it might be said that the concept of productivity and efficiency has its roots in cultural and intellectual shifts between the 14th and 17th centuries (Thompson, p.1). However, that new time-discipline had been internalised by many people with the agency of Puritanism which depends on the belief that hard work is redemption for people (Thompson, p.94). Similarly, there should be an agent of internalisation of information discipline today as people adopted this quantifying and tracking practices. At this point, different levels of intimacy may be one of the ways in which people conform to this culture. In particular, the haptic instants of smartwatches which had the society get into tactile mode may be a contributing factor to the intimate relationship between smartwatches and people. It is important to explore the elements that generate this intimacy and internalisation of information discipline.

Another outcome of this research is the ambiguity in how participants allocate similar functions between their smart devices in their daily life. Also, there is still transitivity between the uses of smartphones and smartwatches in many respects such as communication. On the other hand, smartness may have been questioned to some extent since there are many complaints on accuracy and some tactics of users against the watches. Lastly, it might be said that smartwatches have been extensions of both mind and body as the themes demonstrate.

Regarding the experience of users, it has seen that the experience spreads to different products and media spaces such as earphones, television, social media, etc. For instance, someone can see their heartbeats on their TV screen while exercising. This is quite interesting because then this turns the self into an object as well as a subject. It is not only a viewer anymore. The experience of the smartwatch requires and creates an ecosystem including many nonhuman actors, it even extends to the precursors of the smartwatch. It is also reasonable to say that there is not an exact linearity in which the new product succeeds the previous one completely.

Having mentioned non-linearity, in this discussion, Covid-19 was very influential so that it might be possible to consider it a kind of threshold. It influenced the way these products were used. Also, not being able to be mobile reduced the need for a smartwatch and limited the use of it. Smartwatches as the products that are highly associated with exercising might have been less used than normal for some time. This association might be one of the reasons for people to stop using smartwatches at certain intervals.

Having discussed the main outcomes of the focus group discussion, the following sections will present my own experience with two different smartwatches. In this way, there will be opportunities to discuss these themes and explore different dimensions and issues regarding using smartwatches.

5.4 Autoethnography with Bangle.js Hackable Smartwatch

Bangle.js is the “world's first open-source hackable smartwatch” (*Banglejs*, no date) (Figure 31). This smartwatch project was introduced in 2019, on Kickstarter which is a crowdfunding platform that promotes creative projects and helps them to be actualised (Williams, 2021). Bangle watch was designed to allow users to customise their smartwatches according to their preferences. It enables users to install apps which are created by the online community through a website or develop new apps by using JavaScript or another graphical programming language such as Blockly. The watch which is called AI-enabled has some default features like Bluetooth low energy, accelerometer, and GPS (Williams, 2021).

This product was chosen for this study as it is a different smartwatch than the mass-produced ones in many respects and it demonstrates a strong contrast to the other product (Apple watch) which is used in the research. It is customisable, programmable, and easy to take apart. Also, it is a more of an independent device in terms of data sharing when it is compared to other mass-produced smartwatches such as the Apple watch. As it has seen in the previous sections, people are becoming increasingly reliant on smartwatches and so these types of products could offer people to take control, and the ownership of data back to some extent. This product is considered to provide the research with different experience and insights into the future design of smartwatches.

Moreover, as this watch was constructed in a kind of reverse engineering method, it relates to design archaeology approach which goes back to the past, deconstructs it, and explores its components. Also, the distinctive aspects of this watch could indicate the potential future of smartwatches in a similar way to design archaeology, which finds something new in the old.

Furthermore, the creation of this watch could inform the alternative design approaches towards smartwatches in the future in many respects such as sustainability, customisation, etc.

Figure 31. Bangle.js smartwatch

Bangle hackable watch is a product that tech-savvy people might want to have and use for experiential purposes or fun. Nevertheless, as O'Neill (2019) stated, it is supported by a profound intent which is about the significance of open source and the rights of people to their data. Accordingly, O'Neill (2019) mentions that the project might lead to a 'community-driven open health platform' that people are able to make or get compatible gears. In this aspect, the Bangle watch is highly different from the other popular mass-produced smartwatches. It gives room for customisation and design, as well as interference to the users, while the other smartwatches offer a more seamless and implicit experience.

Furthermore, as it is above-mentioned, the Bangle watch is a product of reverse engineering. The creators of this watch took an existing watch, then they changed its firmware to their Open-Source software (Williams, 2021). This reverse engineering process is aligned with the archaeological standpoint of the research.

Moreover, there are many aspects of this watch which are reminiscent of the mechanical watch, the latter being one of the ancestors of smartwatches. The most easily noticed one is, evidently, the physical elements of the design. It has a huge (5 x 5 x 1.7 cm) circular case with stainless steel ring with three metal protruding buttons (Figure 32). These buttons have concave surfaces and make an audible clicking sound when they are pressed. They completely convey the message and feeling to the user that something has been accomplished when they press them. It gives a clear sense of a mechanical action. The middle button is larger than the other two and seems like a substitution of the crown in a mechanical watch.

Figure 32. Front side view of three buttons

Another physical aspect that recalls the mechanical watch is its weight, which, in the past, was heavily associated with quality. However, given the inclination of technology to evolve into smaller and lighter products, this presents a slightly conflicting aspect. Additionally, there is another quality that could be valuable in terms of archaeological perspective; the battery of this smartwatch is highly durable in contrast with most smartwatches. It could last almost a week. Thus, using that smartwatch is a closer experience to using a mechanical watch since the user experience does not get interrupted by the need for charging as often as other smartwatches.

Similarly, the creator of the project emphasizes that they intentionally designed this watch as a long-lasting product. It could be disassembled with four screws and has a replaceable battery. The statement on the Kickstarter website of the project confirms the intention clearly: “Nothing is glued shut on this device!” (Williams, 2021). Therefore, the design aspects of this watch seem reasonable when the purpose of making it durable is taken into consideration. On the other hand, given the fact that users could disassemble and modify the product, it stands against the technological devices seeming like black boxes to users.

Moreover, the Bangle watch is designed to work self-reliantly. It does not depend on any other product or service (Williams, 2021). This could be viewed as being in opposition to the upgrade culture which most smart devices rely on. Its app store is completely free and the creator of the project states that they never share users’ data with third parties, and the apps do not rely on third party cloud services (Williams, 2021). This is another manifestation of the underlying philosophy of this project and how it contradicts prevalent smart devices.

These basic information about Bangle smartwatch and my initial observation constituted my first impression of the watch. Although I had not used any smartwatch before, I found it different than

the most common smartwatches based on my previous research. Then I started use it as my first smartwatch and explored my own personal experience allowing me to engage with the product and see some unexpected outcomes.

As I am going to describe and interpret my experience with this smartwatch in next paragraphs in more details, it would be sensible to give background information about myself as the subject of this experience. I am thirty-two years old, Turkish, female doctorate student residing in the UK for three years. It is useful to note that this observation, exploration and reflection of the relationship between smartwatches and me is unavoidably bonded to my point of view and cultural background.

To describe my experience, I am going to start with the first thing I saw when I turned on my Bangle watch: 'Jan 1, 1970'. This date reminds me of the time when first digital watches appeared, but, in fact, this is the date which appears on the screen of the Bangle watch whenever I turn it on after it runs out of charge (Figure 33). I do not know the technical reason for displaying this date, however, it was a bit tiring to adjust it every time. I was setting the time by pushing the buttons until I realised that there is a 'Set Bangle.js Time' in the 'about' section on the website of this smartwatch. When you click on that, it automatically sets the time on your watch if you connected the watch to the website by Bluetooth. I discovered this on YouTube (Gary explains, 2020) while looking for how to connect the watch to my iPhone. However, on another day, it did not work after I updated the firmware, and I had to set the date manually again.

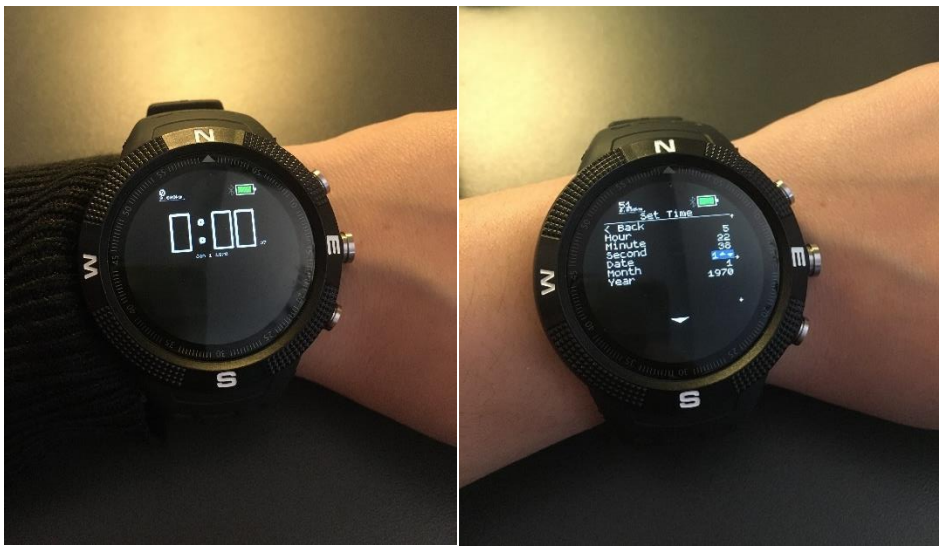


Figure 33. Setting the time and date

As is mentioned in the previous paragraphs, there were two smaller buttons to increase and decrease the numbers, while the middle button is used for confirmation. Holding the button down for a few seconds to reach the targeted number does not work. Consequently, I needed to

press buttons for each number separately. Even this small detail tells us something about the position of this watch between digital and analogue worlds. In a world where we used to accomplish all tasks in seconds, this watch forces users to slow down in some cases. This might not be a deliberate preference, but it supports the idea of creating a long lasting and robust watch. It also contributes to the idea of users being makers, and to the intimate feeling that arises from engaging with the technical aspects of the watch to some extent.

However, given the fact that the website provides a quicker method to update time, it would be more appropriate to say that there is a conflict between its hardware and software design. It also shows that something is overlooked regarding the user experience at that point. Alternatively, it might be said that this watch offers a more engaging experience and analogue feeling to the users when they use the watch independently of a computer.

When I first got this watch, I was surprised by its size. It seemed giant to me. It was too large for my wrist, and it has a more masculine appearance with all its robust black materials. As soon as I saw the watch, I thought it was not well-designed for women. Most of the time, I preferred to hide it under my sleeves. Nevertheless, it gives me a sense of being sporty in some way. I feel as though the importance of the exercise I am doing is heightened when I wear it. I could go so far as to say that wearing the watch gives me the feeling of being part machine. To sum up, in terms of its appearance, it looks sturdy, as its creator confirms (Allan, 2020). However, this is consistent with the idea of creating something that could last for a long time.

After I wore the watch and saw how it looked on my wrist, I charged the smartwatch as all technological devices before turning it on. It has a magnetic USB charge cord, so I charged it with my laptop. However, my first attempt was unsuccessful as I thought the cord would have worked in any direction as it was symmetrical. Then I realised there is one correct way to use it (Figure 34). There is also a tiny sticker on the cable that warns the user about in which direction they should connect the magnetic cable and the watch (Figure 35). This was an inconsistency between the form and function as well as a problem with visual communication.

Figure 34. Charging Bangle watch

Figure 35. Sticker for the direction of the charger

That was my first failure in using this watch, however, I was going to have more complicated problems the more I used it.

After charging, I turned on the watch, a user manual which explains how to use the watch and its buttons appeared on the screen (Figure 36). There were nine different pages in the manual. Unlike the clock's circular display, these pages were rectangular in shape, with the corners seeming to be cut off by the clock's form. In terms of design elements of the interface, it would be appropriate to say that visual aspects need to be improved although they look consistent. Regarding the layout, spatial relationships could've been considered more carefully.

Although there are some problems with the readability and visibility in general, the chosen font represents this device's philosophy very well. The typeface is so similar to the font that was used in early computers and also in coding. This font also resembles to the font which was used as the default in the Command Prompt in Microsoft Windows ('Terminal (typeface)',2022). Therefore, as a programmable watch, the font seems consistent with the main promise of this watch.

Figure 36. Manual for the watch

However, navigational, and informational components are not clearly designed. Especially, for an object where its buttons are used dominantly, the fact that there is also a touchscreen has been confusing at some points. On one of welcome pages, it was written that the watch has a 'simple touchscreen', 'it'll detect touch on left and right' and 'horizontal swipes work too'. However,

except these welcome pages I could not use touchscreen again. The menu and generally the interface of the watch were designed to make users move vertically. Consequently, I could not use that feature and do anything by pressing the left and right sides of the screen. I tried to use it a few times, but it did not work.

Nevertheless, one day I wanted to upload a game for fun, and I uploaded the first game I saw in the App Loader without reading its explanation. Then I realized that the game which is called 'animals game' was a toddler game. Once I uploaded that game by mistake, I touched the screen on the left and right, and it was working (Figure 37).

Figure 37. Using touchscreen in the game

In terms of touchscreen technology, this watch's concave surface, which is so similar to wristwatch crystals, does not create an urge to use it as a touchscreen. In addition to this aspect, the screen is not sensitive enough, and it does not meet users' settled inclinations for using a touchscreen.

Nevertheless, in basic use of this watch, there are not so many cases that users would need to use the touchscreen. Therefore, in terms of my experience, the touchscreen was not the key feature for using this watch. It was not as useful as the buttons which I used to accomplish any tasks most of the time. Hence, it could be said that having a touchscreen might not be so necessary for this product when other physical attributes are considered. Although touchscreen is an element that cannot be detached from smartwatches, it is thought-provoking to imagine a smart device without a smart surface.

At this point, touchscreens can be discussed as elements that make watches smarter. As our expectation from a smart product is also being responsive to our actions, a lack of sensitivity or lack of a proper touchscreen might reduce the perception of smartness. However, whether

intentionally or not, the Bangle watch provides a kind of hybrid alternative with its different aspects that address both digital and mechanical senses.

Besides the explanations on how to use the watch, there was also a notice about what users should do if the watch stops (Figure 38) on one of the welcome pages. That was to hold buttons 1 and 2 for a few seconds to reboot the watch. At this point, the watch seems more like a computer that might need to be reset in accordance with the definition of wearable computers. By including this warning, the watch cues that the user will be involved in some repairing process with some physical actions rather than giving instructions by talking to the device or touching on the screen. In terms of interface design and the language, with the word 'reboot' here, the watch also employs a computer terminology.

Figure 38. Rebooting the device

The first thing that I did after I turned on the watch, set the date and time, and review the manual was to upload a pedometer. When I go to the website and find the App Loader (Figure 39), I saw the 'Active Pedometer' app. When I click on 'read more', I found all features of the app under the 'Active Pedometer Documentation' title (Figure 40).

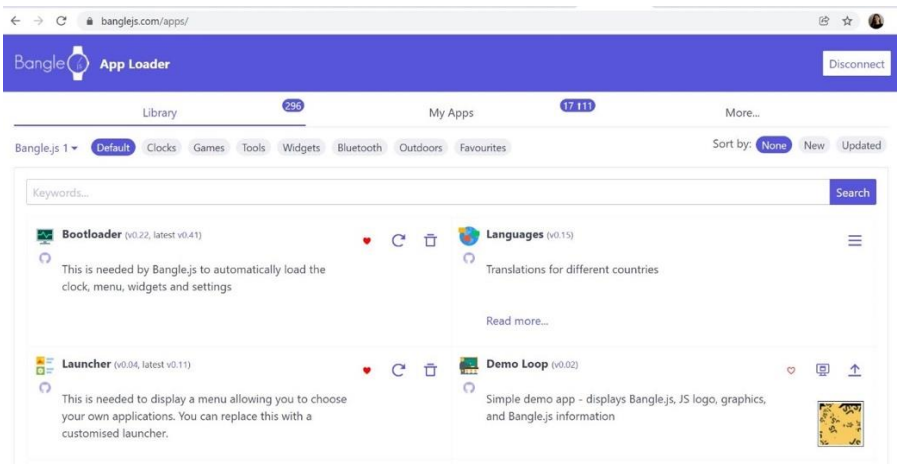


Figure 39. App loader (Bangle App Loader, 2021)

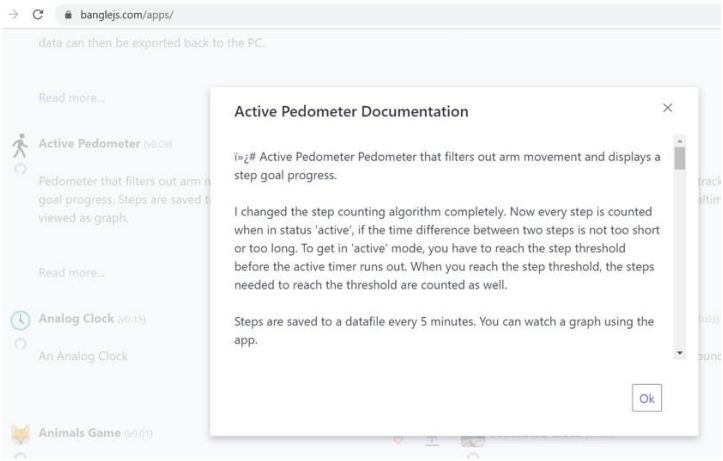


Figure 40. Active Pedometer Documentation (Bangle App Loader, 2021)

As it can be seen in the Figure 40, the first person is used here as the app developers are mostly individuals rather than companies. Moreover, a sort of technical jargon is used afterwards to mention the features and to give instructions to users on how they could import the data file into Excel or how they could convert 'UNIX' timestamps to dates by using a formula (Figure 41). Hence, the relationship that a user can establish with the data is highly different when this smartwatch is used. It seems that users can be in more control over their data. Moreover, how the smartwatch creates a kind of ecosystem with other applications and software is seen here again. It is already presumed that a smartwatch user has a computer, a smartphone and some specific applications.

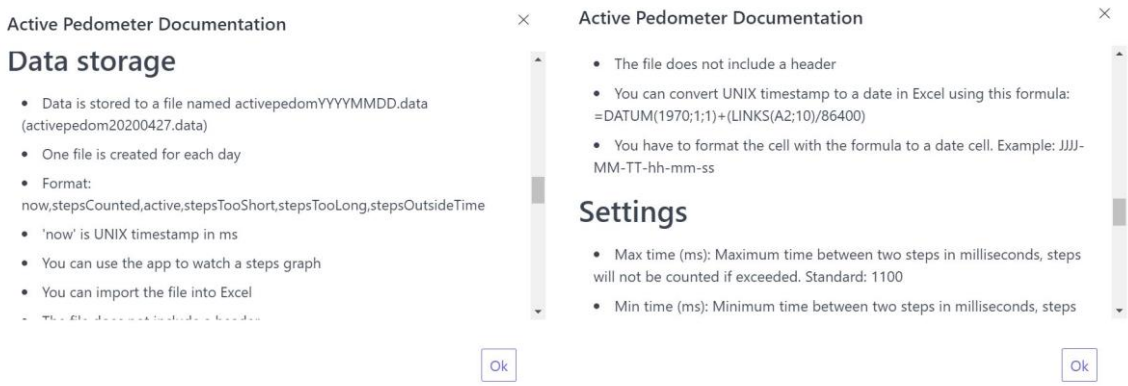


Figure 41. Data storage and settings for active pedometer (Bangle App Loader, 2021)

The active pedometer app positions itself as a more sensitive pedometer by stating arm moves are excluded, and the steps would not be counted if the duration between two steps is excessively short or long. It also indicates that it is necessary to meet the step threshold to start the 'active' mode. Steps would be counted only if they are completed within a given amount of time. Additionally, the settings enable users to adjust many aspects such as step thresholds, step length and step sensitivity (Bangle App Loader, 2021) (Figure 42).

Figure 42. Settings for the active pedometer

The app carries the concept of quantifying to a different level, provides an opportunity for the user to personalise the watch and to take part in the process actively. Therefore, the agency of the user seems to increase here. Personally, this customisation aspect increased my confident in the results and encouraged me to keep using the watch. Seeing the calculation units also contributed the trust I have in the watch's precision.

If we get back to my experience, after I paired the watch in the App Loader via Bluetooth of my computer (Figure 43), it was an easy and quick process to upload this pedometer app. However, in contrast to the statement in the documentation, numbers on the watch screen are not large and readable enough (Figure 44). Also, despite the customisation process, I was still a bit suspicious of its accuracy in counting my steps. Sometimes the numbers did not seem precise and reliable to me.

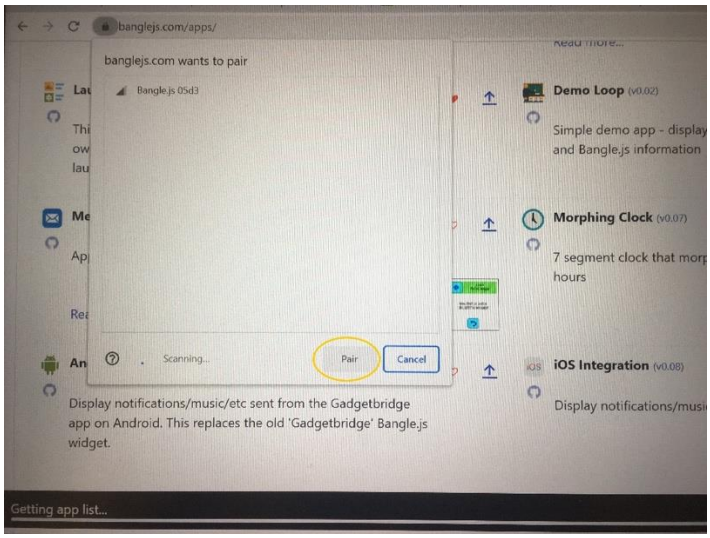


Figure 43. Pairing the watch to use the App Loader

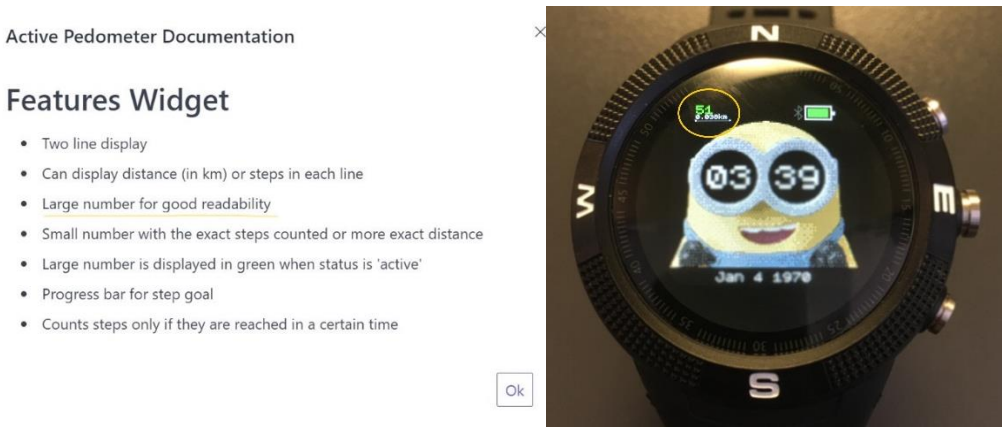


Figure 44. Step counts on the watch screen

After the app was uploaded, a notification appeared on the watch that tells me to hold button 3 to reload. This notice comes into view whenever I upload an app to the smartwatch (Figure 45).

Figure 45. Last step of uploading an app

Although uploading an existing app to the watch from the App loader seems effortless, overall, it has been challenging to use Bangle watch since the very beginning. Besides its physical discomfort which come from physical attributes, it was also problematic to pair it with my mobile phone. Connecting this smartwatch to an iPhone was not possible. Although I saw some solutions to this problem in blogs, they were all possible by programming. As I do not have programming skills at that moment, I could not try them. However, majority of users were complaining the same issue, and they stated these suggestions did not solve the problem (Banglejs, 2021). Therefore, I tried to connect it to my old Samsung phone. Even if I do not know all the advantages of connecting it to my phone, I wanted to do this. At least I was hoping to see my step counts on my phone as well as the watch. Nevertheless, the Bluetooth in the watch was not visible either to my phone or my laptop. I tried to find something about Bluetooth in the App Loader, however, I could not manage to pair them.

