Cell Phone City

Mobile Phone Use and the Hybridization of Space in Tokyo

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1. INTRODUCTION

SMARTPHONE CITIZENS

During my stay in Tokyo I lived close to Shin-Ookubo, a very popular neighborhood especially among young people, just north of Shinjuku. Every day after class, high school and university students gather at the Shin-Ookubo train station to meet up with friends to go shopping or enjoy food at one of the many restaurants in the area. From about 4pm to 9pm every day, the station (which is rather small) is packed with people, and there is always a crowd of people waiting in front of the main entrance. While waiting, the majority of these people kills time by fiddling with their phone. One day, when I myself was waiting in front of the station, I observed two high school girls standing next to me on the side of the pavement, just outside of an area that was crowded with pedestrian traffic. They had opened a GPS application on their smartphones and were discussing the route to a Korean barbecue restaurant that they wanted to visit. They could not seem to figure out how to get there, zooming in and out on their screens, bickering whether they should go left or right from their current position. As I knew the restaurant they were talking about, I was contemplating whether I should help them or not – but I decided not to. Not because I was afraid to sound like I was listening in on their conversation, but because the three of us were waiting in front of a giant public map of the area, which they had ignored from the start. The entire scene was rather ironic. Perhaps they ignored the map because they had not seen it, or perhaps they just preferred the smartphone application's map over the 'real' map behind them. Actually, in a way, they did make use of the map, by standing next to it and using it as a place to stand still and check their phones. It was just not how this sign next to the station was initially intended to be used.

As I observed more pedestrians making use of the space around the station, I noticed how 'natural' mobile phone users moved around and used spots around the station to stand still and use their phones. In a city where the roads are as packed as in Tokyo, slow-walking mobile phone users can easily turn into a public nuisance. With pedestrian paths being only slightly wider than one meter and people rushing to get to their point of destination, there is no space for 'smartphone zombies' who are blocking the traffic because they are moving slower than the rest of the pedestrians. On top of that, there is a general consensus that using your smartphone while walking is a dangerous activity. Many posters and signs around stations in

Tokyo warn people not to use their mobile phones while standing on the platforms, and not to use their mobile phones while walking, especially near the tracks. Some mobile phone carriers, out of concern for their customer (and undoubtedly, potential lawsuits), have implemented security measures in the operating systems of their mobile phones that block the screen when it is sensed that the user is in motion. Only after the device senses that the user is standing still, will it allow the touchscreen to be used again.

TELECOMMUNICATION REVOLUTIONS

Mobile phone internet use, which transformed the mobile phone into a multi-media tool, is widely regarded as one of the most impactful developments of the past years. Mobile phones, particularly after the implementation of mobile internet, have created the general feeling that one can be connected to anyone and access any kind of information, anytime, anywhere (given one is connected to a mobile network). The mobile phone and mobile internet have transformed how people communicate as well as the way in which people access and share information. It has been one of the most important technological developments of the past decades and as such has received much attention from scholars worldwide. One of the most widely discussed aspects of mobile internet use has been how mobile phone users combine their everyday 'offline' activities with online activities, resulting in a distinct change in the way in which people interact with the physical environment. Since it is possible to access a wide variety of forms of information through the simple use of a device in one's pocket, the city – which is completely based on spatial distances and the time it takes to travel these distances – is, in comparison, inconveniently inefficient. If the internet has not erased the need for a city all together, as some early internet theorists predicted, then *mobile* internet is at the very least changing its meaning.

When it comes to mobile phone technology, Tokyo is a particularly interesting case. While it is true that all around the world mobile phone use has skyrocketed in the past two decades, Tokyo can be seen as the cradle of mobile internet technology: the first public nation-wide mobile internet network, called i-mode, was set up by mobile phone provider NTT DoCoMo on February 22nd 1999. This early form of internet included the possibilities of sending e-mails, receiving news and weather forecasts, visiting websites, playing games, and downloading ring tones. I-mode quickly became popular among mobile phone users and all over the country other Japanese providers started offering similar forms of mobile internet. Within a few years after its launch, many more applications based on i-mode's internet

network were developed, transforming the Japanese mobile phone into a multi-media device and an early version of what can be called a 'smartphone'. Mobile internet use through i-mode became extremely wide-spread. At its peak, it had 50 million subscribers. Taking into account that other mobile phone providers also offered mobile phone internet, it is safe to say that the majority of the Japanese population have been using some form of mobile internet since the early 2000s. This makes Japan the first country in the world where mobile internet was used on a nation-wide scale.

Tokyo is typically described as a city that is extremely high-tech. After the Second World War, as the Japanese economy grew, so did Japan's image of being a center of technology. Some of the technologies that contributed most to this image were domestic mobile devices: the Sony Walkman (Hjorth 2009), (portable) gaming devices (Hjorth 2011), and the mobile phone. According to some, cities in Japan possess an intrinsic willingness to absorb these new technologies and among them, Tokyo is definitely seen as a techno-mecca (Tajima 2006). While in the 19th and beginning of the 20th century Japan was (like the rest of Asia) orientalized and seen as an exotic playground where tradition and religion hindered technological progress, this image shifted from the Second World War onwards and Japan gradually became associated with industrial efficiency (Morley and Robins 1995). 'Japan' became "synonymous with technologies of the future" (Morley and Robins 1995, 168–69) and new kinds of technology became associated with a sense of Japanese identity. Tokyo in particular, as the economic center of Japan, received the image of being the most technologically advanced city in the world, a real mechanized metropolis. Many famous science fiction writers and movie makers have drawn upon Tokyo's skyline and neon-lit night quarters for inspiration.