I found iOS integration app in the app loader which is designed to enable users to get notifications from their iPhones on their watches (Figure 46). However, it was mentioned that sometimes Bangle watches might not be seen by the Bluetooth scanner of iPhones which also explains the above-mentioned problem. The suggestion was to download another app which can scan BLE devices. I uploaded another app which is called Bluetooth BLE device finder. However, this app did not detect my Bangle watch even though it scans every device with Bluetooth around.

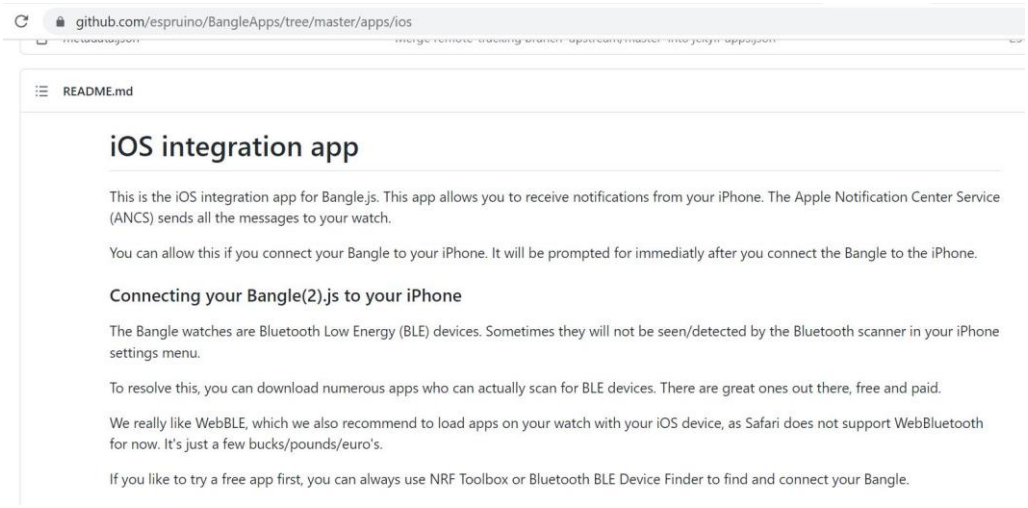


Figure 46. iOS integration app

All of these steps I need to follow made the process longer and exhausting. In general, all my attempts failed for the first times. I encountered many problems and errors while using the watch (Figure 47 and Figure 48). It is reasonable for this watch to be in a kind of post-incubation period and have some weaknesses and bugs. However, it revealed the way I, as a non tech-savvy user, interact with technology and an unknown technological product.

As another attempt, I tried to upload a bold watch app which provides a graphical image similar to the face of a mechanical watch, but it did not work. After that, I tried to upload an analogue clock to the watch, but it did not work, either. Finally, I found a fun watch face with a minion. That was another app which was developed by the community. In my opinion, having the chance to find many options especially apps that I could enjoy was the best advantage of this community-driven system.

Figure 47. The errors which are encountered while uploading apps

Figure 48. The errors which are encountered unexpectedly

Another application that I wanted to have, was the heart rate monitor app. The reason I wanted to have this application was the fact that I have heart palpitations without any medical reason. As I had experiences that are similar to panic attacks and I used to get tired easily for some time after I had covid, I have always been curious about my heart rate. However, when I first tried to use the app, it did not work. Eventually it measured my heart rate, but it was not accurate, and the result was too low (Figure 49). There was also another element in this app which is called confidence. The confidence rate was %0 for that first attempt. Only after using it for the first time I realised the statement on the website about this app: 'Grey out BPM until confidence is over 50% (Bangle App Loader, n.d.)'. Then I managed to get more accurate results, and it took around 30 seconds to reach %100 confidence (Figure 50).

Figure 49. First measurement of heart rate

Figure 50. Heart rates at different confidence levels

The confidence level aspect was another element that double check the precision of the information and might have a strong effect on users to make them believe in the results. It gives a feeling that there is enough control on data.

The graphic was so close to the real ECG graphs, and it made me feel a bit nervous at the beginning. It demonstrated the rhythm by moving graph and it had another red graphic which went up and down simultaneously with the main white graph. Especially when the graph went down, I felt a bit anxious for a second. I got scared of the possible result particularly if I used it while I was feeling unwell. Sometimes this heart rate monitor worked for a few minutes but could not provide any results. I could not understand the reason behind these errors, but the position of my arm or the proximity of the watch to my wrist might be the possible reasons.

These were some of the technical issues that I experienced. In addition to these flaws, I also had some ergonomic problems. It was difficult to move or bend my wrist when I put this watch on because of its size, and weight. It put some pressure on my hand in different positions during the day (Figure 51). I even felt an ache on my wrist slightly. It can be said that, as an object, it makes the user be aware of its presence all the time. Moreover, I wore the watch a few times when I went out running. It was difficult to wear my coat when it was on my wrist as sleeves were not large enough to move my wrist with the watch. Additionally, I thought it drew so much attention because of its size. I could not be completely comfortable with it in terms of both physical and social aspects.

Figure 51. The instances where the watch felt uncomfortable

Lastly, I wanted to try to go to bed with the Bangle watch. I was always curious about how it feels to sleep with these kinds of smart devices, and how they raise an alarm in the mornings. Therefore, once I went to bed with it. When I woke up in the morning it was on the end of my bed. I did not even remember when I took it off. I did not feel anything like a haptic alarm or hear a sound. Therefore, I could not wake up on time on that day. I assume that I felt uncomfortable during the night and took it off at some point. When I attempted to use an alarm next time, there was an intermittent vibration on my wrist that makes me jump in my sleep. Then I gave up going to bed with it. It was such a unique experience for me as a person who had not used a smartwatch before. I do not think I was that enthusiastic about my sleep data and I prioritised my physical comfort at that point.

As a conclusion, I had some difficulties to use this watch both with the hardware and software. Especially, the technical issues caused a feeling that I'm not capable of using this smartwatch. It felt like it requires a kind of specialty and expertise to manage it like mechanical watches used to do. Then I thought I need an expert to help me with making adjustments, using existent apps or programming new apps, or control the settings since there were some terms which I am not familiar with such as 'debug info', 'HID', etc.

In general, this smartwatch does not hide the technology behind the it from the users in contrast with most smartwatches. It makes the process and technical aspects more visible and accessible. However, as a user, I realised that I would have preferred any technological device to do all tasks on its own by a small click on them or with a tiny command from me. I wish I had some main apps on the screen without any effort. This way of using a device was not the best for me in terms of technical confusion although I enjoyed playing with those big buttons and hearing some noises from them. The fact that this watch gave me some mechanical feelings created some conflict in my mind about smartwatches and how technological devices should be designed to provide the user with real engagement.

When the archaeological aspects are considered, having a sort of pixelated graphics and fonts and not having a seamless interface make this smartwatch closer to the digital watches. As the first digital watches had traces from the past as well as new futuristic aspects, a connection could be made between these products. However, this product has unique aspects as it aims to eliminate some of the aspects of mass-produced smartwatches and makes a statement by refuting the linear progression.

On the other hand, this watch is likely to give agency to users more than any wristwatches. It gives users room for designing their own smartwatches to some extent. Also, it seems like it is designed as a semi-product and an object of hobby. Nevertheless, without any programming skills or using apps for programming, it's not possible to use this watch in full capacity.

In terms of its philosophy, it can be said that there is an archaeological turn in these kinds of devices. There is a trend which stands against upgrade culture by trying to retrieve some values from the past such as using a product for long time or repairing it instead of buying a new one.

At this point, this watch has similarity to Fairphone which is a sustainable, modular smartphone (Story, 2022). This project which started as an awareness campaign provides the opportunity to recover the phone's separate parts and recycle the phone to change the trend of upgrading your phone every 2-3 years (About us, 2022). There is a call for long-lasting technological products although it is not the mainstream. Moreover, it seems like there is a demand for privacy and data security focused systems when the popularity of independent/open-sourced systems are taken into consideration.

5.5 Autoethnography with Apple Watch Series 7

Apple watch, having the largest share in the market (Laricchia, 2022) and being the most popular smartwatch, was considered appropriate for this research. This particular brand was chosen for having the most related features and being the most used smartwatch. It has many features and services that provide opportunities to experience most of the controversial issues about smartwatches. In fact, it would not be possible to understand the smartwatch and the related phenomena completely, without engaging with this device. Apple Watch Series 7 was chosen as the latest and supposedly the most developed version of Apple watches at the time this study was conducted. Additionally, its unique features, such as measuring blood oxygen levels, fall detection, etc. were the other reasons for its selection. Moreover, this watch was a model with GPS + Cellular, chosen due to the fact its features can all be used independently of my phone, and to evaluate if the smartwatch could be a substitution for the smartphone. This was one of the issues that had arisen from the focus group study.

In this section, some notable instances during the period when I used this watch will be described and discussed.

5.5.1 First Encounter with the Watch

My experience with this Apple watch started as soon as I hold its box in my hands. I recorded a video similar to unboxing videos which are very popular recently. As I also stated in the video, my first thought was that this watch was going to be easier to use than the Bangle watch because it is light, and it has seamless design. I had this preconception due to the company's promises such as designing user-friendly products. Moreover, I had learnt that I needed to upgrade the software of my iPhone to iOS 15 to be able to use this smartwatch. The upgrade culture was in charge from the very beginning.

In the video, when I opened the box and saw the case, I was a bit surprised, and I said: “Oh, it’s smaller than I expected!”. That was the first moment when I was so close to the Apple watch and held it in my hands. I had measured my wrist before ordering the watch and chosen the smaller case size, so I would not have the same issue as I had with the Bangle watch.

When I looked at the back of the case, my reaction was “Wow!” then I said, ‘these must be sensors, this side of the watch will touch on my wrist’. Considering the reason for my reaction, I would say that it was a response to see those eight shiny circles as a manifestation of advanced engineering and technology. They seemed a bit magical to me at that moment and I felt excited about the product. The circles I saw were blood oxygen sensors, optical heart sensors, and electrical heart sensors according to the Apple watch user guide (2022).

Getting excited and impressed by the sensors, feeling as if I faced with an extraordinary, out-of-world object or a technological wonder was surprising for me. Even though I knew about the watch and its sensors before, I was still excited. This magical sense that Apple watch created reminded me of the way Barthes (1972) describes Citroën Déesse as a superlative object in its time. Although they are two different products, creating such similar feelings and excitement could be the common aspect of them. Representing the perfection with certain physical qualities such as lightness, rounded forms, and smoothness which Barthes (1972) defines as an ‘attribute of perfection (p.88)’ may be considered the biggest similarity. Smoothness signifies perfection and creates a kind of spiritualisation, since the opposite disclosures ‘technical’ and human actions (Barthes, 1972) that might result in imperfection. So, the Apple watch obviously had this connotation in my experience. When I was holding it in my hands, the rounded corners and the smoothness of the case made me feel the same way.

Meanwhile, the red light coming from the back of the watch on my skin at night contributed to this magical sense (Figure 52). As I did not know that the watch uses red light to measure my blood oxygen at that time, it was surprising and fascinating for me. The physical proximity between my wrist and the watch was another element which contributed to me feeling excited and mesmerised. It was a visual sign that the watch was collaborating with my body to let me know how I was doing.

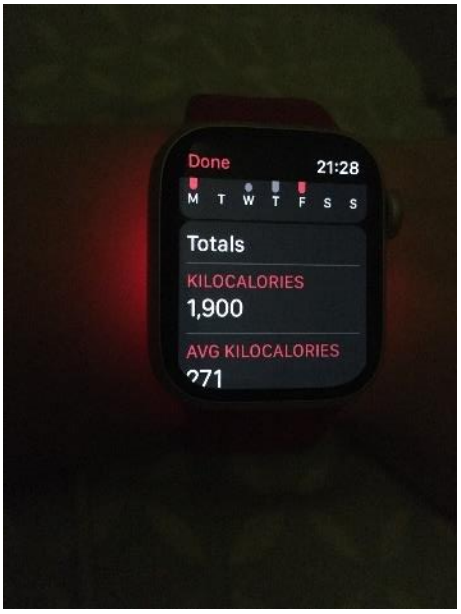


Figure 52. Red light on my skin

Regarding the design of the watch, compared to Bangle watch, there are not any parts except the crown that would create protrusions on the surfaces. Even the ‘digital crown’ is small, thin and can be used effortlessly. All parts of the watch are designed to be hidden and as invisible as possible. That boosts the feeling that the user does not have to deal with many things while using the watch and the usage is as seamless as the design. It gives the idea that it accomplishes everything itself in a flawless way. Accordingly, in terms of the relationship between user and product, the Apple watch hides the background technical processes from the user and offers a more streamlined experience. Hence, hiding the parts that help the watch function seems consistent with the philosophy of hiding technological complexity from the users and preventing confusion as it is discussed in Chapter 2 in the context of HCD.

Meanwhile, there was a manual with instructions in the box. This statement was written in the instructions for assembly: ‘Adjust the band to fit close to your wrist for optimal performance.' As we see in this sentence, smartwatches require maximum proximity to the user’s body. Although this proximity was suggested for a rational reason, it also contributes to the embracing and internalisation of the product.

Since users are supposed to keep this object close to their skin, the material of the product needs to feel natural. At this point, the material of the straps might play an important role to augment the feeling that this product is like a part of the user's body. In this watch, flexible and soft materials like rubber were used that make the watch light even though the case is still relatively heavy. There were some instances when I felt uncomfortable with the watch on my wrist and needed to take it off, especially at the end of the day. So, beyond any doubt, these physical qualities and the proximity of the product to the body enforce the intimate relationship between the watches and users. Nonetheless, the tactile impulses and nudges that are going to be discussed in the next sections could be the strongest elements to create intimacy, improve interactivity and responsiveness.

5.5.2 Set-up and First Data Input

After I assembled the watch, I tried to set up and start the watch by holding the side button hidden in the case. However, this opening process took a long time. After almost an hour I had to restart it, since it failed. I felt a bit frustrated and disappointed about failing in my first attempt as this was similar to my experience with the Bangle watch.

Then I tried to pair the watch with my iPhone, I was holding them very close to each other, waiting and complaining: 'It keeps saying bring your iPhone near the watch'. I was talking about the watch as if it was a person, as the focus group participants did before. Then, finally, the watch recognised my phone, and I needed to scan the watch face with my phone's camera by positioning the watch in the frame on my phone (Figure 53).

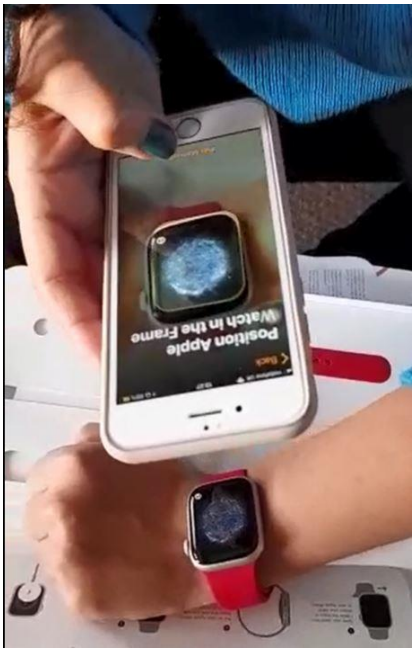


Figure 53. Pairing the watch and the phone

Even though all these steps were exhausting as I had to wait so long, the moments all these processes were accomplished were magical. The moving image on the watch face and simultaneously changing windows and texts on both the phone's and watch's screens contributed to this sense of magic. The fact that these two products worked synchronously and recognised each other automatically taking the process to the next steps turned this opening ceremony into a spectacle to some extent. Furthermore, this experience was one of the first indications showing that iPhone and Apple watch are inseparable parts of a whole.

When they were paired, the phone asked me to update the software of the watch and I had to wait for it. I took a few more steps and finally, when I clicked 'download and install', I needed to accept an agreement. In fact, I did not even read what those terms and conditions were. I only clicked on agree to be able to use the watch as soon as possible. I felt so impatient and did not care about the terms and conditions, as I thought they were kind of pre-agreed since the day I decided to buy that device.

After I paired the watch with the phone, the watch asked me to do some settings, from selecting the font size to the activity goals. I gave permission to many things such as location services, using Siri, finding my iPhone etc. under the shared settings section. These settings and allowing the watch to access so much private information made me feel a bit hesitant and pessimistic. However, to be able to experience all features and see the 'optimal performance' of the watch, I accepted most of the settings. As many users do, I voluntarily accepted to share my data with the company and to be a part of the big data for the sake of self-knowledge.

Regarding the activity settings, the information that I needed to put in were my weight, height, sex, birth date, and if I use a wheelchair or not. Since I recorded myself with the help of my friend while taking these first steps, I was able to see my reactions to these requirements later. My reaction was 'oh my god my weight?!' and I was laughing. That was not because I was surprised about this question. It was feeling unusual having to say my weight out loud, it made me laugh but also feel a bit uncomfortable. It was similar to telling someone your weight which is something people may not feel comfortable about. However, this time it was not only a person, but it was also a huge network. It felt like I told everybody in the world, although I knew that no one could recognise me in the crowd of the big data. This information is obviously required to use the activity app properly, but still it seemed a bit violation of privacy to me at first.

The following page was about setting a daily move goal that means how active I was planning to be every day. However, I did not have any idea about how many kilocalories I needed to burn a day, so, I put the goal which was called moderately there. I was not used to those kinds of numbers, and I trusted the watch in terms of what it claimed as moderate. I was going to

understand that it was too high for me later. Unavoidably, that was going to make me feel as if I was below the average in terms of how active I was.

The following settings were daily stand and exercise goals as minutes. Since I could not guess how many hours a day I would stand, I did not change the existing goal there as 12 hours. It was not realistic, either, as I spend most of my time by sitting on a chair and working with my laptop.

In the next step, I enabled the watch to measure my blood oxygen level during the day. I learnt this term and its importance when I had Covid-19. As I had difficulty in breathing in those days, I had to borrow an oximeter from NHS. I used to measure my blood oxygen level every day, record the results, and inform my doctor. In fact, I used to do the same thing as this smartwatch was going to do; measuring myself and keeping a log. The only difference is that my data will be seen by other institutions now, rather than NHS. Therefore, I allowed that feature without thinking. Since this unfortunate experience increased my awareness of this aspect of my health, I tend to know more about that and take care of myself according to the data. As it is obvious in my experience, Covid-19 pandemic has affected people in this sense and increased their interest in tracking their health and well-being (CCS Insight, 2022). Consequently, both the wearables market and the number of downloads of health and fitness related apps have grown with the impact of pandemic (Ang C., 2020; Fortune Business Insight, 2021).

The next page on the watch was about health and emergency services. I opted to receive low and high heart rate notifications and 'emergency SOS & fall detection'. As a person who has been lived alone for a long time, these features were important for me. It was a relief to know that the emergency number will be called even if I am alone. However, seeing these features on the smartwatch and thinking about those possibilities just because I bought a smartwatch made me feel a bit anxious. Even though seeing and accepting these features provide a sort of assurance for urgent cases, it was a bit scary to consider these possible scenarios.

Despite all these features, the watch warns the user about that it is not a medical device, but it conveys strong messages related to that and reassures the user that it is going to help them in case of emergency. It contradicts the claim of detecting changes in parameters accurately, by saying that it is not a medical device, and users should not act as if the watch provides them with scientific facts. There is also a statement on its box as: 'Apple watch is not a medical device', but, while I am setting up the watch, it seemed to me like a medical device more than a watch with all these features. However, as I mentioned, the watch and the health app on the phone warn users with statements like 'it cannot detect a heart attack' whenever possible and directs users to call emergency services (Figure 54).

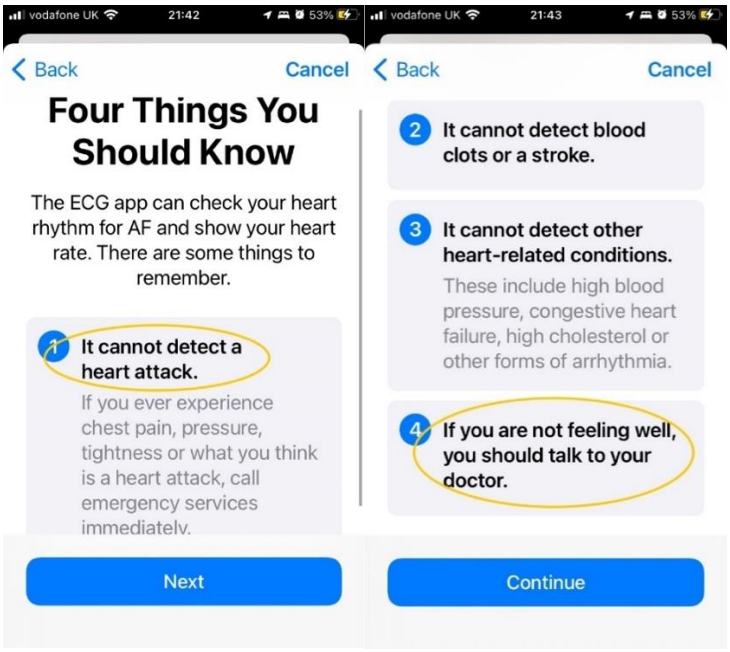


Figure 54. ECG notifications

The ability to receive notifications for high/low heart rate made me reconsider if I really want to know my heart rate or not. On the one hand, it could help me to be aware of my anxiety or panic attacks and try to relax. On the other hand, seeing my heart rate high could exacerbate my anxiety and increase my heart palpitations in result. Since feeling anxious can increase your heart rate and seeing your high heart rate as a reality could intensify your anxiety, this could be considered a kind of vicious cycle. It is a bit controversial because there is always a risk to make the user more anxious in that case. Nevertheless, I opted for this feature to see how it feels.

Following the emergency settings, I realized all the apps on my phone were not available for the watch, such as WhatsApp. Although the smartwatch with all the icons of the apps on its screen seems like a replication of my smartphone, I understood that it is not possible to use all apps from my phone. Moreover, there are only limited usages of some apps, their capacities were less than their versions on my phone. The smartwatch functions as an assistive device of the smartphone in this sense.

After all the settings, I reached the page in which the Apple watch is syncing, and it took some time again. The process of syncing was another element which demonstrates how the smartwatch is dependent on the phone.

5.5.3 Trusting the Watch and the Brand

When I started to use the smartwatch, one of the steps was setting the Apple pay. However, I chose the 'set up later' option for that one. It seemed the least safe feature to me, and I felt that I needed to do more research before setting that. Although I know it is safe, I still could not feel comfortable about adding my card details into my Apple account. I thought that I can only add a card which has a spending limit, just in case. However, I do not have a valid credit card that I can use in the UK, I only have a debit card. Therefore, I did not want to use my only debit card with my phone or watch and putting everything I have at risk. At this point I was a bit conservative and had difficulty trusting this technology as I thought it might be vulnerable to security hacks.

When the reasons are considered behind my preference, it could be said that my habitus (Bourdieu, 1977) which created by both me and the community was effective on that. As the practices are not produced only under the influence of individual dispositions or superior structures, it was the result of both external and internal factors.

The first factor might be the news and articles I read, demonstrating how smartwatches have safety or privacy flaws (Whittaker, Z., 2019; Morrison, S. 2021). The common fear of technology or of being hacked was also effective on me as well as the society. However, inclination of having these fears depend on various factors. As a more internal factor, my cultural capital might have been effective on my attitude towards the Apple pay feature.

As one of the forms of cultural capital, embodied state, is the inherited "long-lasting dispositions of the mind and body" (Bourdieu, 1986). So, in this case, my tendency of being wary, and my perception of money could be related to the socio-economic class that my family and I belong to. Being working-class, the financial attitudes I observed and internalised during my life surely affected the way I approached this type of novelty in managing money. Consequently, internalisation of some possible risks which arise from using new technology for paying occurred strongly in my personal experience. Finally, with an immediate and instinctive reaction I denied substituting my smartwatch with my card. My smartwatch replaced many objects, especially my smartphone. However, it did not turn into my wallet. This feature caused me to reconsider to what extent I trust and accept technological devices.

When I finally started to use my Apple watch, the first thing I tried was using the camera. It was such an incredible event to see the place my phone's camera sees on the watch when my phone was away from me. It made me think about privacy and the possible dark sides of this technology. The watch, which can replace many objects, was functioning both as a remote control and a hidden camera in this case. In this way, it enabled me to see somewhere that I was not in. I saw

the place that normally I was not supposed to see. It enhanced and augmented my sense of sight but also affected the sense of space. The sense of space has been distorted with the opportunity to be present in two different spaces simultaneously. Although it has been a usual feeling with the advancements in technology and communication and seen in previous devices such as phone and television, it was still impressive in terms of manifesting these devices' capacities. Besides the fact that people discipline themselves and observe each other with these devices through the data if not the camera, this experience has contributed to the understanding of these devices' capabilities of turning into panopticons (Foucault, 1977 & Hepworth, 2019).

As a new user, every aspect of the watch was surprising to me. It was an exciting exploration of both the smartwatch and my approach to this device. One of the incredible moments was when I heard someone in my earphones suddenly while taking a walk at the park. I was walking and the watch was recording my steps on the activity app. I was also listening to music with my AirPods. Then at some point, the music stopped suddenly, and a male voice started to speak in my ears about the distance I walked and my walking pace. It was unexpected for me to hear that; I was not aware of this feature. Then I understood that it was about reaching a threshold such as 1, 2, 3 kilometres. Even though hearing a human voice in my ears made me jump for the first time, it also contributed to the personification of the device. So, it could be considered that it literally turned into an exercise buddy or coach as one of the participants in the focus group described.

However, on the other hand, this experience made me feel a bit out of control and impotent. I faced many interruptions in various ways -mostly because of the notifications- as I used the watch. It interrupted my everyday activities many times, and this one was an intervention to my walking routine then. With that voice I suddenly stumbled and had to concentrate on walking again. This audial alert concluded in a change of my body's physical position. At that point the first feeling was that the smartwatch has a power over my bodily movements. Thus, it did not seem as friendly as an exercise buddy for me at first.

Furthermore, I felt like I had no agency at that moment since it was not in my control to hear that voice. In fact, it was under my control since I could turn that 'voice feedback' feature off. However, in the period when I was getting used to the product, I did not know that. After I realised that Siri reads workout alerts to me, I learnt how to turn it off from the internet.

On the other hand, this experience reconfirmed that the integration is not only between smartphones and smartwatches, there are other objects which are also parts of this system such as earphones. Therefore, it might be said that there is simultaneous and integrated accompaniment or surveillance as long as people are surrounded by these objects. That moment was the time when I strongly felt that I was literally monitored.

Another factor that increased the feeling of being watched was seeing some data on my phone that I was not aware was being collected by my watch, and was categorized, used and presented in different ways without my knowledge. I realised that various data can be calculated based on my physical movements when my watch calculated my speed of going down the stairs and how far I can walk 'on flat ground in 6 minutes'. It also provided comments about my health depending on this information (Figure 55). This was surprising for me since I was focused on only my step counts and walking distance. However, the apple watch gives me more calculations by processing my data. It integrates with the health app on my phone and shows extra data only on the smartphone rather than giving all details on the watch screen.

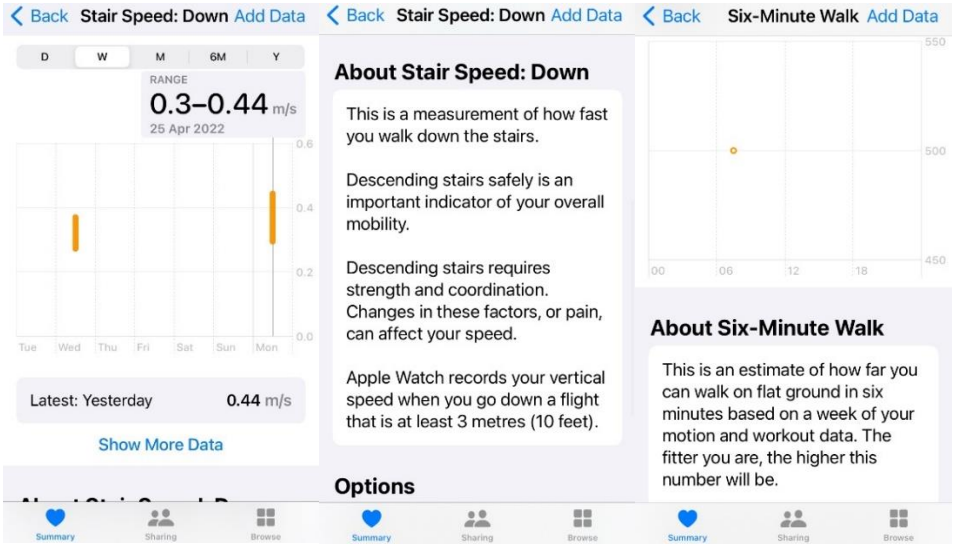


Figure 55. Apple watch records my vertical speed and estimates how far I can walk in 6 minutes

Nevertheless, one of the strongest elements of feeling of being monitored is surely the cartographic visualisations of my walks (Figure 56). This feature feels as if I am being tracked by someone. However, the distance between me and my watch is always far less than possible distance between me and any other human beings. It was the closest entity that could follow me wherever I go.

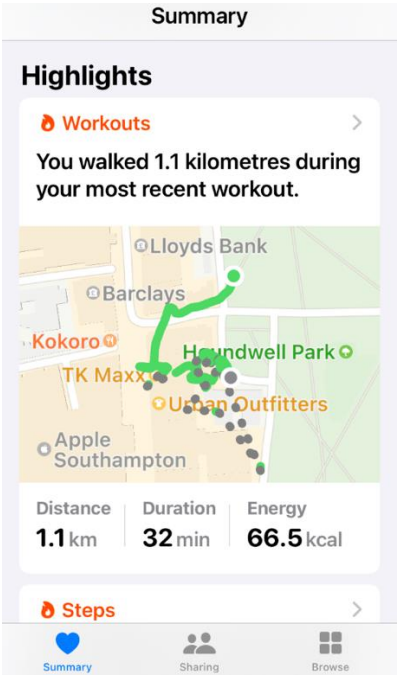


Figure 56. Visualisation of my location data

Another moment in which I felt monitored was when I received a notification about me being awake (Figure 57). As I was wearing the watch 24 hours at the beginning, it was able to understand what I was doing all the time. That notification made me feel a bit terrified and anxious about how much this technology is pervasive in my life.

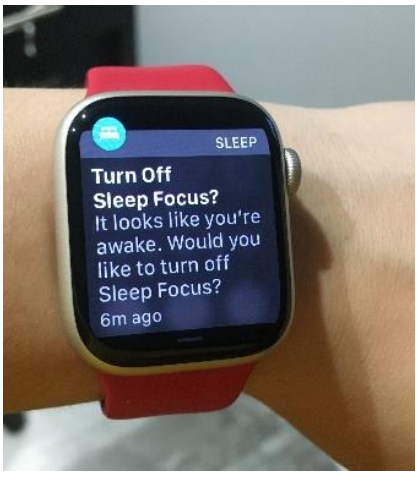


Figure 57. It looks like you are awake!

The Apple Watch was not only monitoring me, but also checking the internal conditions and giving me orders to be able to keep tracking my life (Figure 58). It was in control most of the time and it attempted to organise my daily life to some extent even I did not ask for it.

Figure 58. Battery needs to be at %30 to track your sleep

Besides all these surveillance-related experiences, I also experienced a liberating moment with my smartwatch. I think that was the moment when I felt my watch as my friend who accompanied me and contributed to my enjoyment. I went out without my phone and took a walk at the park while listening to the songs that I downloaded to my smartwatch at home through my AirPods. That was the first time I was out without my phone, and it felt so weird. The feeling of forgetting something before you left the home and the fear of missing something important without your phone were a bit worrying. At that point, I realised that my smartphone is like a part of my body, and I feel incomplete without it. However, it did not take long for me to notice that walking and running without carrying a phone were amazing. I felt lighter and freer without my phone despite of my addiction to it. The best thing about this experience was that I was able to listen to music by using the Spotify app although I had to download the songs specifically into my watch before I left home since I did not have internet connection on my watch yet. The compatibility of my favourite app with the Apple watch was fantastic. Even though I loved that feeling I did not do that so often. Also, if I was going to leave my phone at home, I used to message the people who might get worried if they could not reach me and let them know that I was not going to look at my phone for a while.

Regardless of the discussion of feeling free with the watch or feeling controlled by it, it was evident that smartwatches are generally pervasive and interruptive to daily life. Especially with the notifications and haptic alerts, they interrupt everyday practices and distract users. The designers must have noticed this, too, so they designed many features that compensate for that. Since there is an obvious problem with focusing while using the watch, there are lots of modes including daily activities, leisure time activities such as ‘school time, ‘personal focus’ and ‘theatre mode’ on the watch (Figure 59). These features demonstrate not only how intrusive this device

can be but also how it aims to be a part of everyday life. By using them, the user can still engage with the watch in relation to daily activities and let the watch know about them. It might be seen as a new way of managing and dominating everyday life as the clocks and watches did in the past.

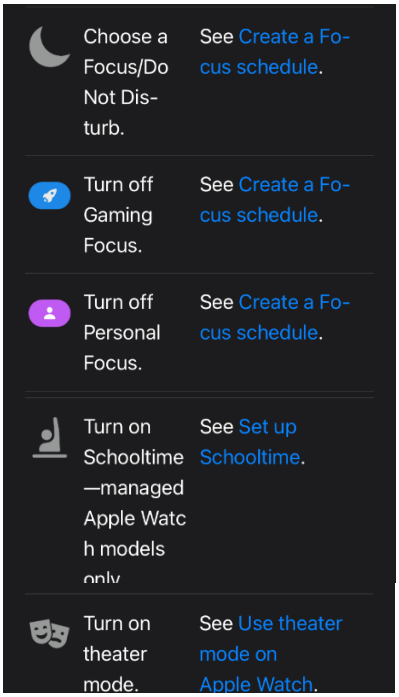


Figure 59. Different ways the smartwatch integrates itself into everyday life practices

Both regarding the daily practices and health-related apps, there is another app called 'Handwashing' on the smartwatch. I was so surprised when I saw this app. It was incredible for me to have an application for such a basic action like washing your hands. Apparently, this is a response to the new cultural conjuncture which occurred during and after the Covid-19 pandemic. By using this app users have their watches automatically detect when they wash their hands and start a 20-second timer which is the duration recommended by global health organisations during the pandemic. However, it is not limited with this, it also reminds them to wash their hands after returning home.

This is obviously the manifestation of how every ordinary practice can be tied up to the smartwatch. This is the highest level of both datafication and invasion of everyday and private life. Although I find it so unnecessary, first, I wanted to use this app for the research. However, seeing its question about sharing my data and how it can recognise speech, I changed my mind and did not activate it (Figure 60).

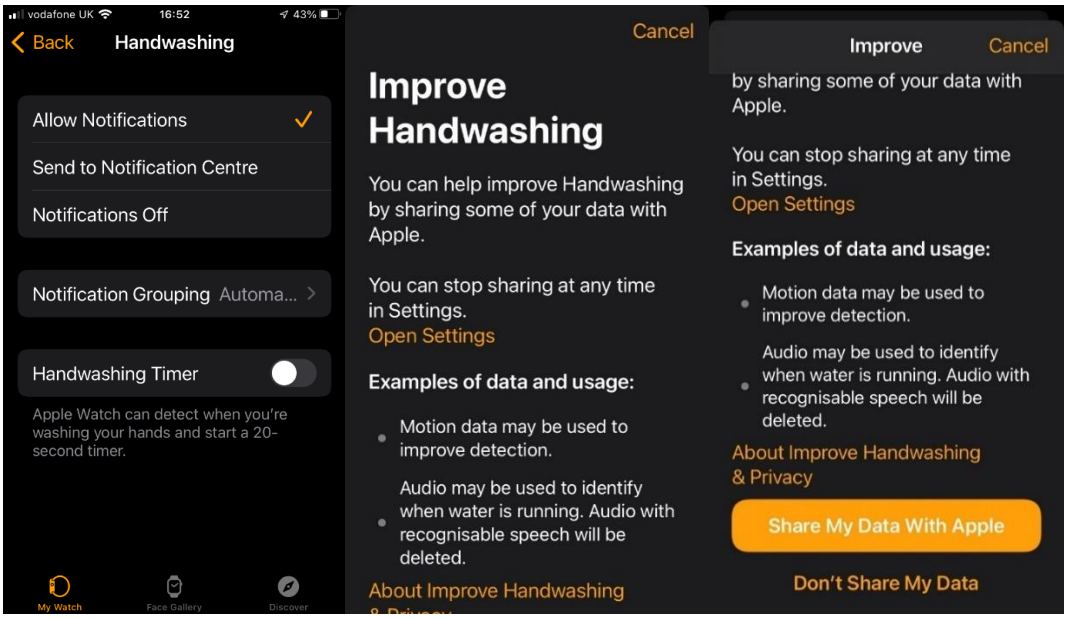


Figure 60. 'Audio with recognisable speech will be deleted'

Seeing the sentence 'Audio may be used to identify when water is running. Audio with recognisable speech will be deleted' as an example of data usage besides using motion data, I felt a bit unsafe. This was not new information about my smartwatch, I knew that it could detect speech in many ways, however, the idea of that my voice, hence the conversations I might have, will be recognised by the watch every time I wash my hands startled me. Even though I could have chosen 'Don't share my data' option to use this app, I did not think it is worth to take any risk for this app. When I reconsider my behaviour now, it seems so desperate to me. Since, I agreed terms and conditions, accepted to wear the smartwatch and unavoidably shared my data with Apple, being concerned and sensitive about privacy after some point does not seem sensible. Nevertheless, I think it is more about whether the service is valuable enough to sacrifice my data or not.

On the other hand, I used the ECG app holding my finger on the crown for 30 seconds and try not to move (Figure 61). It also suggested that I rest my arm on a table or on my legs. When I used it for the first time, it was difficult to believe that a tiny crown makes difference and provides data about my heart rate. It seemed a bit fake at the beginning and it felt so weird to put my finger on the crown. When I consider this device as a wristwatch, it was very interesting to measure my heart rate with a crown. However, it was not only a watch, and that part which Apple calls 'digital crown' was not only a crown in this case, but also a part of a medical device.

In this app, there was an option for users to add their symptoms, too. This, and the question that appeared with it seemed so odd to me. The question intended to be friendly but felt discomforting was: 'Not feeling well?' (Figure 61). If I really did not feel well, I do not think I would

add any extra information there. Beyond this issue, the chosen tone here could be seen as an indicator of the watch's efforts to establish not only intimate but also dependent relationship with the user.

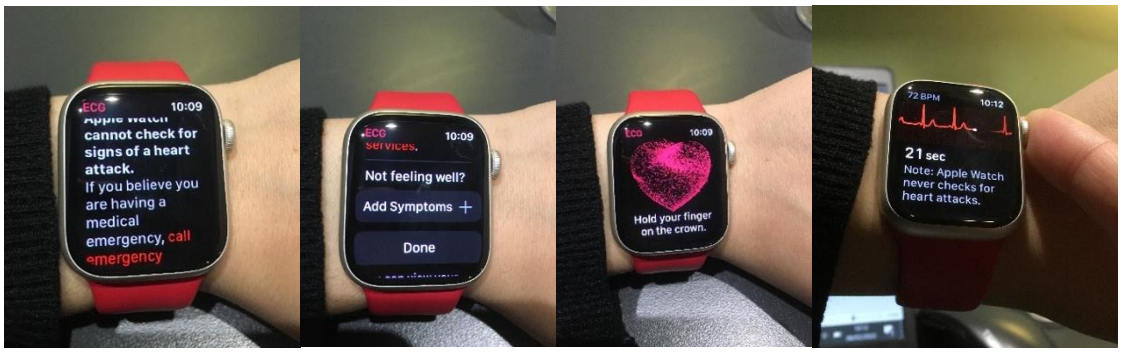


Figure 61. ECG app

In addition to trusting the watch and letting it monitor the user and collecting their data, there was another trust issue that had been brought up by the unboxing process of the watch. This was more about creating trust in the company and brand related to a different topic. This came up when I realised that there was no adapter in the box, and I saw this statement checking the website:

> "As part of our efforts to reach our environmental goals, Apple Watch does not include a power adapter. Included in the box is a Magnetic Fast Charger to USB C cable… (Apple Watch Series 7, 2022)."

With this statement, Apple attempts to create a socially and environmentally conscious brand image, and manifests that they value environment in their decisions. However, there is not enough explanation on how and to what extent this would help to save the planet. Furthermore, that seems paradoxical when their planned-obsolescence strategy is considered. As an ordinary user, I found this statement insincere and inconsistent as the company encourages people to buy new products so often and align their strategy with upgrade culture. Although I do not always necessarily buy green products, and I see myself in the segment of 'Think green consumer' rather than 'Behavioural green consumer' (Jeevan, 2014), my perception of Apple is not strongly related to sustainability.

In fact, rather than being related to environmental issues, this occurred to me as another problem I had regarding the upgrade culture. In line with their environmentally conscious statement, there was no adaptor in the box, but I had only an old type of adaptor which belongs to my iPhone 6s. As it was not compatible with this new cable, the only way to charge it for me was using the laptop I borrowed from the university. Upgrade culture, which includes all practices,

feelings and discourses that have arisen in response to the idea that new technology would develop quickly and continually (Rottinghaus, 2022) revealed itself again. It could be said that the necessity of having the most recent products was one of the pressures I felt during my experience.

In addition to trust in the company about their eco-consciousness, there was another societal issue which presented as a feature of my smartwatch on its box. There was a statement on the box which explains that I automatically supported funding programs that aim to fight against HIV/AIDS since I bought a red band (Figure 62). According to Apple's website, each red product purchase contributes to the Global Fund's support of AIDS programs and now also to COVID-19 Response (Product Red, 2022). In contrast with the earlier example, seeing this statement made me feel good to some extent, although it was not effective in my decision to buy this product. Supporting funding programs that fight against Aids and Covid-19 felt good for a while. Nevertheless, my purchase was not only a contribution to society but also a contribution to the company. Even though these marketing strategies lead people to socially responsible consumption (Webb et al. 2008), by purchasing this device, I knew that I supported planned obsolescence and made it more difficult to compensate for the overall harm to the environment.

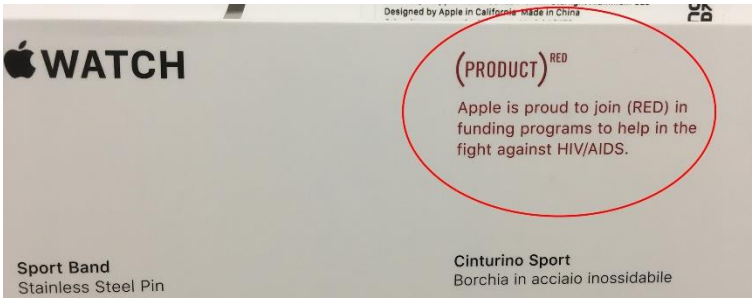


Figure 62. Product red

5.5.4 Being Active with the Watch

During my experience with the Apple watch, the constant notifications were its most annoying aspect. For instance, once, I felt many vibrations on my wrist while using eyeliner, which was very distracting and disruptive to my act. Additionally, the email notifications used to cause me pressure and anxiety. After a certain point I turned most notifications off, as I did not want to see anything work-related in the evenings. However, since I aimed to use the watch mainly for being active and fit, I allowed notifications from the Activity app. However, these notifications also were invasive and disruptive. I received 'Stand up' notifications many times in awkward situations. For instance, one appeared very early in the morning while I was sleeping (Figure 63).

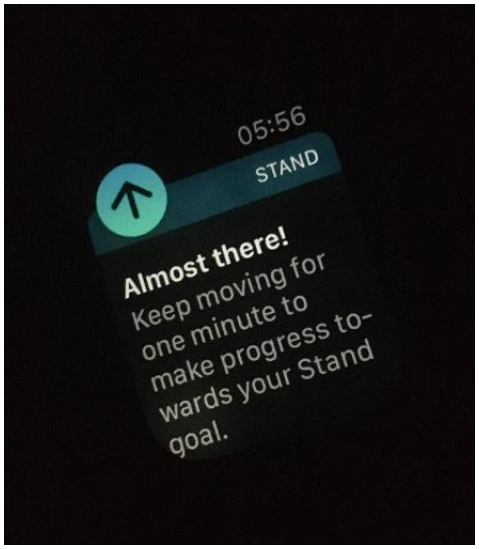


Figure 63. Time to stand (!)

Although receiving notifications to stand up or move was often annoying, I generally found activity-related notifications useful. They were mostly encouraging in terms of the language that they comprised. There were many motivational warnings besides this encouraging effect, which caused a feeling of failure, as they made me face the unpleasant facts (Figure 64).

These notifications are examples of how smartwatches shape one's experience and mediate both one's physical movements, understanding of being active, and perception of one's body. It can be said that receiving emails and notifications demonstrate how embodiment relations occurred, as I was able to see emails or messages through the watch. These notifications, especially those to stand up or for emails, were a coercive influence for me, as they made me take action, whether that is walking, or turning off the notification. However, most notifications from the Activity app had a persuasive influence.

The motivational notifications are clearly a strategy for keeping users engaged with their smartwatches continually. This constant engagement contributes to the process of establishing an intimate relationship with users. As a sample message, "No worries, today's another day!" creates both friendly and encouraging discourse which can contribute to the intimacy indirectly. Moreover, the use of personalisation (Figure 65), strengthened the notion of an intimate and friendly relationship between me and the watch. This also refers to Ihde's (1990) alterity relations due to instances where the watch communicated with me as if it were a person. Personalised prompts enhanced my relationship with the smartwatch as 'quasi-other' (Verbeek, 2005, p.127)

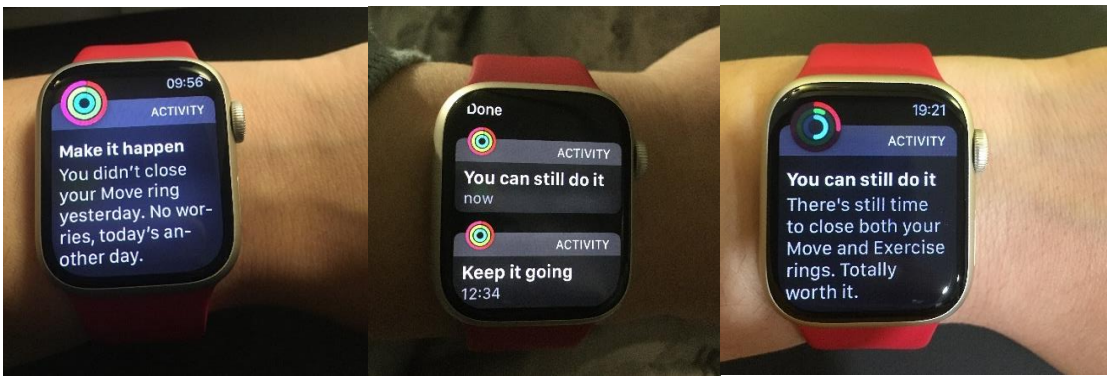


Figure 64. Motivating notifications

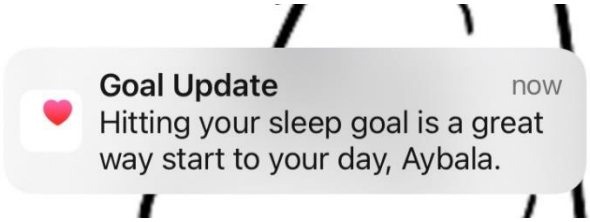


Figure 65. The health app uses my name

In addition to encouraging messages, it is also possible to receive more realistic ones that could discourage the user. For instance, the activity app readjusted my goal according to my recent performance, creating a sense of embarrassment (Figure 66).

Figure 66. More realistic notifications

Although most notifications were friendly, there were some which used the imperative form. Those messages sounded more dominant and patronising (Figure 67).

Figure 67. Imperatives from the watch

Nevertheless, these short notifications are parts of the Activity app's key feature, which is also an effective strategy for engagement: gamification. The main aim is making users accomplish tasks and reach their goals. The app features three circles for 'daily move goal', 'exercise goal', and 'stand goal' that the user sets up at the beginning (Figure 68). If users close these rings, and achieve their goals, they receive awards. The watch also keeps a record of users' milestones and important moments such as first walking or first dance workout (Figure 69). It gives users different badges for those moments and turns them into even more significant accomplishments in this way. All these badges and awards are examples of seductive influence as they subtly shape behaviour and create internal motivation.

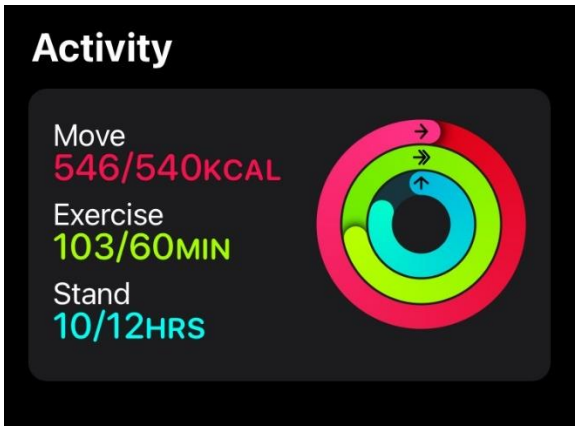


Figure 68. Activity rings

Figure 69. Awards from the activity app

These recordings, such as the first dance or exercise, build up a close relationship between the watch and the user. They transform the device into a diary, cataloguing memorable moments of the user's life.

Furthermore, the fact that my smartwatch values every little action (Figure 70) meets my 'esteem needs' that refer to the desire for esteem, recognition, and appreciation – creating a positive appraisal about oneself, as Maslow (1943, 1969) described. Maslow's esteem needs include two main categories: desire for accomplishment, competency, independence and desire for status, acknowledgement, appreciation and respect from others. Considering how motivation is inherent to continuation of using the smartwatch, it is reasonable to evaluate my experience from the perspective of motivational theories. Although Maslow's Hierarchy of Needs was criticised for being too constrained, linear and not culturally sensitive, it provides a sound foundation to understand people's needs and motivations and the role of smartwatch especially with the developments and updates made to this theory. It should be noted that Maslow (1954, p.51-52) himself stated in his recent works that needs can change depending on the individual and the steps in his famous pyramid are not necessarily in a strict order.

In this particular case, where the smartwatch sends me notifications using a very humanistic language and everyday phrases such as 'nice job!' to acknowledge and appraise my effort, it provides me with the esteem that I normally expect from other people (Figure 70). I receive something that I used to obtain from human relations, through my smartwatch. This combines two different esteem needs by providing me a sense of accomplishment and confidence. This relationship offers me perfect circumstances to boost my confidence by receiving recognition and appreciation from my watch. Eventually, it becomes difficult to remember if I was doing this for myself or for recognition from the watch. Identifying if my main motivation was to accomplish something, increase my agency or to have recognition and attention is challenging. Regardless, this situation illustrates how some of our needs could be addressed by these devices now, how

they establish human-like relationships with people and function in the same way as our family or friends, decreasing dependence on other people. Humanisation and personification of the smartwatch as a design strategy works effectively on human needs and psychology.

Maslow's theory can be interpreted and adapted to contemporary life, where technology is involved in every stage of the pyramid. The feature of competing with friends and comparing steps, as well as social media apps where people share their achievements with a wider audience, add another layer to this complex relationship. It connects to the 'Belongingness and love needs' in the pyramid, which refers to connectedness and affinity.

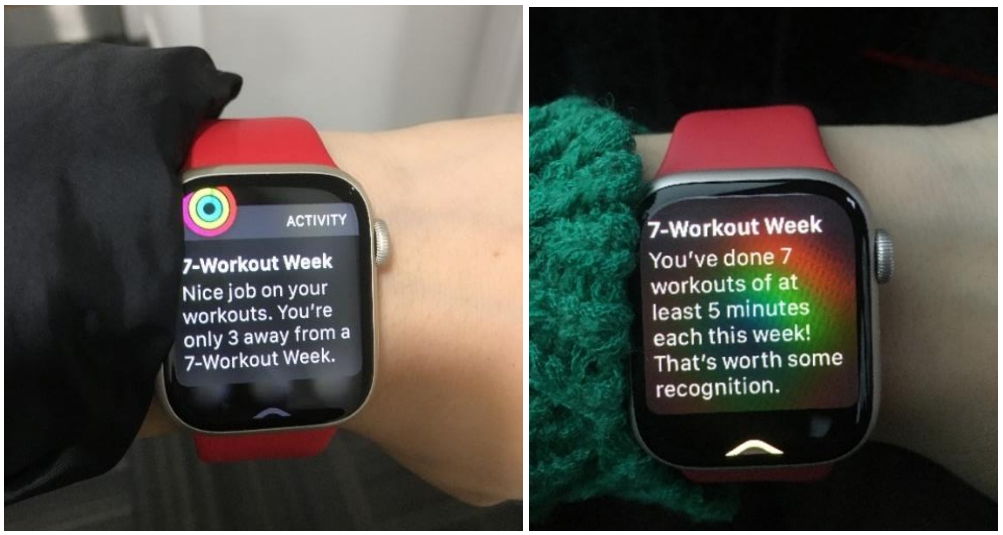


Figure 70. Appreciation from the watch

On the other hand, the watch urges users to focus on self-improvement by supporting them. It encourages them to achieve their 'personal bests' (Figure 71) by self-regulation. In this sense, it refers to the need for 'self-actualisation' (Maslow 1943) and reassures users that they will fulfil their potential as long as they keep using the watch. It implicitly promotes the idea that everyone needs to be as 'healthy or fit' as possible, although self-actualisation does mean more than this. It is described as "the desire to become more and more what one is, to become everything that one is capable of becoming (Maslow, 1943, p.383)", meaning the definition of self-actualisation can vary from one person to another. Nevertheless, this idea seems to be adapted and even distorted to promote continual use of the smartwatch (Figure 71). The idea of self-actualisation and improvement is embedded in the design of the watch as well as the whole marketing strategy. This also relates to the idea of being as productive as possible as discussed in section 5.2, in the context of internalisation of time discipline and capitalism by adopting Puritan work ethic (Weber, 2003, p.118-119)

At this point, understanding the recent updates made to Maslow's theory (1969, 1987) becomes significant. Maslow developed a further step, 'Self-transcendence', in addition to self-actualisation in the pyramid. This amended part of Maslow's theory is credibly explained in literature, such as in Koltko-Rivera's work (2006). Self-transcendence denotes going beyond oneself by having transpersonal experiences of varying natures, that make people feel a sense of altruism that surpasses their personal identity and interest (Maslow, 1969; Koltko-Rivera, 2006). These experiences are also called 'peak experiences' (Maslow & Arieti, 1961, pp.255).

> "…the person in the peak experiences gets to be more purely and singly himself he is more able to fuse with the world…for example…the creator becomes one with his work being created, the mother feels one with her child. That is, the greatest attainment of identity, autonomy, or selfhood is itself simultaneously a transcending of itself, a going beyond and above selfhood. The person can then become relatively egoless (Maslow & Arieti, 1961, pp.255)."

When it comes to different levels and types of motivational states, it can be said that smartwatch addresses people's essential needs at various levels by penetrating every aspect of life including sleep, safety and mindfulness (see Section 5.5.5). Nevertheless, it should be noted that behaviours are not only determined by these needs. There is a complex structure, including cultural and internal factors that make people behave in a certain way. Yet, these connections to the basic needs give us some insights into what happens while using the product and foresight to enhance this relationship. In this respect, self-transcendence particularly in terms of being a part of something beyond self and serving others could be an area to explore for designers, such as developing the connection between smartwatch use and charitable fundraising and other campaigns (e.g. Charity Miles app), provided that ethical considerations are contemplated. Considering the rise of spirituality wellness in the culture (Friend, 2019), this could contribute to the internalisation of the product. In addition to this, more personalisation could help to understand cultural nuances and conceptions in terms of what motivates the specific user.

Figure 71. Personal best

Returning to my experience, as I used the watch, I became increasingly captivated by this act of 'closing the rings'. After a certain point, it was not exercising for me anymore, it was a race to close the rings. Once, I even decided to dance at home just because my walking was not enough to close the ring. Conversely, I felt my exercise had lost importance once I had already closed the rings, and my extra exercise no longer counted towards it anymore. As I exceeded my daily goal, I wished to transfer this exercise to another day or allocate it evenly to the other days to be able to get awards more easily.

I started to become addicted to exercising with my smartwatch. I started always taking it to the gym, and whenever I forgot to wear it, my exercise felt like a waste of time and energy. Recording my exercise was more important than doing it. One day, just before I left to go to the gym, I realised the battery of my watch ran out. Therefore, I sat and waited for 20 minutes until it was charged.

As the Activity app provides various options for different sport equipment, I chose equipment such as the elliptical on my watch before using the real one in the gym, so I could see the calories I burnt on the watch. This was crucial for me, as I realised how the numbers on the equipment and the watch differed (Figure 72). Seeing that increased my trust in my watch in terms of its accuracy in measuring.

Figure 72. Inconsistency between the numbers on sports equipment and my watch

My experience with the watch in the context of gym, is that it enhanced my exercise and made me feel more satisfied and productive. On the other hand, it made exercising more complex by creating more tasks for me such as starting and ending relative exercise on the watch.

One day, I forgot to end the 'core training' that I started on my watch in the gym. I arrived home and suddenly realised that. I felt like I tricked my watch since it seemed like I did core training for an hour, which was not true. Similar events happened on other occasions. For these instances, the smartness as well as the aliveness of the watch become debatable. If this watch was smart enough, would it be possible to trick it? On the other hand, in the concept of being 'sort of alive' (Turkle, 2012, p.42), I could say that it was alive enough to make mistakes or to be tricked. There were many instances where both the participants in the focus group and I talked about smartwatch as if it is alive. However, it was smarter than users with all its data, and was capable of spying on us, so it has a different sort of aliveness than human beings. In my opinion, whenever it feels like it has intelligence and emotions, or whenever it needs to be taken care of, it is closer to being perceived as kind of alive (Turkle, 2012).

On one hand, this sort-of-alive device takes care of me and creates additional time for self-care. On the other, it causes additional tasks for me, forcing me to wait for it to charge or to countdown so that I can start my activity. Receiving all the notifications instantly also wastes time by distracting me from my current task. At this point, Zampino's (2023, p.134,138) discussion of 'temporal practices' which are dedicated to reappropriating time against the overvalued 'acceleration' in capitalist culture (Leccardi, 2009 cited in ibid.) and subjectivity of time seem relevant, since they refer to the tension between the time imposed digitally by the smartwatch and the subjective experience of time, especially when one tries to operate and appropriate the

technology. Nevertheless, this process does not always result in appropriation but also non-appropriation.

The fact that I turned the notifications off is an illustrative example for resistance practices which also helps me to reclaim my personal time and how, as a result, the product can be underutilised (Kline and Pinch, 1996). Furthermore, these types of practices including managing my time for better self-care could be considered a way of recapturing the 'subjective time' against structured time of 'accelerated capitalism' (Leccardi, 2009; cited in Zampino 2023, p.134). This also relates to the work-life balance, which feels less and less achievable, despite my attempts to ignore work emails on my smartwatch and to prevent it from becoming an extension of work (Moore and Robinson, 2016). Using the watch remains an intrinsic part of the idea of self-optimisation and productivity in line with neoliberal structures in which all the responsibility is assigned to people instead of the state (Lupton, 2013b; Veitch, 2010), even when it is only for health. Liu (2021) illustrates the tension between individual responsibility of being healthy and political and governmental actions which are not taken to provide people with healthy environments and proves how complex the idea of self-governance of one's health could be when she portrays people going for a walk in polluted air.

Concerning subjective experience, Zampino (2023) identifies a wide range of changing behaviours of her interviewees from using a smartwatch as only a traditional wristwatch to going for a run or exercising at home. Similarly, the smartwatch influenced my daily routines, including the way I use the equipment in the gym, integrating other products into my experience and creating new practices. These new and adapted customs did not include all the practices that were inscribed in smartwatch, and some were unexpected. Therefore, they clearly demonstrate how the interrelation between time, body and space takes shape in the everyday realm, under the influence of smartwatch.

Regarding the space, smartwatch provides subjective experience which changes from one to another. In my experience, the smartwatch encouraged me to go out, explore new parks and go to the gym more often, while in an example from Zampino (2023) it provided flexibility of space to another to do exercise at home instead of gym since she did not have time due to other, familial commitments.

At this point, smartwatch also creates social, as well as structural, debates, particularly concerning time and the perception of how responsibilities differ between genders. Feminist perspective discusses whether smartwatches and similar products provide flexibility and support women in controlling their bodies, or whether they undermine empowerment of women by

consolidating existing normative assumptions about gender identity, body and health (Dolezal & Oikkonen, 2021).

An illustrative example of the latter is that my smartwatch and the health application to which it is linked categorised me based on the 'ideal' VO_2 Max level of a standard woman at the same age as me. With this feature, I was able to see my VO_2 Max level, which is the maximum amount of oxygen my body consumes during exercise, amongst other users. Although this aims to encourage competition through gamification, it inevitably creates a generalised and idealised notion and discards the uniqueness of individuals by creating a 'normal'. This shows how some norms and assumptions are embedded in these products and how they fail to be inclusive. As a user, I was not entirely sure how this number was calculated, and I did not know anything about other women who are the data source of this graph. Overall, this comparison and categorisation demotivated me, as it ranked me 'below average' (Figure 73)

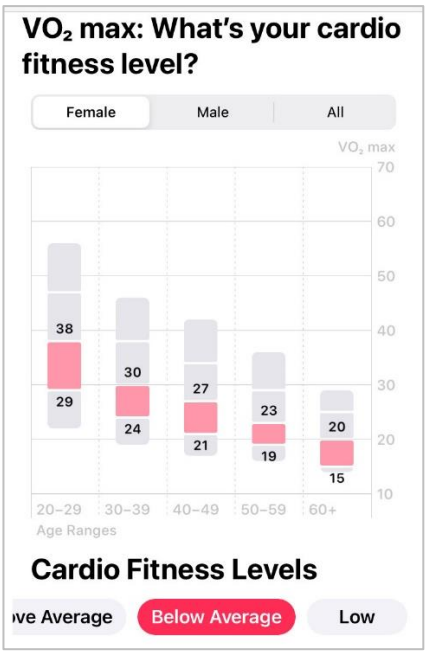


Figure 73. My cardio fitness level as below average

This data revealed my quantified 'level of youth' (Zampino, 2023, p.147) 'ageing' me compared to my peers. Below-average levels of fitness were associated with long-term risks to my health. Moreover, the "What it means if your cardio fitness is low" section in the app contained depressing information about the possible future of my health (Figure 74). The tone was frightening, firstly through the risks, while later promises stated how I could avoid these risks.

Figure 74. The risks that the Apple watch foresees for my health

This warning could be considered responsible and reasonable health advice, however, when scrutinized with a greater depth, it is evident how normative assumptions and neoliberal approaches are inscribed in the design of the product and application. The fact that this application is not created by NHS and the only requirement to access and track this data is to have a smartphone and smartwatch, demonstrates how the responsibility of public health is delegated to individuals and how their health concerns are commoditised.

This commodification is also supported by fashion, beauty and health discourses promoting the same type of normative bodies (Sanders, 2017) as this app, under the guise of wellness and scientification. According to Sanders (2017), self-tracking causes neoliberal and patriarchal essence of fashion and beauty industries to permeate intimate areas of everyday life.

On the other hand, according to Dolezal & Oikkonen (2021) by prioritising individual responsibility, self-tracking practices with smartwatch dismiss determining socio-cultural factors. They assume adopting a self-tracking routine regardless of social, political and cultural settings around an individual is possible for users. At this point, intersectional examination of the use and design of these products is essential to consider underprivileged and marginalised people who do not have sufficient social, or material means to adopt self-tracking and improvement practices (ibid, p.4). Borenstein (2021) also points out how cultural context is determining in the experience of these products by illustrating the potential surveillance of women's bodies and how the data could be exploited by different actors such as women's husbands, personal trainers and employers.

Another gender related example from my experience can be found in the gamification mechanics of the smartwatch activity app. The user experience is carefully designed to provide the user with

various gamification elements such as ‘reward structures’, ‘positive reinforcement’, ‘badges’ and ‘challenges’ (Figure 75) (Zichermann et. al, 2011).

Figure 75. New Year Challenge

One of the challenges was presented on International Women’s Day and again encouraged me to work out more, as a woman, to appreciate women in the world (Figure 76). This, and similar challenges, such as International Dance Day, included social aspects, raising awareness of these special occasions and encouraging users to be more active and feel like a part of a bigger community. This corresponds to the discussion on needs of hierarchy above by giving the sense of belongingness, as well as transcending the self for a greater cause, although it fails to create a real change. These challenges both serve to engage users with the system and to the brand image becoming ‘socially conscious’, adding social values into the user’s experience. On the other hand, it seems conflicting and paradoxical to appreciate all women by pushing them to reach a quantified standard of health, body and lifestyle. It would not be reasonable to say that being encouraged to be more active is not beneficial for physical health of women in the long run, however, these mechanisms of encouraging users and their political, social and psychological aspects have to be considered to avoid any adverse implications on individuals and society. All features of these products should be carefully designed considering how these issues are complicated, subjective and relative.

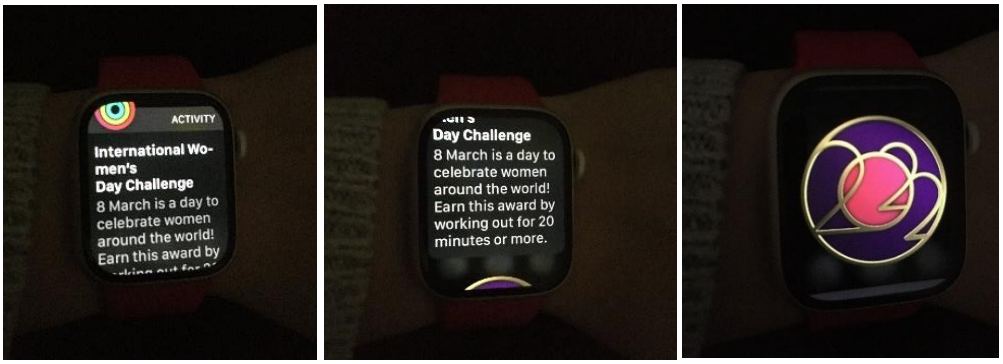


Figure 76. Challenges for special days

Additionally, despite the standardised user of the product, it is not possible to standardise the way individuals experience some features. For instance, International Women's Day challenge did not work for me as an encouragement, and I did not earn this award. Seeing horrific comments on my VO2 Max level only made me feel bad about myself and my life, while making another woman feel younger (Zampino, 2023, p.142). Nevertheless, I was highly proud of myself when I surprisingly received the 'March challenge award' one day due to closing all my activity rings in that month. Although these awards were not the only reason for me to do exercise, they made me feel better about myself. Challenging myself physically, closing the activity rings and getting awards in return made me more loyal to the watch.

With all these challenges and awards, smartwatch has many references to games and appeals to competitive players inside of users. Having gamification elements in the design, this usage of smartwatches surely has its origins in video games. At this point, we could even see an archaeological relation between video games and smartwatches, particularly in terms of the added game mechanics. Trophies, badges, and leader boards which can be seen in different forms on the apple watch, fulfil the same purpose, maintaining user engagement by evoking their feelings and needs. As Zichermann et al. (2011, p.10) mention, the only way of creating a foreseeable, repeatable, and rewarding experience is using the power of gamification.

As an indispensable aspect of gamification, social interaction is applied here by providing competitions. In the Activity app, there is a section that provides users with social layers to integrate into their experience. It is the 'sharing' page which asks users to invite their friends. This enables them to see each other's rings, or, in the words of Apple, their 'progress', and receive notifications when they end workouts, achieve goals etc. They can invite friends to a 7-day competition in which they earn points by completing their activity rings, with the winner receiving an award. This feature gives users a chance to interact with others and create a social network. They compete with their friends and family members or share their progress with trainers. They can motivate their 'competitors' by replying to notifications about their progress. Although this

feature seems encouraging and useful to improve society's health, from a critical perspective, it inevitably results in a different type of surveillance which again resonates with the idea of panopticon. People can see and check each other's actions as happens in a panopticon. Therefore, the power seems decentralised but also consolidated.

Furthermore, when users invite someone to compete with them, they make them reengage with the device even after leaving the system. This is very similar to the social engagement loop strategy in gamified systems (Zichermann et al, 2011). With the help of this strategy, it is possible to make users return to the systems, or even to gain users.

I could not try this competitive and social aspects because of the lack of people using Apple smartwatch in my circle. Nevertheless, I shared my step counts with family members and compared myself to them as they counted their steps with other smartphones. This calls on an intrinsic tendency for people to compare themselves with others when they engage with competitive systems, particularly having measurable achievements. Therefore, I could easily have convinced my friends or family members to acquire Apple watches to accompany me in that virtual world.

Besides the comparisons with others and virtual social networks, Apple watch also offers different features for users to engage in 'real-world' communication, such as Walkie-Talkie. It helps users to contact each other easily, providing a social context to use this feature such as shopping: "Whether you're out shopping or trying to find someone in a crowd, use the Walkie-Talkie app to get in touch with just a tap. Add friends, then manage when you want to talk (Apple, 2023)." However, these features require users and their friends to have the same upgraded software as well as another app. The requirements to be able to use this feature are explained below:

> "To use Walkie-Talkie, you and your friend both need to have an Apple Watch Series 1 or later with watchOS 5.3 or later. You also both need to set up the FaceTime app on your iPhone with iOS 12.4 and be able to make and receive FaceTime audio calls. (Apple, 2023)"

In addition to its social context, Walkie-Talkie is a clear indication that smartwatches have various genealogical roots and how technology reoccurs, reforms and is taken out of the context in which it was produced, such as World War II for walkie-talkies, then recontextualised in today's circumstances.

There are various ways to add a social layer to the user experience. One of these is to expand the social sphere of the watch with different platforms and to integrate the watch with other actors. As mentioned in the focus group data, there are various 'quantified self-oriented' (Hepworth,

2019, p.328) platforms such as Strava and Nike Run Club. These kinds of platforms encourage users to connect to social media platforms and share progress on their feeds.

Nike plus is a good example of this as it encourages people to sync their Facebook accounts with the app and share their accomplishments via feeds. In this way, when a user starts to run, the app shares a notice and asks their friends to praise them. Moreover, the app plays the sound of a cheering audience and lets users know they are supported by others (Zichermann et al, 2011, p.96). Therefore, the social network which users create by sharing their activities is not limited to the device itself; it has the potential to expand endlessly.

Besides social aspects, turning back to the design of the activity app as another important element of my experience, I was seduced by the interaction this app provided. I enjoyed seeing my quantified self as visualised in basic, understandable forms like those colourful circles I was so eager to close to achieve my targets. At this point, design of this application can be seen as the most effective element of my engagement with the watch.

The infographics are designed in a modernistic, simplistic way with the effect of flat design. Self-data is transformed into readable, understandable geometric shapes. By implying basic design principles such as hierarchy, rhythm, negative space and repetition, the communication became effective both functionally and aesthetically.

These aspects, particularly rationalistic design style, also contribute to the level of users' trust on the accuracy of data. In that sense, visual design convinces users that they receive objectively summarised data about themselves. However, there is no detailed textual information that might confuse them, so, the basic numbers and percentages are open to their own evaluations (Hepworth, 2019).

On the other hand, simple layouts, geometric shapes with rounded edges and vivid colour scheme make that functionalist design more favourable and friendly (Hepworth, 2019), while they are perfectly aligned with the form of the smartwatch itself. Additionally, there are rational choices based on the cultural codes associated with chosen colours. For instance, red, which is associated with blood and fire (Russell, 1991, p.14) connotes activity, power and energy, and is a reasonable choice, since the 'move' ring shows how many calories that users burn.

5.5.5 Mindfulness with the Watch

During my experience, I also occasionally used the Mindfulness app. There were two options in this application: 'reflect' and 'breathe'. Both were designed to last 1 to 5 minutes. Moreover, there were some suggestions for users such as sitting and closing their eyes during reflection sessions (Figure 77). At the end of the reflection session, users could see their heart rates, too. When I saw this app first, it seemed a bit conflicting to me since the smartwatch imposes the idea of being productive, quantifying the actions, achieving goals and inevitably creates pressure on users. Yet, it also offers meditation, which normally would not be perceived as a quantifiable activity, to make users relaxed in a quantified way, to some extent.

As it can be seen in the last image (Figure 77) there is an emphasis on the duration (*'...help you feel more calm, focused and centred in as little as one minute'*) which reflects how smartwatch convinces users to use this app in line with the idea of using time efficiently. It reflects how people are focused on being productive and how they are in hurry. By choosing this kind of language, the smartwatch becomes more persuasive. It seems that smartwatches offer whatever users need in their lives, from being well-organised and productive to being mindful. Or they determine what people need and how they should organize their actions. There is a tension between these two opposite statements and that tension is what provides variety in experiencing smartwatches.

Figure 77. Tips for reflection and the moving image appears during the reflection

In my first experience, the 'breathe' exercise felt unusual, as I felt so many taps on my wrist. Feeling those haptic alerts was uncomfortable and distracting. I thought that those taps were unnecessary in an app that requires deep focus. However, it might have aimed to help focus on the body and sensations. After I used the app a few times I understood that haptic elements are important part of this practice besides visual design that will be discussed in next paragraphs.

First of all, very intense and frequent vibrations are felt in the 'inhale' part, and they are in harmony with the image on the screen. These nudges start slowly and then accelerate as the

image extends and user inhales, then slow down as the image stops extending. These vibrations are direct physical interventions. However, they are also a part of the sensorial experience. When it is time to exhale, the image starts to become smaller, and there are no nudges after that point. The exhaling part seems like a relaxation time and the user is not disturbed by the haptic stimuli anymore.

The visual design is also crucial to communicate with the user in this app. There is an image that expands when the user needs to inhale and then contracts when they need to exhale (Figure 78). There might be a semantic relationship between the act of breathing and this moving image. It possesses the flexible quality of lungs and expands as the user inhales. With this indirect connotation, a kind of integration becomes possible between the watch and the user's body. Even though it is an illusion, this interaction contributes to the phenomenon of forming a united whole with the user and the watch. It is a convincing visual element that presents how the smartwatch is sensitive and dependant to your body.

The image itself is very similar to a mandala, a symbolic pattern used as a meditation tool in Hindu and Buddhist Tantrism. Mandala is a visualisation of the universe, so, people experience cosmic integration and disintegration as they mentally enter and progress to its centre. There are basically two types of mandalas, and each represent an aspect of the universe such as the "movement from the one to the many", and "from the many into one" (Britannica, 2019). Therefore, it can be said that there are symbolic meanings and digitised cultural references in this app that are visible through the design.

Furthermore, cosmic integration and disintegration processes of the meditation happen here simultaneously in a smaller parallel universe of user experience consisting of a subject and object. The user, occasionally, gets more integrated with or detached from the digital universe that the smartwatch opens its borders as they use the app. As Jung claims (1968), creation of mandala is a part of 'individuation process', and it signifies the conscious self's attempt to integrate unconscious matter. Even though the user does not create the mandala itself in this case, the synchronisation of breathing and the moving image have the potential to improve both the meditative experience through the self and user experience with the smartwatch. In conclusion, with the contribution of all these semantic elements, the integration between user and smartwatch inevitably becomes reinforced.

Figure 78. 'Breathe' exercise

At this point we see how the app is designed to make users feel relaxed with the help of both visual and haptic elements. In the exhaling part there are no nudges so after all those vibrations users finally can feel relaxed as they move haptic impulses away as well as their breaths.

Nevertheless, even though the design elements are consistent with the idea of meditation, the haptic elements did not help me to focus on my sensations as they were supposed to. The intensive taps made it difficult for me to relax and concentrate. I could even say that they made me a bit stressed. After a long time, I used the app with the haptic alerts turned off, and, conflictingly, it was so ineffective this time. It was easier to focus like that, but, then the experience was not so different from doing meditation without the watch.

The Mindfulness application was a good illustration of how smartwatches prescribe some tasks that are closely related to users' bodies and affect their positions, physiological, and psychological states. At this point, Apple watch seems to be willing to regulate or manage people's mental health as well as their physical health. It seems that this app takes away peoples' rare alone time when they can escape from digitally invaded capitalist world, similar to their sleep time (see section 5.3.3.2.)

5.5.6 Sleeping with the Watch

As we have seen so far, the Apple watch evidently focuses on health and productivity, and this is one of the ways it differentiates itself from other smartwatches. Another application which would support this idea is the 'Sleep' app. It is designed for tracking the user's sleep, so they should not take the smartwatch off when they go to bed. While it seems to be the most important factor for the intimacy between the user and the watch, it is also the biggest reason for privacy concerns. I did this several times, but did not feel comfortable enough to do that every day. Nevertheless, I liked seeing different aspects and stages of my sleep, even though I struggled to understand some of the data (Figure 79).

Figure 79. Some highlights from my sleep data

While reading the information about this 'sleep' feature through the Health App on my phone, there were some tips for sleeping well that conflict with the idea of sleeping with a smartwatch. The app includes keeping electronics out of the bedroom as a recommendation. On the other hand, the watch states that it is not going to disturb or wake the user up at night, as if it tries to convince them to go to bed with it to be able to track their sleeping (Figure 80).

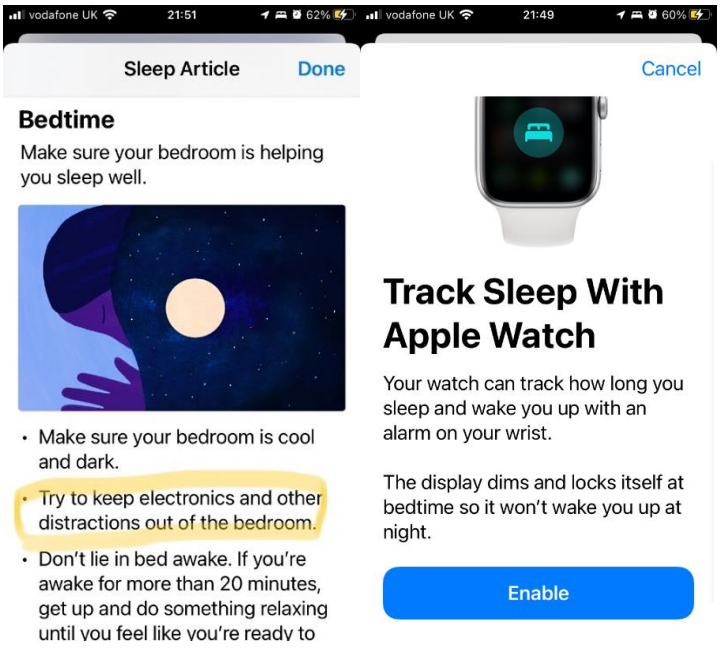


Figure 80. Bed time tips and sleep tracking

On the one hand, going to bed with the smartwatch is like having someone awake with you. It is a chance to maintain your digital presence even when the real you sleep. Since people tend to be online all the time, it helps people to keep their omnipresence in a way. It supresses the fear of

missing something while you were sleeping. On the other hand, it permeates and takes over the only free time people really have.

According to Crary (2014, p.10), sleep was a reminder of the time before modernity and only break from capitalism stealing our time, since our other needs have been commodified, such as the need for friendship. However, sleep's incompatibility with the concept of productivity caused people to undervalue it. Now, it is reconceptualised as an instrumental and physiological function. While the number of people who wake up and check their messages at night has increased, there is no actual state of rest anymore, as the common linguistic figure 'sleep mode' indicates, there is no 'off' mode (Crary, 2014, p. 13). Therefore, sleep is not a break anymore, only a limited condition where functionality and accessibility are still achievable. Accordingly, it might be said that people who sleep with their smartwatches are uploading their presence into 'digital immortality' (Crary, 2014, p.13) through smartwatches. Their sleep is taken over by the smartwatches as well as their data.

5.5.7 Using the cellular feature: The Vodafone Nightmare

Apart from all these experiences, which generally occurred between me, my smartwatch, my smartphone, and my earphones, there was also another occasion including other actors. As explained before, the GPS + Cellular feature of my smartwatch was supposed to enable me to use the smartwatch without my smartphone. The idea was to be able to use the mobile data of my smartphone's plan on my smartwatch. In this way, I planned to use almost every feature and app on my smartwatch, particularly making calls without my phone.

I assumed that I could use the mobile data that I already had for my smartphone as soon as I bought an Apple watch with cellular. However, I discovered that Apple watch does not support Voxi as a carrier, only Vodafone, EE, and O2 as operators. Although Voxi is a subsidiary mobile network of Vodafone, it was impossible to use the mobile data included in my Voxi plan with my Apple watch. Before getting the watch, I searched for this issue, and to be sure, I asked 'Apple support'. I communicated with someone from Apple through messages on my phone, who directed me to speak to a Voxi representative.

I visited the Voxi website and started talking to a chatbot. By trying to trick or convince the chatbot to direct me to a real person, I finally talked to a member of staff. She said that I needed to switch my number to Vodafone to be able to use the smartwatch independently. Moreover, I was going to need to have 'one number', which enables me to share my "mobile plan's allowance of data, minutes and texts with other devices (Vodafone, 2025)."

In addition, I would have to have a ‘pay monthly’ account with Vodafone on my phone as ‘one number’ does not work on ‘pay-as-you-go’ accounts. I also learnt that I needed to have a twelve-month contract at the shortest to be able to keep my number. Everything in that online chat was so unexpected and confusing for me, but, at least, I realised that this process was going to be much more complicated than I expected.

The person I talked to via online chat suggested that I get a new phone or sim to be able to use my watch like a smartphone. There were lots of detailed instructions and numerous steps to follow. All these steps were intimidating, and I started to feel a bit disappointed.

Besides these confusing conditions, there was another unexpected piece of information; Vodafone was going to do a credit check and see if I was allowed to have their products. 'Credit check' was a brand-new term for me, and although I asked for clarification, it was still not clear to me. During our online chat, I learnt all the requirements for the credit check, such as having lived in the UK and having had a UK bank account for longer than 3 months.

After this disconcerting conversation, my next stop was the Vodafone store. I talked to someone about the options, as I needed to select a new plan for my phone number. However, I realised that many things the member of staff told me in the online chat were incorrect, such as the prices of one number and the conditions of plans.

The member of staff in the store sounded like she was speaking in a completely different language, using some terms that I did not know. Everything was so confusing when she tried to explain the process including the cancellation policy. However, she did not explain the technical process such as how the smartwatch becomes activated and how ‘one number’ works.

She asked me the model of my smartphone and checked if I needed a physical sim card or an e-sim. I had a quite old version of iPhone, so that made me feel a bit anxious. Although I updated my phone’s software to be able to pair it with the smartwatch, I felt a bit uneasy for not updating my phone for a long time. I thought having an old phone and the newest watch at the same time seemed strange. At this point, upgrade culture was effective again, and it made me feel like I was out of touch.

Although this did not influence me to the extent that I felt urged to buy a newer phone, it did cause me to feel a bit ashamed of having an outdated Apple smartphone. I was not exempt from internalising this culture and unconsciously knowing that my phone was obsolete. As Rottinghaus (2022, p.7) stated, upgrade culture is ‘rapid, perpetual and inevitable’, creating a shift in people’s perception of technological changes over the centuries. Although not in the same way as the technological developments disrupt the mundaneness of everyday life and create a feeling of

awe, wonder and terror that Nye (1996, p.16) described as ‘technological sublime’, consumer technology companies still utilise the concept of futurity with planned obsolescence in their strategies (Rottinghaus, 2022). There is still an element of wonder to technological changes, however, these are expected and estimated. Neither my smartphone nor my smartwatch had been designed to last long, as their promise of futurity requires novelty every single year. Therefore, individuals must either adopt this reality, or miss out on many services, as happened to me here, and feel excluded. My lack of alignment with upgrade culture only caused me problems.

After the conversation which made me reflect on upgrade culture, I noticed that there was an option which would allow me to keep my number when switching. This was crucial for me, as I did not want to have to inform institutions and organisations such as the university and the office of education counsellor about my new mobile phone number. The issue here was the fact that everything, every single online presence of mine was also connected to my mobile number, as well as my email address. I realised that all my actions were linked. All the things I do in everyday life, such as shopping, logging in to my accounts on various websites, or ordering takeaways were related to my phone number. All different parties such as courier companies and banks would contact me through that number. It might not be as difficult as it seems to change someone’s phone number; however, my aim was to avoid all these obligations as much as possible. I did not want to lose the network I already had through my phone number. The people who know my number were the secondary issue I considered. I realised that there was an interdependent information chain that I did not want to break.

Therefore, I moved my number to Vodafone, and I chose a 30-day plan with 20 GB of mobile data to use my smartwatch’s features without my phone.

The request of carrying my number to Vodafone was quickly approved. However, all the other procedures including telling the staff my EID number took ages. I did not even know what the ‘EID’ number was, but it was in the ‘about’ section on my watch, with other information, such as the serial number and model. I learnt that it was my smartwatch's ‘eSIM identification number’, used on certain occasions such as eSIM activation (Vodafone, 2022b) to contact the operator.

After all procedures, I was told to wait 24-48 hours for my watch to activate. However, nothing happened in the first week. Or the second. Then longer. During this distressing time, I constantly tried to contact Vodafone, and spoke to many people both online and via the customer service number. They all claimed it would activate in 24 hours. Many ‘24 hours’ passed, and the problem was not solved.

During these exhausting days, I desperately tried to solve the problem by sitting in front of my laptop waiting to speak to a human through the online chat or listening to the constant 'hold music' until I could reach someone. These steps took hours and hours with no solution. The people I contacted were unable to even identify what the problem was.

In one attempt to solve the problem, they cancelled my current sim card and gave me instructions to activate eSIM on my Vodafone account. I followed the instructions, but at one stage, my phone failed to scan the QR code needed to activate the eSIM. Meanwhile, the person I was speaking to suddenly left the chat and the sim card in my phone was cancelled. It took a few more hours to contact Vodafone again and get my sim card re-activated.

On another day, the conversation with Vodafone staff took so long that my laptop's battery ran out. Therefore, I lost connection with the team. This had happened many times since the waiting period was long and all people who I contacted transferred me to another person. While waiting to get in contact with someone more 'competent', the window automatically closed because there were no updates in the chat.

I went to the Vodafone store many times to solve the problem. However, the same people who sold the plans to me refused to help, insisting that they did not have the authority to help, and I needed to talk to customer service.

In the end, one member of staff told me that my account details might be the problem, as I had two independent profiles as user and payer, and I needed to merge them. Finally, I had a reason for the problem. Seemingly, I had more than one presence in the Vodafone world. Having multiple profiles as user and payer was a representation of multiple selves in the digital world and how companies portray customers.

Everyone I spoke to transferred me to another team member who supposedly specialised in that problem. Eventually, someone confirmed the problem and claimed that it was now solved. However, I kept receiving the same notifications of errors (Figure 81 & 82).

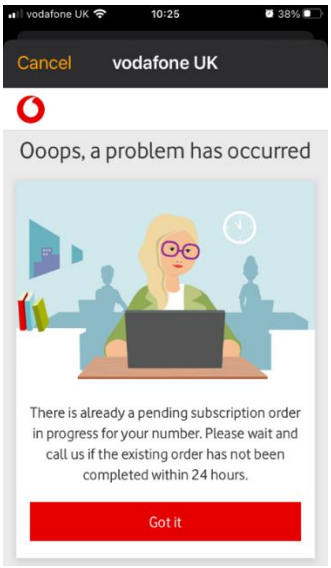


Figure 81. One of the warnings that I saw whenever I tried to set up mobile data on my Apple watch app

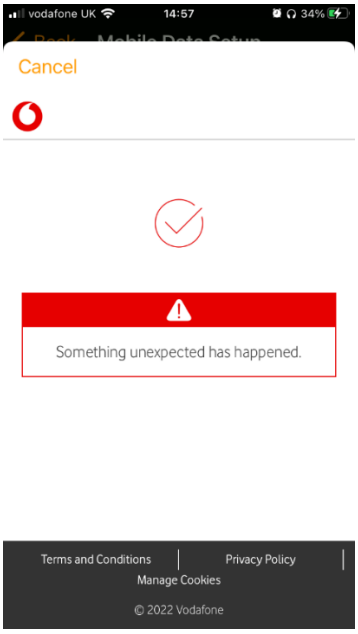


Figure 82. Another warning on my Apple watch app

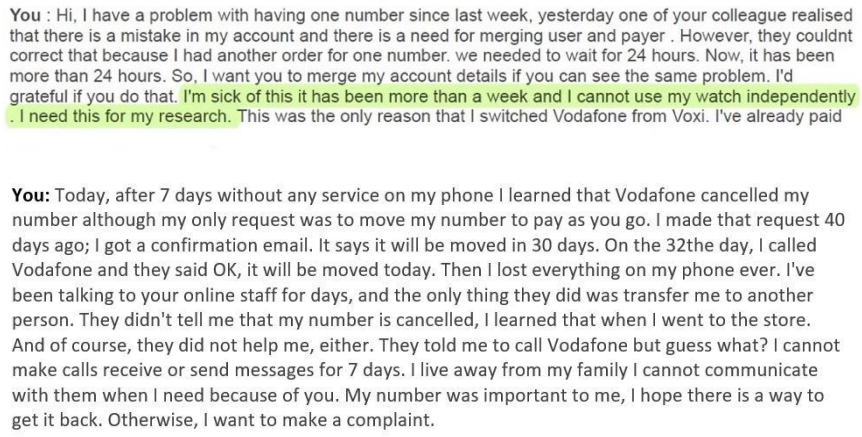
As seen in the screenshots, '24 hours' and 'Something unexpected' were the key words for my experience. These words depict the relationship between technological systems and people. They illuminate the expectations, ignorance and alienation of people as users of these services. My expectation from technology-related services was to be fast, uninterrupted, and smooth. However, there was something unexpected in my experience and it was out of control. At least, this was the impression that all actors of this case left on me. Furthermore, they did not accept any responsibility.

I felt so exhausted and desperate at the end of every conversation during this process. I felt that they apply a strategy to keep you as a customer as long as possible and make you wait hours and hours until you feel too exhausted to demand something. They make you believe that there is nothing to do except waiting for the system. It seems as if nobody has control over the process. It is a technical issue, and it must always take 24 hours. Eventually, I was so frustrated with all of this and just wanted to cancel my plan. However, this was not the end but the start of another frustrating process.

I wanted to move my number back to pay as you go to stop paying for a service that I never used. Vodafone received my request to move my number to pay as you go, and it was to be transferred back in 30 days. However, they did not do that on time, and I had to call again. After a few hours, I completely lost service. I knew that it was possible to lose service for around 20 minutes when they moved the number. However, my phone did not function for days. The vicious circle started again.

This time, reaching out to Vodafone was more difficult, as I was not able to use my phone anymore. When I went to the Vodafone store, they told me that my number had been cancelled completely. I steamed up when they did not help me there again. I wrote a long reproachful message on Vodafone's Facebook page, which they immediately replied to and gave me back my number. The power of social media helped me draw attention to my problem. Using companies' social media accounts for complaints is a common practice, which provides you with the advantage of being visible to many people. It is an aggressive tactic as it may harm the brand image. Thus, social media was incorporated into my personal experience with my smartwatch again, but in an unexpected way.

In conclusion, I could not use the cellular feature of my smartwatch even after weeks of effort. It was an annoying, frustrating, and disappointing experience. It is not possible to find the right words to express my frustration with that process. However, I kept transcripts of some online conversations with the staff. I did not plan to use them in this study; I only recorded them to show other staff members what their colleagues told me. They thoroughly reflect my feelings as they were written in the heat of the moment (Figure 83).



You : Hi, I have a problem with having one number since last week, yesterday one of your colleague realised that there is a mistake in my account and there is a need for merging user and payer . However, they couldnt correct that because I had another order for one number. we needed to wait for 24 hours. Now, it has been more than 24 hours. So, I want you to merge my account details if you can see the same problem. I'd grateful if you do that. I'm sick of this it has been more than a week and I cannot use my watch independently . I need this for my research. This was the only reason that I switched Vodafone from Voxi. I've already paid

You: Today, after 7 days without any service on my phone I learned that Vodafone cancelled my number although my only request was to move my number to pay as you go. I made that request 40 days ago; I got a confirmation email. It says it will be moved in 30 days. On the 32the day, I called Vodafone and they said OK, it will be moved today. Then I lost everything on my phone ever. I've been talking to your online staff for days, and the only thing they did was transfer me to another person. They didn't tell me that my number is cancelled, I learned that when I went to the store. And of course, they did not help me, either. They told me to call Vodafone but guess what? I cannot make calls receive or send messages for 7 days. I live away from my family I cannot communicate with them when I need because of you. My number was important to me, I hope there is a way to get it back. Otherwise, I want to make a complaint.

Figure 83. Quotations from the online chat which demonstrates my frustration

Being unable to use my smartwatch as a smartphone has been a huge part of my experience, unexpectedly. It has been such a strong illustration of how it can be difficult to access the service that companies or products promise. In this case, it is even more ironic when the promised 'seamless experience' is taken into consideration. The product itself promises an effortless experience for users, with precision and consistency in its functions. However, it was the opposite, especially when it depended on third parties.

This experience also illustrates the multiplex network that a user would find themselves in when purchasing a 'smart' product with the idea of making their lives easier. Even though producers promise effortless steps as happens when you touch the screen of a smart product, it is not a straightforward route. Different institutions, organisations, people, and objects are layers of the whole information system. The relationship which is supposed to be established between a person and an object extends itself to other human and non-human actors. At this point, a discrepancy occurs between the promises and deliveries of companies and products. Consequently, reality may not meet user expectation.

Besides the interrelationships between many actors from credit companies to telecommunication companies and customer services, this problem also highlights the deficiencies in the infrastructure, in terms of collaboration with carriers. The complaints that I found on the Vodafone forum support the fact that many people had the same problem as me (Vodafone, 2022a).

As seen in users' comments and in my case, these problems inevitably make people regret purchasing the product, since they pay for smartwatches with cellular more than other models. As indicated in users' comments, the process support is complicated by the involvement of many parties. Companies tend to pass the buck in these kinds of cases.

The period ‘24 hours’ was frequent in other users’ comments, reminding me of the 24/7 term of Crary (2014), which refers to the ‘round-the-clock process of production and consumption’ (Poole, 2020). A clear parallel occurs between what exists and what is instantly accessible or serviceable by a 24/7 world (Crary, 2014, p.19). There is no time that the system does not work, there is no period one cannot benefit from networked services. However, as seen in my case, even these never-ending operations cannot be effective when there is a disruption in the process across the network.

One of the main issues in this process was disinformation, and subsequently technological ignorance. Neither the staff in Vodafone nor I were proficient and competent in understanding the technical problems. Even the staff who were supposed to be in the ‘technical’ team were not capable of understanding the process and identifying the problem. Unfortunately, I was often misinformed by staff, causing me to lose my existing service. The difficulty in communication in terms of many aspects was incredible in this ‘information’ age. From the quality of sound in phone calls with customer service to the necessity of talking to a chatbot online, all aspects of communication were below the standard quality of communication that civilisation has reached so far.

The cellular feature would have allowed me to receive and make calls when going for a walk without my phone – an experience I missed due to the above-mentioned reasons. Although this disappointed me, it enabled me to see the downsides and weaknesses of the whole system.

Additionally, it is not possible to use WhatsApp properly on the smartwatch. This lack of compatibility between this app and the watch reduces my desire to use it independently. Although it is possible to see message notifications and reply by sending short ready or voice messages on the watch, it is not possible to make or answer calls.

Seeing WhatsApp messages on my smartwatch is highly distracting as I receive many in a day. Nevertheless, I have not turned those notifications off, as I am a bit addicted to the app. Even though I did not open messages, it was good to see who messaged me immediately. My desire to be connected all the time, especially to my family, and not missing any important messages, kept me using it.

Therefore, not being able to use all my apps properly on the smartwatch was a disappointment. It could be inferred that the apps and the personal ways of using them in daily life are important determinants of one’s experience with the smartwatch. Consequently, the way people use their smartphone would be a strong factor in the way they experience smartwatches. At this point, my experience confirms that there is a correlation between smartwatch and smartphone use. The

smartwatch is a flexible gadget that means something different to each person. In my case, WhatsApp is the most crucial app in my everyday life, but it would change for anyone according to their usage habits of their smartphones. Thus, smartphones have a dominant effect on everyday life and so on how users experience their smartwatches.

5.6 Analysis of Autoethnography

5.6.1 General Overview

As smartwatches are versatile and sophisticated products, the phenomena that I experienced inevitably linked back to various broader subjects and concepts such as neoliberal capitalism, sustainability, surveillance, everyday life, etc. Moreover, using two different smartwatches provided me with the opportunity to consider and compare alternative ways of thinking about and designing smartwatches. This also enabled me to explore any possible archaeological traces both in the design of smartwatches and the ways I interact with them. Finally, this unique personal experience has also enhanced my perspective and the ability to self-reflect.

Numerous themes and sub-themes appeared during the exploration of my personal experience with the Bangle watch and Apple watch as I engaged with the products closely. These included '*Quantified Self & Gamified Discipline', 'Informatic Culture, Technological Ignorance and Resistance'*, *'Datafication of Everyday Life and Surveillance', 'Intimacy', and 'Broader Networks and relying on Expert Systems'.* Due to the constraints of this thesis, only the most prominent ones will be discussed in the next sections.

In this section, my experience with two different smartwatches will be discussed, to address the aim of the research. The parallels and differences between these two experiences will foster the discussion of the 'smartwatch' phenomenon in various aspects and provide different standpoints.

In the autoethnography sections, I highlight different aspects of using smartwatches from inferences about the big picture to the smallest details in everyday life. Therefore, even though this research has been conducted at a micro level, it also provided diverse clues to understand issues at the macro level. As I simultaneously took notes on the practicality of smartwatches, the way I interact with them, and the emotions I experienced, the analysis of my experience yields various perspectives and discussions regarding smartwatches and the system in which they exist. Moreover, it examines the idea of the self through my agency, reflects my attitudes to different elements of using smartwatches, my cultural background, and the dynamics of my everyday life. It provides opportunities to explore the self in contemporary culture and my private sphere in

relation to the public sphere as a member of today's society. It offers insights into the present, which is the starting point of design archaeology.

First of all, to evaluate my experience in general, using the Bangle and Apple watch were distinctive experiences. They raised significant topics such as sustainability, privacy, upgrade culture, and dependency on third parties since these products have opposite positions on these issues. On the other hand, by interacting with them, it was possible to explore how these different positionings affected their design aspects. Experiencing both devices made me consider the possibilities of creating self-reliant smartwatches according to societal trends such as neo-collectivism (Friend H. & Houghton, O., 2022) which includes the interest in 'collective ownership' or community-driven systems and contributes to the decentralisation of power. Creating a self-reliant watch could be an archaeological turn to mechanical watches in a sense.

Furthermore, the tension between having long-lasting products or upgrading products was another prominent matter during my experience. On the one hand, sustainability and temporality issues created an internal moral conflict for me. On the other hand, I enjoyed the Apple watch more, despite it being a product of upgrade culture. This led me to question my values, my expectations from these products, and to understand the reasons behind my feelings and preferences in the context of upgrade culture.

Upgrade culture, based on Moore's law, denotes the constant exponential increase in the processing power of microchips becoming an inseparable component of culture, as well as business strategies (Rottinghaus, 2022). Companies benefit from narratives of improvement in putting their planned obsolescence strategies into practice in an effective and acceptable way. Rottinghaus (2022, p.13-14) defines these narratives of improvement as 'reconfigured technological progress narratives' from the past and asserts the idea that ancient beliefs and assumptions about technological change are still relevant and form today's technocultural relationships. On the other hand, the fact that people frequently associate newness with 'material and moral betterment' (Slack and Wise, 2007, p.11), and therefore a better life, contributes to the penetration of upgrade culture.

Upgrade culture creates a mindset for the consumers that allows disposing what is obsolete and results in more frequent purchases. The desire to stay up to date by having the most recent products motivates millions of people to adopt these consumption patterns. As Rottinghaus (2022, p.13) indicated, 'upgrade', as a term, puts emphasis on quality, while 'update' prioritises time. Therefore, upgrading a device is directly associated with attaining better quality. Nevertheless, he also states that some marketers he interviewed confessed that they reframe standard features as upgrades when reiterating devices and presenting each change as an

enhancement in quality. Hence, he describes upgrade culture as an echo in the guise of technological progress (ibid., 2022).

This culture is obvious in consumer technology products, especially Apple's. In my experience, it was easy to feel obliged to align with the latest updates and to upgrade my devices. If I had the resources this could have led me to buy the latest smartphone to be able to use my smartwatch more easily. Although I had not been directly influenced by the marketing narratives until obtaining the smartwatch, technical restrictions compelled me to consider it. Meanwhile, I cannot deny that having the latest version of Apple watch provided me with a sense of superiority, while having an outdated iPhone did the opposite. My experience was inevitably influenced by these cultural, symbolic and systemic aspects.

On the other hand, the environmental impact of upgrade culture urged me to question my pleasure of using the latest, so-called most-improved Apple watch by comparing it to the idea of having a long-lasting product, exempt from the imposition of upgrading by software updates and defects in hardware. The experience of using Bangle Watch illustrated a different way to design features which offer users more flexibility, such as customisation, application development and repairing. This was less harmful to the environment, and it contrasted with the difficulty and expense of having technological devices repaired. This required consideration of the harm that disposed, but still functional, electronic products cause the environment by creating e-waste.

According to the United Nations's 'Global E-waste Monitor (GEM)', the increase in e-waste is five times quicker than the amount of recycled e-waste. In 2022, '62 million tonnes of e-waste' was created and increased 82% since 2010 (Cornelis, et al. 2024, para. 1-2). Upgrade culture boosts constant consumption by fostering marketing of ephemeral products instead of long-lasting or repairable ones. Both the existing research on upgrade culture (Cooper, 2013; Rottinghaus 2022) and my personal experience indicate the urgent need for an alternative approach in manufacturing, design and marketing of these products.

In addition to its opposition to upgrade culture, the Bangle watch, as a product that users can replace some parts of, or design the applications themselves, also offered me a more engaging and participatory experience than the Apple watch. However, my preconceptions about smartwatches and my expectations from technological devices were different. I realised that I expected smartwatches to be fast and easy to use in line with the above-mentioned concept of rapid, inevitable, technological progress. I expected them to be smart enough to do complete tasks without any real effort on my part.

Nevertheless, I had various difficulties while using both watches. Although the nature of the issues differed, problems at different stages originated from a lack of technical knowledge. Technological ignorance became a prominent theme. Although the actors were different depending on the cases, technological ignorance, which is used for both the lack of information about the complex systems, and the instances where people reject or neglect information, has been one of the biggest issues of my experience. This concept encompasses further definitions and varieties, notably from an epistemological perspective, demonstrating its complexity (Bhatt & MacKenzie, 2019). It has provided a rich foundation to explore the structures and motivation that maintain specific practices and cognitive processes in the context of digital culture.

Another prominent theme was unsurprisingly the quantified self. As the strongest theme of focus group study, quantified-self manifests itself in many ways also in my personal experience. Monitoring and seeing my physical activity in quantified forms was one of my main motivations for using smartwatches after a certain point. Especially, with the activity rings as simplified representations of my numeric goals, I was so enthusiastic for turning my movements into numbers and reaching a certain number of steps or burning specific number of calories a day. Although quantified self refers to using numbers to measure bodily movements, I noticed that the smartwatch is integrated with many everyday practices and brings the same perspective to even the practices that are not quantifiable. It brings the motivation of being productive and the most effective way to organise a day. The notion of quantified self is an overarching term for many sub-themes, and it is also closely linked to qualitative experiences.

Consequently, quantification of the self also means datafication of everyday life. These are interwoven processes, and the smartwatch permeates different spheres of everyday life by quantification and tracking. This permeation sometimes results in disrupting routines, sometimes creating routines, and establishing social networks. Even though I could not experience the social aspects of the smartwatch, it obviously encourages users to create social interaction through quantified selves. As it is seen in many cases, the quantified self and ‘qualified self’ are inevitably involved in an interaction. When it is considered that the smartwatch incites people to compare themselves with others by sharing their data, it can be said that it also creates a new way of monitoring and persuades people to allow it for their own benefit.

At this point, it would be appropriate to mention the concept of surveillance as another theme of my experience. As is evident in my experience, I felt anxious at certain points about being monitored in relation to sharing my data. I let the smartwatch record my data for the sake of self-knowledge although I felt uncomfortable. Thus, there must have been something that kept me using the smartwatch and sharing my data. During the autoethnography, I identified some factors

influencing me on sharing my data and normalising surveillance. One of them is gamification, which is used as a tool for presenting the quantified self.

Gamification of using smartwatch with various elements such as awards veils the fact of being monitored as well as it encourages people to be involved in their quantified selves. It is one of the strongest elements that keeps people inside the system besides the social interactions. Gamification elements strongly impacted various areas, including self-discipline, engagement and intimacy.

Intimacy appears as another theme that emerged in focus group discussion. While gamification assists the creation of intimate relationship between user and smartwatch, both the visual language and the chosen discursive elements also contribute to an intimate feel. Using friendly, and persuasive language is highly effective in creating intimacy. Thus, having an affinity with the smartwatch, the user starts to see smartwatch as a companion whom they share lived experiences with. Particularly, health-related applications increase the intimacy by producing an effect of being cared by the product. They cause people to associate the smartwatch with domestic feelings, in accordance with the increasing trend for caring and empathy as an output of the pandemic. In this sense, my experience comprised such specific context of my personal circumstances during the pandemic and illuminated the potential for the smartwatch experience to vary depending on individual experiences.

Additionally, physical proximity between smartwatch and user, and the 'haptic instants' in forms of taps and nudges are the key issues as Gilmore (2017, p.190) mentions, when someone uses a smartwatch. Since they physically contact with users' bodies to transmit any information, which can be in any form, from an email to a notification of a social media platform, they support establishing an intimate relationship between users and watches.

On the one hand, by conveying information to body, and governing the body in various ways, they reinforce the idea that smartwatches have their roots in Cartesian mind-body dualism with the domination of mind over body (Moore et al., 2016). On the other hand, the information which needs to be processed by mind mostly comes from body. Consequently, this relationship blurs the distinction between mind and body, while the knowledge of body promises a rational way to improve peoples' performances (Moore et al., 2016). At this point, it can be argued that the experience that smartwatch offers goes beyond this dualism (Moore et al., 2016), especially my experience with the 'mindfulness' app, where the spirit or mind as well as the body was an object to be improved, is taken into consideration.

As is seen in ‘mindfulness app’ case, the value and impact of visual elements are remarkable in terms of user experience. Visual elements as intermediaries are keys for almost every theme in my experience, particularly for quantified self and gamification. Besides their design aspects which support persuasion and interaction, they also represent the philosophy behind the products. Moreover, with the semantic codes they carry, they assist effective communication between user and product.

Regarding other highlights from the autoethnography, I often addressed archaeology in different contexts, ranging from design, the way people interact with smartwatches in everyday and underlying ideologies of the products. Various archaeological traces from videogames and smartphones to touchscreens and digital watch faces that mirror mechanical watch dials have been identified. The military was also an area that many antecedents of the smartwatch stemmed from. However, the most prominent parallels were in the usage and effect of technological devices in everyday life.

Overall, my experience with smartwatches might be described as unexpected. I had numerous different feelings during the process. It started with being surprised and mesmerised. I also felt impatient as I constantly failed to achieve some tasks such as pairing the watch with my smartphone. Other notable feelings are highlighted through emotional coding of the text, which I produced from my personal notes.

Feeling confused and unsuccessful notable emotions, as was suspicion about the precision and privacy of data. When it came to dealing with third parties, my experience became increasingly frustrating and disappointing. Moreover, the health-related apps often caused anxiety, despite the assurance that they provided me with.

In contrast, positive emotions such as being proud of myself and feeling free also appeared when I achieved my activity goals and walked in the park without my phone. An almost magical feeling was initially dominant, until I became familiar with the products. Unlike the focus group participants, who have used smartwatches for years, I was more suspicious and worried about my data, and had the feeling of being monitored often. I initially described my smartwatch as ‘creepy’ because of the notifications. I was generally hesitant when I needed to ‘allow’ any data-related features.

Nonetheless, it did not take long for me to become captivated by the idea of knowing myself through numbers. With the help of gamification, I felt very enthusiastic to reach my ideal self. The seductiveness of gamified way to see my quantified self kept me using the smartwatch for a long time. However, my addiction to the smartwatch lost its effect in time to a certain degree. I did not

give up using it, but I was not as worried as I used to be when I forgot to wear my watch for exercise.

I noticed that my level of enthusiasm for being active enough to reach my goals and feeling disappointed about my performance somewhat decreased in time, mainly through becoming accustomed to the notifications, and they started to have less effect on my actions. Reading and thinking critically about smartwatches may also unavoidably have influenced my feelings.

When I re-read and re-evaluated my experience, I realised some of my emotions, expectedly, differed. Those early emotions were real and essential to reflect on specific stages of my experience. For instance, I gained the habit of using my smartwatch mostly when walking or going to the gym after a few months and it became my 'exercise buddy'. However, I did not always perceive it as friendly.

After my self-observation period, I did not use the smartwatch for a while. Then, I was reluctant to use it again because I was not active in my daily life at all. I did not go to the gym; I felt too busy to even take a daily walk. I also felt that I gained weight. Therefore, I did not want to count my steps and to see my VO_2 max under these circumstances. I did not want to see the reality and feel unhappy. However, I plan to use it when I start walking and exercising again, although I may wait until I am fitter.

Although I described my experience and feelings, deciding how to describe smartwatches according to my self-observation is still challenging. However, one of the outputs of this research is that the depiction of smartwatches is subjective, and the meanings, functions and uses of smartwatches are open to reproduction in different practices of everyday life. As Garfinkel (1967) mentions, everyday life is a participatory production, and individuals have room for manoeuvres while producing daily practices.

As the founder of ethnomethodology, Garfinkel's ideas have been influential in areas such as praxis theory, science, and technology (Schuman, 1987; Heath & Luff, 2000). Ethnomethodology is described as exploring the methods that people use to construct common sense and negotiate actions in everyday situations, puts emphasis on micro interactions and how people create and maintain social order. In terms of examining embodied practices, this research can be seen as parallel to this sociological approach. Although there were not intentional disruptions to everyday routines as in Garfinkel's (1967) breaching experiments, this research observed the way people construct their practices in relation to social order when they create new routines, or their routines were unexpectedly disrupted. Similar to Garfinkels' s experiments, it was possible to

observe how users try to maintain a sense of control and order when interacting with technology. Managing the intrusiveness of notifications could be considered an illustration of this.

Moreover, to grasp and identify the feelings and behaviours against widely accepted social norms which are embedded in the smartwatches was another parallel between this research and Garfinkel's approach. This provided the opportunity to see the possible reactions to the social norms including various tactics, adaptation, and rejection. This way, it was possible to examine the tension between structure and actor. As Giddens (1986) reinforces, by contradicting Bourdieu's criticism (1977) about ethnomethodology being reductionist, considering the emphasis on the role of routine practices for societal order, Garfinkel's approach is useful to see the dynamics between structure and practice. In the recent discussions concerning theory of practice, it is also stated that practical actions and use of tools subindicate structure (vom Lehn, 2014).

Reflexivity, on the other hand, is another useful element borrowed from Garfinkel (1967), as it implies not only how people's actions are shaped by context, but also how context is continually changing via people's actions. In terms of this reflexivity and contextuality, it was obvious that the broader social structure and expectations influenced the use of the smartwatch, concerning the dynamics between upgrade culture and opposing trends. Productivity and growth-centred social order and the use of smartwatch in this context also exemplified the reflexivity in my experience.

In this respect, it is reasonable to say that although not completely independent of social structure, individuals subjectively reproduce the smartwatch within their contextual practices of everyday life. The functions and the meanings of smartwatches constantly change depending on the user and the context where social interaction and negotiation occur as Garfinkel (1967) describes. Accordingly, my smartwatches have been several objects: toy, hidden camera, extension of my smartphone, pedometer, oximeter, or accessory, although they mostly have functioned as trackers. Apple watch was also an extension of my work with its email notifications and made me feel structural pressure. However, I 'negotiated' with the watch and stopped it by changing the settings.

Another fact which was evident throughout the study is that considering smartwatches as independent objects is not realistic. They are only one party that works in coordination with many other actors which are both human and non-human. They create an ecosystem in which users can switch from one realm to another and maintain their omnipresence. The integration of smartwatches into broader systems and their complexity are noteworthy.

Lastly, examining specific terminologies which are used by smartwatches is enlightening since the language of the interface creates such unique discourse. Furthermore, the computational

language and certain terms such as ‘activating’, ‘cancelling’, ‘pairing’, ‘connecting’, ‘updating’, ‘upgrading’, and ‘compatibility’ are considered significant cultural signs and representative of the way we live and think.

Having summarised some key points from the autoethnography in this section, it is useful to discuss the most prominent themes further in the next sections, as they have the potential to reveal deeper insights.

5.6.2 Main Themes

5.6.2.1 Quantified Self and Gamified Discipline

As mentioned before in the analysis of focus group research, quantified self seems the most relevant concept to smartwatches as well as some other tracking technologies. This concept refers to measuring and quantifying the self and the elements of one’s activities in daily life, particularly physical activities such as step counts. The quantified self term is used as a tool for individuals to know and improve themselves through self-knowledge. Wolf (2009) as a co-creator of Quantified Self movement, explains the motivation underlying their project as ‘self-knowledge through numbers’ in his article. He also claims that self-trackers help broaden the knowledge of human life. Moreover, he asserts that people’s everyday experiences will turn into materials for experiential studies with the help of data gathered from self-tracker tools. While he mentions the advantages of this term and how tracking is easier now with user-friendly products, he also touches on the common perception of ‘quantification’:

> “Quantitative analysis by its very nature seems remorseless and inhuman. Numbers may be useful for epidemiologists and insurance companies, school systems, the military, and sociology professors, but what have they to do with the fabric of our personal lives? To be turned from warm flesh into cold arithmetic—what a terrible thing. As the hero of the cult TV series The Prisoner cried, "I am not a number! I am a free man!” (Wolf,2009)

As is stated here, numbers were associated with scientific institutions, businesses, or academic context rather than everyday life. However, as mentioned in section 5.2., with the spread of clocks and the quantified units of time, calculation and quantification became a part of everyday life. The numbers had already started to penetrate the everyday long before smartwatches were devised. People started to try to be on time or to save time by counting it. Hence, numbers reorganised everyday life practices via clocks and watches. Today, the action of counting outperformed the idea of quantifying time and has reached at a point where people count their physical actions and biological patterns that their bodies produce. People can see themselves as

numbers, as quantified knowledge went beyond scientific or economic fields and permeated everyday life.

Consequently, the quantified self term is used as a common term for all self-tracking practices (Lupton, 2016, p.14) now, besides the quantified self movement and website that was created as a community for users and creators of 'self-tracking' tools. It is transformed into a subculture after Wolf's article (2009), and it has become a term which is used in the cultural lexicon (Lupton, 2016). Thus, it can be inferred as a broader term which includes the "ethos and apparatus of practices that has gathered momentum in this era of mobile and wearable digital devices and of increasing sensor-saturated physical environments" besides measuring everyday activities (Lupton, 2016, p.3).

From a theoretical point, quantified self inevitably recalls rationalism and Cartesian dualism between mind and body. People are incited in using their minds to dominate their bodies through numbers. With the smartwatch, people can use the information which comes from the body and process it by using a rationale to improve themselves. Nevertheless, this process blurs the distinction between mind and body as they are integrated and dependant on each other, although mind seems dominant and in control (Moore, et al. 2016).

At this point, the body became objectified, and an endless need for improving it to reach its highest performance emerged. The body which transformed into 'an informational object', 'a readable text' (Ajana, 2013, p.90) started to be seen as a source of 'storable and processable data' via sensors in smartwatches besides other contemporary methods such as 'fingerprinting, facial imaging', etc. (Ajana, 2013; van der Ploeg 2013). In this way, normally mysterious elements and activities of the body became more intelligible and tangible.

People tend to know themselves, but in a subjective or questionable way. As Wolf (2009) states, the ancient ways of tracking oneself were not sufficiently objective. For instance, keeping a journal and record of one's feelings used to happen only when someone felt like doing so. Nowadays, however, the existence of new tools means there is now constant data collection in the background and 'randomised time of inquiry' (Wolf, 2009, para. 7) regardless of one's mood. This reduces the subjectivity and bias. Thus, quantification becomes involved and provides people with some reliability. Quantified data provides a sort of authority, as it is perceived as more objective, technical, and thorough than other data. People see digital data exuding a sense of 'scientific authority' in contrast with subjective knowledge obtained from one's observation and sensations (Lupton 2016. p.56). On the other hand, as stated in an article titled 'Humans judge, algorithms nudge' (Raveendhran et al., 2021), people prefer to be tracked by devices rather than

people, as they think technology-driven monitoring would be less judgemental. A quote from the focus group would represent this feeling:

> "I don't share any of my data… I don't care about people knowing how much I've done and judge me (Participant C (19:27- 20:35)".

However, from my experience, I would not say that I never felt judged by the devices. The notifications from the watch made me feel that I was cruelly judged at certain points. Moreover, seeing my performance as quantified data led me to judge myself most of the time.

It is reasonable to think that smartwatches are not as judgemental as people, but the fact that they connect users should be also considered. The feeling that smartwatches do not judge must have stemmed from the fact that it is not 'human' but only 'sort-of alive'. In addition, according to the authors, people experience a 'sense of autonomy' when monitored by devices, although normally being observed obstructs this feeling (Raveendhran et al., 2021). Of course, this depends on how one uses the devices but, considering that these devices are designed and promoted as everyday objects such as watches and accessories, it is reasonable for people to feel this sense of autonomy.

Even though the above-mentioned research was conducted in the context of the workplace, it is also possible to see the autonomy issue in the interpretations of users in other contexts. As mentioned several times in both autoethnography and focus group research, there are many features of smartwatches that give users a sense of autonomy. There are opportunities for users to manage and limit the functions of devices. Regardless, it is obvious that having digital products monitored is easier to accept and get used to rather than being monitored by people. Nevertheless, in the case of smartwatches, it would not be accurate to say algorithms do not judge, or people are not monitored by others when they choose technological devices as trackers.

Leaving aside the issue of autonomy for later discussion, it is apparent that the need for seeing the self from a relatively objective perspective is one of the motivations of people to adopt quantified self practices. On the other hand, the key objectives of self-tracking seem to be increasing productivity and enhancing wellbeing. Subsequently, the body can be disciplined by the data on smartwatches to achieve an 'optimised self' (Walker et al., 2015). According to Walker et al. (2015), the optimised self refers to 'optimisation' rather than reaching perfection. Therefore, they provide a more reasonable and acceptable term for rationalisation of quantified self as they do not refer to a 'better' or 'the best' self and perfectionism. Quantification aims to address the desire for constant personal development.

Although this idea mirrors my experience with the smartwatch, there is significant uncertainty about the way people assess their optimised selves. As seen in the autoethnography, I was unsure which goals would be appropriate for me, and even though I observed myself and understood my capabilities, it was not easy to accept what I was and adjust everything according to my current version. I wanted to achieve at least the goals defined as moderate by the watch. Then I was more competitive when I saw myself as below average in terms of VO_2 max on the health app. Although the aim of using smartwatches presented as improving health and reaching your best, as a result of feeling competitive towards others and yourself, it inevitably contributes to the desire for perfection. Therefore, quantifying the self not only helps self-improvement but also causes constant competition by evoking the need for comparison. After all, when something is numerical, it can only be made sense of by comparing it to what is smaller or bigger than itself. Hence, the way people understand data is to see if they fit the standards that are created by the data itself.

Moreover, the seductiveness of the quantified self can easily make the user addicted to numbers as happened in my case. At that point, how you do something no longer matters, but *how much* you do it matters. The day when I danced at home just because my walking was not enough to close the activity ring, and my disappointment at doing extra steps but not having them counted for the next days are good illustrations of this situation. Therefore, it is reasonable to say that the concept of quantified self in the way it is applied to smartwatches evokes strong emotions in users, such as ambition and failure. In an article in the Guardian, the quotes from a woman who uses an activity tracker illustrate this phenomenon very well:

> "Hang on. I wasn't running all those miles… Some of it was walking around bookshops and libraries. Some of it was walking around the house. I close the website. I am a failure, after all. (Thomas, 2015)"

This led to the following: 'Recently, I have started to worry: do I even exist without my Fitbit? Without data, am I dead?' (Thomas, 2015). At this point, it is obvious that these products are intertwined with people's sense of self (Lupton, 2016, p.39). The selfhood transforms and becomes multifaceted; a digitised self appears on the smartwatch. From an ontological point of view, with the quantified self, a new hybrid form of being (Lupton, 2016, p.39) comes in sight. Having both physical and digital presences create a need for constant checking and achieving consistency between them.

By using smartwatches, a 'split narrative' is created in the way people's lives are measured. There is their experience, and there is the data about them: 'these may converge or diverge for reasons to do with the fallibility of human memory, or the fallibility of data tracking systems (Crawford, 2014, para. 10)'. Similarly, it could be said that there are two different realities, one is qualitative,

and the other is the quantified version of the qualitative one. Quantified version tends to lack some qualitative aspects. However, as mentioned before, people tend to rely on quantified data more, even though they are capable of sensing various qualitative aspects of their lives.

In this case, individuals are mainly responsible for working on themselves to succeed in being productive, healthy, and reaching their authentic selves. Inevitably, two separate entities emerge here, 'the authentic self' and the 'inauthentic self'. The inauthentic self needs to be worked on by the self (Lupton, 2016, p.49). On the other hand, authenticity becomes something difficult to achieve as smartwatches function to transform the self to fit new standards and social norms that themselves are created by these devices. When the quantified self is taken into consideration, human subjectivity and authenticity are at the risk of failure. However, the quantified-self forms unique identities particularly in terms of biometric data, even though they become invisible amongst others'.

'Biometric' means quantifying biological aspects of the body. Turning the body into numbers makes the data produced by the body an indispensable part of digital identity. Smartwatches, by measuring body movements and functions, turn the unknown inside of the body into comprehensible, visible data (Lupton, 2016). In this respect, the way smartwatches present this data becomes significant. According to my observation, a visual language which is identical to the conventional graphics in medical devices is used in smartwatches, especially for the heart rate and ECG features. This enhances the reliability and accountability of these devices, creating a similarity to medical devices, despite companies emphasising in their communication that smartwatches are not medical devices. Regardless of their reliability, the sense of self is enhanced, as knowing the inside of the body and how it functions all the time is possible with the help of these visual elements. This increases the intimacy between users and smartwatches. Consequently, it is inferred that the quantified self instigates qualitative experience and influence intimacy indirectly.

In an archaeological sense, the quantified self has many traces back to the past. As discussed before, the quantified self was important at the beginning of industrialisation. As the main predecessors of smartwatches, clocks and watches made this notion more visible in everyday life. On the other hand, this concept was applied to workplaces, and Taylorism represented the idea of work discipline by measuring workers' performances. As a result of the widespread use of clocks and watches, the separation of public time and private time started, and 'time-discipline' dominated all spheres of everyday life.

Besides time discipline, especially when body-related data that smartwatches provide is considered, another precursor of quantified self could be the weight scale (Crawford et al., 2015).

In terms of self-measurement and self-knowledge, common promises of both smartwatches and weight scales, weight scales can be considered as predecessors of smartwatches (ibid.). Similar to clocks and watches, weight scales were seen in public spaces first, before they moved from streets to homes. When they were used in the streets with a penny, they had some gamification elements as well as smartwatches. For instance, people could take their pennies back if they guessed their weights right or they could be given some incentives such as candies or horoscopes (ibid.). In this sense, they were similar to smartwatches that offer digital awards to users. However, the publicity of scales created a kind of embarrassment, so they turned into bathroom scales. With this change, the relationship between scales and people dramatically changed and unavoidably became more intimate. Furthermore, a height and weight table accompanied users, and they evaluated themselves according to the standards, as smartwatch users do. Thereby, these devices suggest a 'moral epistemology' (ibid., p.486) that users have better lives in the same way that smartwatches offer; by knowing themselves. With the promise of providing accurate data, the idea that better data creates better humans (ibid.) was strengthened.

Nevertheless, the level of user engagement is different in smartwatches than scales as they are wearable, and require a response to their notifications. Moreover, the transmission of data was one-way for scales, while smartwatches create a more complex flow of data between numerous actors. Therefore, there is a risk for people who use smartwatches to become known to other parties (Crawford et al., 2015). In that case, it seems that data implicitly becomes public again, as with weight scales in the streets.

Since the relationship between users, their data, and smartwatches is complicated and multidimensional, smartwatches also have the potential to engage users with qualitative experiences, as seen in the autoethnography. Although numerous daily life practices are quantified by the smartwatch and the emphasis is placed on the quantified self, some researchers contradict this overemphasis on quantification. For instance, Gilmore (2016, p.2526) claims that 'quantification of our bodies operates dialectically with qualitative experiences to produce new forms of everyday practice.'

Some researchers go so far as to describe 'qualified self' as a counter concept. This notion refers to the process in which people understand and contextualize the information they receive and reflect on it (Lupton, 2016). Boam and Webb (2014, quoted in Lupton, 2016) describe its function:

> "Where the quantified self gives us raw numbers, the qualified self completes our understanding of those numbers. The second half completes the first half."

In the smartwatch context, this notion becomes prominent when users create a narrative about themselves and share it with others (Davis, 2013). From my experience, as I achieved a challenge in the activity app and got an award, my view of myself changed. I created a new narrative that built my ideal identity with specific qualities such as being healthy, conscious, and active. Conversely, data could destroy my perception of myself, as happened when I saw my VO_2 max level. In this respect, although the qualified self is instrumental in the creation of narratives and perception, the impact of the smartwatch's friendly or quite serious alerts should not be underestimated as a contributing factor.

Regarding qualitative aspects of smartwatches, they can easily integrate with different social platforms and develop social networks, giving a sense of community to users. On the other hand, acquiring quantified data results from taking actions and initiatives in everyday life. This might occur in different forms such as new habits, routines, conversations and interactions. As De Certeau (1984) implies, even walking has a qualitative aspect -even though smartwatches are focused on step counts- since people make their own ways despite the preconfigured structure of the city. Each step is uniquely created through space without following the predetermined architectural paths. He states that “steps cannot be counted because each unit has a qualitative character: a style of tactile apprehension and kinaesthetic appropriation…Their intertwined paths give their shape to spaces… (ibid.,p.97)”. Although footsteps are counted by smartwatches now, the qualitative aspects of walking are still relevant.

De Certeau (1984, p.97) refers to city maps and routes as tools to track walking, however he criticises them for being superficial and overlooking acts such as ‘passing by, wandering and window shopping’. He finds lines on maps totalising and emphasises how these procedures undermine the practice itself, while making actions legible. He states that this ‘causes a way of being in the world to be forgotten (ibid.,p.97)’. This idea could easily apply to smartwatches and their location-based applications which map users’ movements. Quantifying movements and actions is lessening. The qualitative aspects of everyday practices are mostly overlooked in the design of smartwatches, although there is effort to integrate social networks and applications. Quantity is inherently the dominant feature of digital culture; however, it is crucial to remember that it is highly tangled with subjective qualitative experiences.

Accordingly, using smartwatches for quantified self transforms the relationship between user and space - namely their surroundings. This was also the case for previous mobile media such as the Walkman and iPod (de Souza e Silva and Frith, 2010). The smartwatch influenced my experience of time and space by encouraging me to take actions, particularly when I was using AirPods at the same time. It led me to choose different or longer paths in the city and explore new spaces. It

sometimes disrupted my enjoyment of walking, disconnected me from the environment by notifications reminded me of the quantified aim of my action with the number of kilometers. It changed my attitude towards bad weather; I started to go out for a walk even if it was rainy. I created tactics and bought clothes to be able to walk under the rain. This demonstrates the vast range of effects on my qualitative life experiences from consumption patterns to walking routines.

I also checked my heart rate when running and adjusted my pace accordingly or stopped when I reached a milestone. When I stopped, I was able to see other people in the park and smile at them at that specific moment and pet a certain dog because my watch made me stop there. It changed the way I perceive and interact with my surroundings, other entities, and my body. It strongly influenced my qualitative experience in various ways. All these details show that the smartwatch mediates my experience and practices. Although it works in the background and quietly collects data in line with background relations, these examples demonstrate alterity and cyborg relations. The smartwatch functions as another entity and actively shapes my actions by sensing my body in an intimate fusion relation. Moreover, hermeneutics relations occur when I receive notifications about the environment and weather on the watch as representations and interpret and inform my actions accordingly.

Experience of space is one of the most relevant qualitative experiences to smartwatches, as they create a sense of ubiquitousness but also encourage the user to physically move and use space with the pedometer function. Regarding omnipresence, it is reasonable to say that the sense of space including the city has been changed a lot in a digitally mediated world. As Waal (2014) states, the smartphone is the compass for citizens' everyday lives, and this could also easily be said for smartwatches. Smartwatches are such important tools in the relationship between users and their surroundings. They are also unique in terms of transforming the externality of space into something embodied and more intimate, considering the proximity of them to the body.

Besides the digital transformation of urban space, 'decentredness' and 'alienation' as intrinsic aspects of modern cities (Jordan, 2015, p.3) still hinder the feeling of belonging. It becomes more difficult to identify or relate to spaces such as home due to the entanglement of virtual and physical worlds and lack of boundaries. As Jordan (2015, p.7) points out, the home is a delocalised, online and 'interactive node'. There are not visible 'boundaries between place and experience' or 'self and stranger' anymore (ibid.). In this respect, McQuire (2008) coins the term 'relational space' which refers to the social space of perpetual connectivity and immediate relations created by digital media technology. Smartwatches are significant actors in this since they reproduce the space with constant information flows and instant communication. They help people inhabit relational space.

On one hand, smartwatches reinforce the sense of alienation and isolation in the city by promoting individualised experience instead of collective experience of public space. Two people who walk in the same park at the same time could have such different experiences of the same space based on how they interact with their smartwatches and therefor the digital realm. One could check their work emails while the other tracks their step count. Regardless, smartwatches disengage users from their physical environment and draw them into the digital realm. On the other hand, smartwatches provide users with the opportunity to connect to other people and local areas. They can guide users to local events or places or help them interact with others digitally by embedded social networks. Although they can create a sense of community with digital interactions, these are mostly fragmented and shallow.

Concerning the reconfiguration of experience of space, there are various strategies which include augmentation and gamification. There are applications that augment everyday practices of users such as walking. Some examples are *Pokémon Go, Marvel Move and Zombies, Run!*. *Pokémon Go* adds Pokémon characters to surroundings with the help of augmented reality, and gives the user the mission to find hidden Pokémon around their neighbourhood. It makes people walk around and alters the way they see their environment.

In *Marvel Move*, Marvel characters accompany the user and motivate them to complete missions that encourage them to run based on a scenario. Similarly, in *Zombies, Run!*, storytelling is the core element that helps users to stay motivated and keep running. These apps track users' running, map the area that they pass by, and award them for their milestones with trophies. In these examples, smartwatches are mediators and channels between the user, apps and space. They are a crucial part of this network, as they collect data for the app and communicate with the user through earphones to maintain the storytelling. The story, on the other hand, maintains the exercise since the user naturally wants to reach its conclusion. This also demonstrates how gamification could go beyond the Activity app on the smartwatch itself and how numerous kinds of media including films can combine with one's experience with the smartwatch. Smartwatches are capable of both changing the sense of space and turning an act into a performance.

As seen from the examples above, there is a constant transition between quantifying actions and qualitative experiences during the day. The qualitative aspects of walking, like other everyday practices, co-exist with their quantified version in intricate ways (Gilmore, 2016). My walks had qualitative aspects and included diverse emotions as they took place in various environments at different times, while other elements such as music helped augment my walking experience.

My experience with the smartwatch, in general, was dependent on many variables and was highly personal. The research has evidenced smartwatches are open to personal interpretations and

appropriation. As people use different apps, settings and have diverse priorities and reactions, the connection between them and their smartwatches and their feelings towards these devices are unique for each person. This means each user has distinctive qualitative experience.

Smartwatches are influential on qualitative experience also by causing users to develop new habits. For instance, I developed the habit of going to the gym. Being able to see my quantified self on the smartwatch encouraged me to go more often. I met new people there; indirectly the smartwatch helped me to socialise. Sharing digital achievements with friends is another social aspect that smartwatches offer. This digital form of interaction offers a ritual formation, while personalising motivation and competitiveness. Moreover, I formed another habit of checking my heart rate when I felt stressed or had heart palpitations. I realised that my heart rate started to slow down as soon as I paid attention to my smartwatch's screen showing my heart rate. This is the very epitome of the endless ways of establishing personal, intimate relationships with the smartwatch and how it affects qualified self.

Another way smartwatches contribute to building people's 'qualified' selves is recording their significant moments, saving their reminders, family photos, etc. They save memories and they become a witness or a part of memories similar to the 'evocative objects' concept of Turkle (2011). As they consist of various personal data about users' lives such as music lists, WhatsApp messages and photos, they also serve as evocative objects that remind users of their past experiences, relations, and feelings.

Regardless of quantified or qualified, learning about the self is the key desire for people when using smartwatches. However, how they use this knowledge and what they do with it are as important as this desire. The self-knowledge leads to self-regulation and by using a smartwatch, individuals discipline themselves. This happens in several ways such as walking more in a day, using timers for studying, receiving notifications for tasks, checking work emails and organising a day. This daily self-discipline demonstrates that the power or control over society is diffused and decentralised. It is a mode of governance (Gilmore, 2016) which veils the institutional level of authority, especially concerning the governance of data. These objects provide a basis for 'disciplinary society' in accordance with Foucault's (1977) perspective and the power is 'objectified' by these products.

Foucault (1977b) emphasised how surveillance results in discipline by using the term panopticon. In this surveillance mechanism, many were observed by the few. In today's circumstances, surveillance is mostly achieved by mobile technology with the help of big data. In this respect, smartwatches can be considered as panopticons that disperse the power of institutions and corporations. However, these provide something more similar to omnoptic surveillance where

many are monitored by many (Jensen, 2007; Hepworth 2019). In the context of smartwatches, features that users share their activities with others or see data statistics, and applications such as Strava could exemplify how the many are watched by the many, particularly with the help of geo tracking and mapping. Strava's Heat Maps, for instance, reveals its users' activities and routes during two years as data visualisation. While causing privacy and safety risks in the past years (Griffin, 2023; Hern, 2018), it displays the extent of the current panopticons.

Social media and networks are crucial elements of these new panopticons and dynamic discipline society. Surveillance is spread over such wide networks as advertising agencies, marketers, health insurance companies, hospitals, governmental agencies (Ruckenstein and Schull, 2017). This gaze of society and institutions on the user and the possibility of surveillance lead to self-discipline as it happens in a panopticon. Yet, in recent circumstances users are aware that there is surveillance. They know they are watched, and they watch themselves and others as well. The key is that surveillance and control are being achieved subtly by internalised norms and discipline. Neoliberal systems convince individuals to regulate their behaviours voluntarily. Smartwatches are such convenient tools to employ self-governance strategies. Individuals track and adjust their activities according to the data presented by the smartwatch. Smartwatches do not only track users' fitness, but also check their 'fit-ness' to the norms (Gilmore, 2016, p.2531).

Smartwatches constantly train users' minds and bodies to create supposedly better routines, to be more productive and efficient. Notifications, visualised data, integration of various apps, continually being online and accessible are some of the tools for control and discipline. On one hand, smartwatches provide users with agency over their body -not their data- especially by making bodily functions and movements legible. On the other hand, the subtle mechanisms embedded in smartwatches impose various standards and norms into users' everyday practices. This is how users are led to discipline themselves to conform to a normative standard of actions and health, driven by data.

Self-discipline and self-governance suggest that users are responsible for themselves, especially their health, in the context of self-tracking and biometric data, and in line with neoliberal ideology. However, self-tracking is not entirely self-tracking as discussed in the previous chapters with the concept of 'other-tracking' (Neff, 2016). Tracking can be imposed, pushed or exploited by the institutions and companies (Lupton,2014). Workplaces and health insurance companies that encourage self-tracking are good examples. Olson (2016) states how Cigna, a health insurance company, collaborated with a corporate company to give their employees smart wearables and influenced their health positively. However, as Crawford (2015) notes, this type of programme also creates pressure on employees to conform to certain health standards. This evokes a return

to Taylorism in terms of scientific approach to efficiency and productivity. Work discipline is reassured by self-discipline in this case, but there are also disciplinary actions that some companies take such as higher insurance costs for smokers (Vitality, 2024).

As Crawford (2015, p.494) asserts, although wearable devices are promoted with the concept of self-knowledge, they also make users known by others in line with the idea of panopticon. With this knowledge, it is possible to conduct more customised interventions (ibid.). At this point, power relations become prominent again. First, other parties can access more data than users do on smartwatches. Secondly, the responsibility is assigned to individuals in essential areas such as health, at the expense of addressing governmental or economic issues. These all indicate power issues between users and other actors.

As Gilmore (2016, p.2534) mentions, self-governance is 'a part of a continued tension between personal empowerment and capitalist control'. Using smartwatches is a negotiation for users between gaining agency on their body, time and practices based on biometric data and being subject to institutional control.

Despite the above-mentioned tension, smartwatches keep people motivated to discipline themselves, be active and competitive. Key strategies for maintaining this self-discipline are gamification practices and socially engaging features. These strategies are also effective for continuous use of smartwatches.

Gamified features such as reaching a certain level, levelling up, and gaining awards are merged with the ideal of endless personal development. Setting specific goals contributes to the continual engagement of users with smartwatches and motivates them to be active and productive. This was also obvious in the focus group discussion:

> "I was competing against myself, but that might be 'cause I'm into games… like OK, I'm gonna hit that segment…(Participant B, 21:07- 21:50)"

Seeing their improvements and achievements on the smartwatch in the form of basic visuals makes users keep using the watch and tracking the 'quantified' outputs of the changes they made in their lives. It can be considered that gamification helps users to create routines and pursue their goals. Thus, gamification also keeps users under information discipline. In other words, disciplining the everyday and body based on data is gamified by smartwatches.

Gamification turns exercising and other activities into engaging events by portraying them as challenges. Overcoming these challenges gives a sense of achievements to the user. Smartwatches leverage elements from games such as leaderboards, progress charts and rewards.

Positive reinforcement and prompt feedback enhance users' commitment. Also, users willingly share data with the smartwatch because the more data the watch acquires, the more precise and customisable the services.

As Lupton (2016) explains, another factor in people's adoption of these discipline-based practices is the underlying moral discourse that praises individuals who work on self-improvement. Yet, it is the same norm that makes users like me feel stressed. This moral discourse refers back to the 'Puritan ethic' mentioned in previous sections in the context of internalisation of time discipline. It depends on the belief that hard work is salvation for people, and it is pleasant for God. Although the moral criticism of indolence was not new, industrialisation and time discipline strengthened that idea and wasted time became unacceptable. Therefore, it is reasonable to say that there are parallels between the phenomena in the past and the present. Although most of the cultural elements and values changed, the adoption of smartwatches and disciplining the self is sourced from similar reoccurring cultural patterns. Today, discipline seems to be created and adopted by users themselves, rather than by authorities and institutions, in accordance with the nature of neoliberalism. It is explicable as individuals are mostly convinced that they are responsible for their wellness (Lupton, 2016).

Returning to my case, I could not maintain the information-based self-discipline after a certain point. There are various reasons for this inconsistency in using the smartwatch, from the pressure I felt to be productive all the time to the lack of 'social motivation' (Davies, 2014). As I did not have friends with whom I could share my progress, did not become a member of a community, or connect my experience to social media, I was not socially motivated. The design of the smartwatch was also influential in the Bangle watch case.

Another factor was the frustration I felt during certain processes. This originated from the times when the smartwatch did not work properly or failed syncing, or when I was not able to use a feature as happened in the 'Vodafone' example. When there are disruptions to the seamless experience, it affects the continuity of self-discipline through the smartwatch. One of the reasons, on the other hand, was the fact that I strongly associated the smartwatch with how fit and healthy I was. It created an adverse effect; I did not want to look at the smartwatch when I felt too unfit and unhealthy to see my quantified self.

Correspondingly, the conflict between self-care and trying to fit standards was effective in my experience. Trying to fit the standards of being 'normal' and healthy based on quantitative data was not that appealing after a certain point. It was indeed disappointing when I could not fit. Also, serving big data, the commodification of the self, and the pressure that quantified self put on me resulted in underuse of some features and disassociation from the smartwatch.

To conclude and comprehend the discussions, it is crucial to review previously mentioned perspectives in relation to each other and identify how they correspond to certain issues.

Maslow's (1969) hierarchy of needs, including self-actualisation and self-transcendence, refers to personal motivations and individual agency. The idea of improving, particularly in terms of health and productivity, is intricate in the motivations for using smartwatches. In my experience, I felt that I increased agency in my life by making decisions about my movements and actions. As was discussed by Zampino (2023), this enabled me to have better self-care which could be associated with taking subjective time back. In line with Maslow's ideas, Zampino's work and my experience all proved that smartwatch use is highly subjective and personal. Users also have control over some of the features of the smartwatch.

Additionally, Garfinkel's (1967) approach to everyday micro-interactions amongst people can be seen relevant to personal motivations and other elements of Maslow's theory (1969), such as belonging needs. Constructing daily actions together based on various motivations and acting for others concerning self-transcendence are also pertinent. Self-tracking for charities is an example of the latter. Moreover, creating and maintaining social order, addressing needs such as sense of connection and social ability further links these two perspectives.

As Dolezal & Oikkonen (2021) stated, these evaluations and perspectives, although valuable, reveal a risk of overlooking sociocultural and political factors. At this point, Foucault' s discipline society helps to view the issues in relation to broader systems with a more structuralist approach. While Maslow's perspective highlights self-actualisation via smartwatches, Foucault's reveals that self actualisation is also actualising the ideal consumer, who conforms to current social norms mainly around health and productivity. This was visible in my experience when my biometric data was benchmarked against others' and ideal values. Neoliberal discussions maintained this core idea, although the mechanisms and applications have been substantially changed. Similarly, Rottinghaus's (2022) work also demonstrates the current norms and strategies and how upgrade culture is imposed on consumers.

De Certeau(1984), on the contrary, draws attention to the tactics developed against structural strategies. By employing his approach that illustrates subjective, qualitative everyday practices to my experience with smartwatches, it can be said that individuals are not completely governed by neoliberal capitalist structures, and they have the autonomy to creatively find alternative usages.

Despite this duality, quantified self remains one of the primary motivations for smartwatch use. The key strategies for long-term engagement are offering strong social connections, creating

possibilities to combine quantified self with more qualitative experiences, and reinforcing intimacy.

Having discussed the quantified self concept with the articulation of qualified self, discipline and gamification, the next section will review the informatic culture and technological ignorance.

5.6.2.2 Informatic Culture, Technological Ignorance and Resistance

Informatic culture, technological ignorance and resistance are another group of themes that emerged from my experience. Analysing my relationship with the smartwatch provided an understanding of my attitudes towards information-based systems, products, and practices as a user. This also served as the point of departure for understanding today's informatic culture and the relationship between people and technology.

Informatic culture in this section refers to the culture in which information is highly valued and central to numerous practices, behavioural patterns and decisions (Choo et al., 2008). Information is the basis of everything from organisations to personal interactions (Curry and Moore, 2003). The socially accepted norms are also dependent on information in this culture. Moreover, this term mostly encompasses today's prevalent computer-related information systems.

The whole system in which smartwatches are used can be seen as a reflection of informatic culture. All the features and functions of smartwatches and the idea of quantified self and self-tracking are all based on the foundation of information and the given importance to it. Using the smartwatch as a mediator between constant information flow and the body explicitly demonstrates how information penetrates everyday practices.

The smartwatch seemed like a tool that constantly informs users about numerous aspects of their lives, including their health and their work which is now inseparable from leisure time. This interaction with information is not one-sided. The smartwatch provides users with instant information, but users also constantly provide it with data. However, the way people establish relationships with information and technology is more complicated than this trade.

Using a smartwatch directly influences the dynamics between users and information, as it communicates information with users in such innovative ways, including haptic notifications. With smartwatches, users not only see and cognitively process the information but also feel it on their bodies. The interaction of users with information is based on tactile acts such as touching, tapping and nudges. With haptic instants in smartwatches, the immaterial nature of information is given a material form (Munster, 2006).

As Gilmore (2017) indicates, these mechanised touches become key mediators for everyday practices. This also reinforces the idea of disciplining bodies by information, as mentioned in the previous section, as the smartwatch demands users to be aware of the information being pushed to their bodies (ibid., p.198). Personally, I was highly irritated by the nudges and work-related information being communicated with me. However, I was content to see and feel WhatsApp messages from my friends on my wrist. According to Gilmore (ibid.), these tactile interactions enable the information systems to be felt by users who want to be connected to the technology and updated in ideal speed as digital culture requires. 'This perceived desire for felt-ness' can be also associated with the loss of tactility in everyday life due to the digitalised world (ibid, p.200). The effect of the pandemic on this loss of tactility also should not be ignored.

Although people seem to be committed to adopt informatic culture by carrying smartwatches on their bodies, there are many instances where they do not have enough knowledge about technological information systems. It was seen that, for all the actors in my experience, there was some technological ignorance and various tactics that they applied against this huge informatic structure. Although it appears contradictory with information culture, ignorance is an inseparable concept in this system.

> "Ignorance can be viewed as an absence or neglect of information, a failure to understand information, a mental state, a moral condition, a public problem, an economic commodity, a manufactured product, or an aspect of a culture (Smithson 2015, p.385)"

Above mentioned definition demonstrates a comprehensive conception of ignorance that touches on its potential parameters. Accordingly, there are various definitions and categories of ignorance in the literature. Some of them are 'ignorance as lack of knowledge/true belief', 'ignorance as actively upheld false outlooks' and 'ignorance as substantive epistemic practice' (Kassar, 2018).

While the first one is the most basic definition, the second is commonly used in political contexts and more relevant to 'active ignorance' which is defined as "an ignorance that occurs with the active participation of the subject and with…defense mechanisms…an ignorance that is not easy to undo and correct, for this requires retraining–the reconfiguration of epistemic attitudes and habits–as well as social change (Medina 2013, p.39)".

The third, 'ignorance as substantive epistemic practice', describes ignorance not only as an individual situation but also as an outcome of intentionally structured practices. It takes social systems, the effect of institutional structures and the formation of flawed beliefs under certain cultural circumstances into consideration (Alcoff, 2007).

In addition to identifying instances where ignorance appeared in my experience, identifying how it was constructed, if it was sustained for specific purposes, or intentionally made acceptable in society are also important (MacKenzie and Bratt, 2019). Ignorance may not be always a simple lack of knowledge but an active, complicated state that many negligences and actions form (Frye, 1983).

According to MacKenzie and Bratt (2019), ignorance often appears as a performance of a ritual and a social practice. People strategically choose to be ignorant in some cases, to be able to manage the constant stream of information that they are intensely exposed to in the digital world. They can find it reasonable to leave the autonomy and rely on other actors with expertise (ibid.).

Technological ignorance is also used as a term in this section in relation to various types of ignorance in the context of technological ecosystems. It refers to both the lack of information about complex technological products, systems and services, and people's rejection to take notice of knowledge.

In the context of this research, technological ignorance explains the instances when users or other actors ignore the technical processes underlying products, when they actively choose not to know and neglect the broader issues. These mostly personal instances also connect to broader issues such as the relationship between people, technology and environment at the macro level. Having experience with two smartwatches that are highly different from each other in this regard and discussing the everchanging interactions between users and information-based products allowed for a better understanding of cultural phenomena.

As can be seen in the autoethnography, I had different feelings such as disappointment and frustration due to my lack of understanding and knowledge about how to solve technical problems. It was obvious this issue had a deterministic influence on my experience as a user. For instance, the reason for me to use Bangle watch for a shorter time was my frustrating ignorance about how to use the product to the fullest extent, as it required knowledge of programming and technical terms. I was more accepting of products that hid technical processes from me more easily to have an effortless experience. I accepted not to know about working principles of my watches as long as they gave me the information I needed. I mostly enjoyed the seamless experience with the Apple watch. However, regarding my personal data, this ignorance fuelled my concerns about privacy and agency as I did not know how my data was used. Nevertheless, I kept using it. Using the Apple watch without fully understanding the working principles, data usage and privacy risks can be considered active ignorance since I actively chose to dismiss and avoid any potentially uncomfortable information about them. This active ignorance is also supported by the

other actors such as companies, who do not acknowledge the extent to which they utilise users' data or potential privacy risks and focus on the benefits of their products instead. Therefore, it is crucial to question how companies support digital literacy and profit from users' ignorance (MacKenzie & Bratt, 2019).

Furthermore, there were moments when users acknowledged their ignorance about the functions of the smartwatch also in the focus group:

> "I've never really understood how it tracks sleep yet. Anyway...(Participant B, 44:09-44:11)"

One of the reasons for users to ignore the working principles behind these products is the abstract form of the technological procedure. Transactions occur at nanoscale in digital devices. Therefore, the materiality of technology is not visible and tangible to the user. Archaeologically, this could be compared to the back of mechanical watches where the mechanisms are hidden, but it is still possible to see how the product works when needed. However, in this case, the only materiality that the user interacts with is the product itself. As technological procedures take place through sensors and microchips, it is hard to know what happens in the backstage.

In mass-produced technological devices, the strategy of hiding the sophisticated technology from the user is commonly applied. The existing production and consumption systems promote ignorance and makes it a commercial product (Roberts and Armitage, 2008).

> "As products from cars to computers become more and more technologically sophisticated, many consumers are content to let manufacturers and service companies take on the burden of understanding how such products work and how to repair them. Thus, ignorance is actually a commercial product. Consumers happily purchase ignorance in their quest for hassle-free consumption and businesses enthusiastically encourage consumer ignorance to create increased demand for knowledge services and products (Roberts and Armitage, 2008,p.348)"

Therefore, while knowledge services increases, the commodification of ignorance also becomes common. Ignorance is promoted in the Apple watch case, and used as a tool to design user experience as seamlessly as possible. Since I wanted a hassle-free experience, especially after using the Bangle watch, I was willing to buy ignorance besides the product. However, their strategy created unexpected hassle for me when there was a technical problem, and the knowledge services were not helpful enough. The problem that I experienced with Vodafone is exemplary for knowledge-based systems and how they may leave the user desperate in case they fail.

In addition to the marketing and economic strategies behind technological ignorance, the magical feeling which is mentioned in the autoethnography regarding the Apple watch also contributes to the idea that advanced technology is beyond users' understanding. In this way, the distance between the technological object and users increases. As the object seemed superior to me, this created a desperate dependency for me on the watch.

Design aspects are significant in creating these certain feelings and experiences for users. Although the adopted design principles are mostly based on the requirements of a seamless experience and hiding all complicated systems, considering alternative ways for designing products by taking technological ignorance, and the problems that it creates, into account can be beneficial. As it happened in my experience with the Bangle watch, a more open design that users can interfere with some of the processes needs to be considered. This could include replacing batteries, parts or better data-sharing practices. While the Bangle watch was not the best example in terms of design, a smartwatch that positions somewhere between Apple watch and Bangle watch could be ideal to balance the amount of information that users are exposed to and the alienation that the technological ignorance causes.

Ignorance also appears in broader contexts regarding the smartwatch and its design. As an illustration of ignorance as substantive epistemic practice, the fact that smartwatches are designed in a way to focus on standard metrics such as heart rate and steps that are based on the needs of young, non-disabled people can be considered. They mostly dismiss specific needs of women and minority groups. This ignorance is actively and collectively constructed and fortified with institutional and socio-cultural practices. There are also other notions that are socially accepted, such as self-tracking being beneficial and that data from smartwatches is reliable and accurate. When these are embedded in practices and beliefs, they prevent users from questioning widely accepted and promoted systems.

Another ignorance regarding smartwatches is closely linked to upgrade culture and sustainability. As seen in my experience, I was aware of the devastating outcomes of upgrade culture. However, this did not transform my feelings and behaviours immediately. This is the case for many people today. Some are ignorant, as in the first meaning of the concept; they do not know about the effect of their purchasing behaviours. Some do know about the impact of upgrade culture yet actively ignore it and choose the practices that maintain it. There are numerous factors that reinforce this ignorance. One is the fact that having a product repaired is more difficult and expensive in many cases. Another is the belief that their used products could be beneficial to other people via donations or other ways. As Cooper (2013.p145) states, 'they salve their consciences with the thought of it helping others'. Additionally, company strategies and the

narratives they create to manipulate the facts also contribute to this ignorance. Eco-conscious brand images also maintain this active ignorance and allow systemic problems and power relations to stay unaddressed.

Ignorance sometimes occurs with resistance. People may not accept facts or certain features and usage of products. They can show resistance to technology and learning it, as I did in the Bangle Watch example. I did not push my limits to be able to use and fix it. I just accepted that it was complicated, and I did not have the capability of using it. Therefore, my experience with the product was somehow limited. Additionally, the instances where I refused to use some applications, limited the notifications or declined to share my data with the watches could be considered other forms of resistance.

Resistance can be formed as tactics in daily life such as users cheating their pedometer on their smartwatches by moving their arms back and forth. There are even websites that explain the ways to cheat step counters (Figure 84). Moreover, there are products designed for this purpose such as 'automatic step shaking/earning device'.

These are also directly related to the quantified self concept and how people resist the imposed discipline in cases when they are obliged to take part in 'step count challenges'(wikiHow, 2023). In my experience, the tactics I created were starting to record my exercise earlier than I had actually started or ending it later to be able to complete my activity rings.

Figure 84. Fixing your phone to a ceiling fan or attaching it to the top of a robotic vacuum (WikiHow, 2023) (Image courtesy of wikiHow.com)

These practices and tactics demonstrate that users have agency on smartwatches to a certain extent; however, there are also instances where users cannot control and completely rely on other actors in the system. For instance, I did not know what to do if my smartwatch was broken. As it happened in Vodafone case, users must rely on expert systems for each small problem. It is even worse if those are not knowledgeable enough. My experience disclosed how knowledge-

based systems leave the user helpless when they fail. At this point, other services and relying on expert systems become significant.

The research confirmed that the smartwatch is always in an ecosystem, and an entity in a broader network. There are expert or knowledge systems in this network and its foundation. Knowledge services and the production of complicated technological devices are all based on the belief in expert systems. However, trustworthiness of these systems can be questioned as they are given a great deal of authority. The tension between trust and scepticism is always visible in the relationship between users and information-based products and systems.

For instance, when I entered my data in the activity app, I was not sure if I allowed the smartwatch to use my data to compare me to other users. I was suspicious but also ignorant about the ways it can use my data. Later I found a section where I could see my VO_2 Max level amongst other users. Although I saw that the fitness levels were derived from the 'US Fitness registry and Importance of Exercise National Database (FRIEND)' in the app, I was suspicious then if I accepted to contribute to the big data and have an impact on that chart, by allowing the watch to use my data. I thought that I was eventually going to become unattended information in someone else's application. I had such a strong presumption and suspicion at that moment.

This scepticism brings us to trust in the smartwatch and the whole system surrounding it, as well as surveillance. Companies and third parties are some of the actors that people are monitored by, and they are parts of a broader neoliberal capitalist system. There are circumstances where being monitored is almost unavoidable for smartwatch users. The instances where their data is shared by various companies such as health insurance companies can be considered an example. Being monitored is inevitable as smartwatches are now a part of such a broad network, covering all domains of life, including work.

Recently, it is very common for insurance companies to provide offers based on customers' health data. For instance, Vitality is a health and life insurance company that offers deals and services to their customers depending on their health data on their smartwatches. It suggests that customers buy an Apple watch and connect it to Vitality to track their activity levels. In this way, if they stay active enough, they pay less for their smartwatch and receive other benefits and rewards (Figure 85). These companies indirectly put pressure on their customers to fit health standards which are determined by quantified society, resulting in endless surveillance.

Figure 85. Vitality's Apple Watch offer (Vitality, 2025), © Vitality, 2025, All Rights Reserved. This content is not covered by the University of Southampton Thesis Licence over this publication. For permission to reuse, please contact the copyright holder.

As explained in the previous section, health insurance companies also collaborate with corporates and provide their employees with smartwatches to track their health. These types of pushed tracking can result in different health insurance charges or other policies and sanctions. One of the problems for users in these cases is not to be fully aware of to what extent their data is used by other parties. Another problem can be users' lack of knowledge about how to control and manage these technological devices to protect their privacy. In fact, users are not fully informed about the terms and conditions when they use information technologies. Even in my case, I did not read the whole terms and conditions page, which seemed long and incomprehensible to me.

Tracking practices, particularly in workplaces, also result in such pressure on users and lead them to find creative ways to cope with these corporate strategies. They create tactics to avoid feeding the smartwatch, and so third parties with their personal data. They manipulate the information system and prevent certain actors in the network from being informed about their health and productivity. Employees can be motivated to do so to keep their privacy and avoid being judged and penalised. Tactics can be falsifying data by lending the watch to someone else or shaking their arms without really moving to increase the step count. If users have enough technologic literacy, they can disable background apps or integrate apps such as 'Fake Steps' that generate false data into their watch to seem healthier for their observers.

In addition to the controversy about the accuracy of data that smartwatches gather from the body, it seems that information technologies not only produce data but also enable counter systems that manipulate the data. The tension between knowledge and ignorance comes into sight in numerous ways. Social media is another area that creates suspicion about the accuracy of information and has the risk of spreading ignorance. Paradoxically, informatic culture and easy access to information does not guarantee that people are more knowledgeable.

It seems that surveillance, technological ignorance and resistance are all inextricable elements of informatic digital culture. Datafication of the body and everyday life, and the information discipline, which can be described as an extended and sophisticated version of time-discipline, are also crucial constituents of these cultural phenomena.

Chapter 6 Conclusions

6.1 Conclusions

As the research is based on both the past and the present phenomena, the findings were diverse. The prominent outcome was to have an understanding of how past and present are inseparable and constantly influence each other. Moreover, this interaction is visible in the culture and product design. With a design archaeological approach, it was possible to identify recurring cyclical phenomena in the present. Some similar cultural patterns, as well as technical features in the past and present, were found in the usage of the smartwatch and its predecessors. In terms of culture and everyday life, the genealogy of quantifying and disciplining the self became evident in the research. The information discipline of which the smartwatch is an integral actor was explored as a more complicated and expanded version of time discipline.

Additionally, the findings of the research show that the evolution or progression of a product is not always linear. There are some reoccurring motivations and objectives as it was seen in the example of biorhythm watches. In this respect, contingencies are both effective and significant. Therefore, a different approach to product design than problem-solving could be useful to understand the conditions of presence for the objects.

It can be stated that an archaeological approach could help to reconsider the smartwatch and retrieve some aspects from its antecedents, such as durability, and sustainability. It is clear that new approaches to design smartwatches are needed and those approaches should take the recent discussions about creating sustainable and collective systems that maintain data privacy. Moreover, some alternatives to upgrade culture could be considered with the help of design archaeology.

Design archaeology proved to be a useful perspective for rethinking technological devices as design products. Moreover, many predecessors of the smartwatch such as calculators, navigators, wristwatches, pocket watches, weight scales and so on have been identified in the research in different contexts. Furthermore, some archaeological research has been done to see how technological novelties, as well as the cultural changes and thresholds, enabled the smartwatch to exist. Some similar cultural patterns and tendencies are identified between the present and the past. It is also seen that the promises of smartwatches and their predecessors have changed over the time. For instance, it is evaluated that the main promise of digital watches was delegating human tasks, such as memorising, to a non-human. However, in the case of smartwatches, it can be seen that it has more agency over the user's actions, and it delegates tasks. It seems that for the

smartwatch, the emphasis shifted to reminding users of their tasks and dictating them to accomplish their goals.

On the other hand, looking at the past in the context of technological novelties, it is noted that the military was an effective resource for the ways in which products are designed. Furthermore, some connections were still apparent, such as the connection between the idea of creating sleepless consumers and the military studies.

Relating to archaeological traces, it is also identified that there is a contiguity of the smartphone and the smartwatch. It can be shown that the way users use their smartphone could be very influential on their experience with the smartwatch. Therefore, the smartwatch and how one experiences it is highly subjective and personal.

Moreover, some events and developments were considered as types of thresholds, such as the dissemination of social media and its integration in mobile devices, and the pandemic in relation to the perception of, and approaches to, health.

In regard to the information discipline, some elements have found for people to internalise different forms of discipline. The internalisation of this discipline is achieved by various features in the smartwatch such as gamification. Moreover, in terms of moral elements and motivation, the idea of one reaching the best version of themselves, which is parallel to puritanism, is identified. Furthermore, the intimate relationship between the watch and the user was observed as another factor. It is created by the visual and verbal language as well as haptic stimuli as communicative elements that the watch uses. On the other hand, there was a social layer that includes competitive motivations as an internalisation and adoption factor. Of course, these elements also contribute to the internalisation and acceptance of surveillance. At this point, many dualisms and dilemmas were explored during the study. On one hand, the user feels good about being informed by the data which is produced by their body but might feel incompetent sometimes. On the other hand, the user might be happy to receive the most accurate data about themselves. However, the sacrifices they made to achieve this might cause them to feel monitored, even commercialised.

Additionally, it explored that the smartwatch has an intimate relationship with the body in order to provide the user with the most accurate data. In another perspective it transforms the body into pieces of information. In this way, it also blurs the distinction between mind and body. Therefore, it has a deep connection to Cartesian mind body dualism, but it offers an experience that goes beyond it.

On the other hand, it changes the perception of the self, as it constantly creates different versions of quantified self with the constant flow of data. Nevertheless, the smartwatch is capable of

creating qualitative experience and the qualified self in implicit ways. The research demonstrates that taking quality of everyday life into consideration could be an important factor in designing smartwatches. Although it attempts to integrate into everyday qualitative experience with some features, there is still room for improving qualified self through the smartwatch.

Other inferences which are made from the research are how technological ignorance can be effective on the experience of the smartwatch. As a part of a broader system, the user might need to rely on knowledge services and systems. However, there is a lack of knowledge in many actors of the system. The infrastructure is not established for some of the features of the smartwatch. Besides, some resistance to technology and surveillance is identified and seen as tactics of the user.

Overall, from the research, it can be inferred that the smartwatch is a sophisticated product, which ties to broad areas such as neoliberalism, informatic culture, environment, etc. Additionally, it creates an ecosystem around it and it cannot be experienced without engaging so many other actors and parties. It has so many technical, cultural and social layers.

6.2 Future Research Directions

This research has brought numerous aspects to attention not only regarding smartwatches, but also technology, digital culture, design, participatory practices, sustainability, and ethics. Therefore, the research beneficiaries could vary from smartwatch and technology companies to healthcare providers and policy makers. Additionally, service providers, product designers, UX and UI designers and educators could benefit from the outcomes and insights from the research. The research can inspire designers and companies to create more user-friendly and ethical products that are easily adopted in everyday life by employing a more participatory design process with its interpretative approach. Verbeek's (2011) augmenting constructive technology assessment could be beneficial to design an informed process for the mediation design by getting feedback from all actors.

The research can help educators in design related areas to create teaching approaches that take cultural and archaeological elements into consideration to provide a holistic understanding of the complex issues in technology, society and design. On the other hand, policy makers could benefit from the research to inform their decisions in the context of use of technology for public, privacy and data sharing practices.

Future research directions based on this study could be in moral aspects of technology including issues ranging from inclusivity to privacy. The issues around identities, feminism and inclusivity emerged from the research, although could not be explored deeply. The strong dependency of

the watch on users' bodies and its normative assumptions necessitates questioning the mechanisms behind its design. This could be an area to further explore including impacts on differently abled users.

In addition to human users, the relationship between non-human actors, notably animals, and smart devices, such as trackers, could be an area of research.

Additionally, future research should focus on the possibilities of improving the integration of qualitative experiences into smartwatches. Mental health and wellness-related areas could be worth exploring in line with social trends, especially for the interest of the public. Intimacy between smartwatches and users is another aspect that needs to be investigated further.

Future research can compensate the limitation of my research in terms of its application in a variety of areas. Not only developing and experiencing apps but also tackling the existing problems of compatibility and usability of the apps on smartwatches could be beneficial.

An important area would also be the investigation of how smartwatches could be more ethical and, as Verbeek (2011) points out, how they can influence people in making more ethical decisions. This would involve the moralisation and internalisation processes, as well as design.

Appendix A Topic Guide of the Focus Group

Topic Guide

Focus Group Schedule

(This focus group schedule provides a preliminary structure for the session. The questions which are offered as topics and probes might be modified, and their order might change according to the flow of conversations. Also, the times given here are average estimated times.)

Firstly, the researcher will be sure that all participants had the information sheet and consent form and agreed with statements before the meeting.

Introduction (2 minutes)

Welcome to our session. My name is Aybala, and I am a doctoral student at Winchester School of Art. I'm very grateful to you for sparing time to help me with my study. This session will last for about an hour. The reason we're here today is to listen to your thoughts, perceptions and experiences regarding watches, particularly smartwatches, and understand different interpretations.

I'm going to moderate our discussion today. I will be asking you questions under three main themes which are about using watches, interacting with them and giving meanings to them. I will also be showing cartoons for each part as prompts. There are no wrong answers, so I would like you to feel comfortable sharing your ideas.

The main purpose is to build on each other's remarks and have a comfortable conversation. You do not have to answer every single question, but I'd like to hear from each of you as much as possible during the conversation.

I also would like you to know this focus group discussion will be recorded as a video which will be kept encrypted and safe. The recording allows us to revisit discussion for the purposes of contributing our research.

Ground rules (3 minutes)

To have a conversation which flows more easily, I'd like to introduce some rules;

-You may have a discussion, but please ensure that only one person speaks at a time. This is so important as we aim to make a written transcript of our talk. If there are multiple voices at once, it could be difficult to understand everyone.

-This is a confidential discussion, so your names will not be referred in anywhere. This also means you should also keep this discussion confidential. I emphasize confidentiality since I want you to have an open discussion. I want all of you to feel free to express yourself without any concern.

- If you want to withdraw from the research or leave the meeting, let me know.

-Are there any questions so far? If you are happy, I can make the discussion and recording begin.

Questions (50 minutes)

I would like to start with just a few general questions and a cartoon as ice breakers.

Part I: *General Questions (Ice breakers)*

1- What kinds of watches do you use recently? (Mechanical watches, smartwatches, hybrid watches etc.)

2- How many wristwatches do you have? What are their types?

3- What kinds of objects are watches for you? (accessories or technological devices, essential needs or luxury)

4- If you wanted to give it another name except 'watch', what would you call it? (bracelet, organiser, manager, ornament, personality reflector etc.)

Now, I would like to talk a bit about your ways to use your smartwatches in terms of daily practices.

Part II: *Practice*

1- What is the primary purpose of using your watch? (to tell the time, to be well-organised, to complete dressing, to view my health data etc.)

2- Which feature do you think is needed to be improved or added?

3- Is your watch easy to use in everyday situations? (during travels, meetings, cycling or in public transportation or parks or under different weather conditions etc.)

4- Have you ever felt uncomfortable because of the watch? (as it seems in the cartoon, or in any other ways socially or physically)

Now, let's consider how you interact with your smartwatches.

Part III: *Interaction*

1- In what way do you prefer your smartwatch to send you notifications and why? (visually, via sounds or vibrations)

2- Have you experienced any difficulty to use gestures like tapping, swiping through the screen or to identify visual elements?

3- How does it feel to carry it on your body in terms of its physical features like its material, weight, size, etc.?

4- Do you use any app to interact with other people through your watch? (for ex. to compare your step count to each other)

Well, now, I would like to move onto the meaning part.

Part IV: *Meaning*

1- Do you think watches show people's personality and status? Explain how and why it happens.

2- What are the differences between using smartwatches and your old watches do you think?

3- Which one of your watches is the most valuable for you? Do you have any memory in which a watch included?

4- How do you feel when you forgot to wear your watch?

5- Do you feel safe about that your watch stores your data?

6- How do you feel about getting notifications regarding your health, such as your low heart rate?

Closing (2 min)

These are all the questions I have for you. Is there anything that you want to add or know about the research?

Thank you for your time and contribution. It was a pleasure to meet you. Your comments have been constructive to see this subject in different ways. Thank you so much.

Appendix B A poster for the PGR Exhibition

Who is talking to me?

This is a poster that illustrates my experience with my smartwatch in a provocative way. It is a very personal and subjective interpretation of mine as a new user. The poster consists of the notifications from my smartwatch as well as my inner voice. This is from the section in which I took an autoethnographic approach to my PhD research entitled 'Design Archaeology: on the

Smartwatch’. Here I chose the material that helps me to evoke some emotions by showing the intimate and sometimes disruptive or even love/hate relationship between technological objects and people.

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