Next to the image of 'city of the future' Tokyo is also characterized by its crowded streets. The Asian city is typically portrayed as disorderly and chaotic (E. W. Said 1978). Contributing to this image is the fact that Tokyo is one of the most densely populated cities on earth. Tokyo is divided in the Tokyo metropolitan area, which in itself already has over 13 million inhabitants, and the greater Tokyo metropolitan area, which is a combination of several urban agglomerations around and including Tokyo, and amounts to almost 40 million inhabitants. In its most crowded central parts there are over 20,000 people living in one square kilometer. During the day, the number of people in the center of Tokyo increases due to an

inflow of commuters from neighboring towns and urban agglomerations. Especially during the rush hours in the morning and late afternoon, the (often narrow) pavements of Tokyo's city centers are filled with people. When crossing these streets in Tokyo, it is remarkable how many of these pedestrians are using mobile phones while engaging with traffic. Crossing Shibuya Scramble, Tokyo's iconic pedestrian crossing, you can spot mobile phone users all around you, scrolling through their phones and casually glancing up from the screen now and then, in order not to bump into the approaching wave of pedestrians. The number of pedestrians must lie close to over 1000 people in one crossing[1], of which a good percentage is looking at a screen of a mobile device. Although the largest in size, Shibuya Scramble is only one of the many large pedestrian crossings in the center of Tokyo. Millions of pedestrians wait for the pedestrian crossings every day, interacting with their mobile phones and maneuvering to the other side while having to look up from their screens as little as possible. If 21st century Tokyo is defined as a densely populated, technologically advanced megacity, its pedestrian crossings must be its most iconic locations.

Mobile phone use while walking is generally seen as a sign of unhealthy pedestrian activity. It implies that the user is more concerned with their mobile phone than with the street, the people, or the traffic around them (Lamberg and Muratori 2012; Burd 2007). Not only is it generally regarded as a dangerous practice (Lamberg and Muratori 2012; Nasar and Troyer 2013), it is also seen as a sign that a person is uninterested in their surroundings and disconnected from the 'social' part of city life (Burd 2007). 'Disengaged' pedestrians are consequently seen as having a potential bad influence on the city. At the root of city life, after all, lies pedestrian activity: it is one of the most vital parts that make a city, framing and generating city life. Mobility in a city is not merely movement between one point and another, it is a socio-spatial phenomenon that "reflects social relationships and organizes city life" (Cresswell 2006, 9). Pedestrian movement and behavior is intrinsically connected to the city and society (Pucci, Manfredini, and Tagliolato 2015; Urry 2000; Cresswell 2006; Sheller 2011). The rhythms and routines of pedestrian mobility are the "coordinates through which inhabitants and visitors frame and order the urban experience" (Amin and Thrift 2002, 17) and an indicator of how people experience the urban environment. If pedestrians are shifting

[1] "Shibuya kousaten, 1 kai de 3 senjin oudan?" *Asahi Digital*. April 24, 2016. http://www.asahi.com/area/tokyo/articles/MTW20160422131330001.html (Accessed October 31, 2019)

their attention away from the city, it can therefore be interpreted as a sign that a society as a whole is in danger of being neglected.

While people's disconnection from the physical and the increasing time people spend being online has met with critique, it is also an important development that indicates changes in the relationship not only of the pedestrian with the city, but also that of the city with technology. Some argue that the increased use of domestic mobile technology leads to a new perception of urban space: through (mobile) internet devices, the 'digital city' is becoming more important than the 'physical city' (Negroponte 1995; Townsend 2013; Wells 1997; S. Graham and Marvin 1996). The mobile phone, then, acts as a mediator in the process of the digitalization of society. According to Manuel Castells, author of the 'Information Age' trilogy, the mobile phone in Japan is the main actor in the process of becoming an 'Information Society': "the usage of keitai (mobile phones), including especially the myriad wireless internet applications, is central to the transformation of the Japanese information society" (Castells et al. 2004, 103). The ability to access all kinds of information anywhere is central to the concept of an information society. In other words, the Japanese mobile phone user, because they have been connected to internet for a substantial period of time, is the main reason why Japanese society is progressing into an information technology-based society. It is the mobile phone user who is recoding the relation between society, the city, and technology. High percentages and a wide distribution of mobile phone internet use, which have been prevalent in Japan since 1999, are a central part of what we can call an 'information society'. Paradoxically, the very aspect of mobile phone internet use that is seen as its most important facet, namely the fact that any form of information can be accessed from any place, is also seen as the aspect that is its main drawback for society: it is thought to disconnect the user from their physical environment, neglecting 'reality' in favor of 'being online'.

THE RESEARCH QUESTION

However, although there has been much speculation on its implications and possible negative side-effects, the exact relation between mobile phone internet users and the city in natural settings in real cities has not been researched sufficiently yet. Although there have been numerous studies in laboratories, actual 'real life' pedestrians and their behavior towards the physical environment in a city have not been thoroughly analyzed at all. Tokyo, where the inhabitants have been using mobile internet technologies for almost two decades now, and where mobile phones have been central to everyday life since the mid 1990's, is an excellent

case study for diving into the complex relationship between mobile communication technology and the use of space in the city. This research is an attempt to shine a new light on the question how mobile phone use, especially the internet-based, non-voice call aspects of the mobile phone, influences the way people experience the space around them and what consequences this might have for the relation between society, the city, and technology. The research question can be broadly formulated as follows: *How does the use of mobile phones influence urban space in Tokyo?* Here, I define 'urban space' not just as the built environment, but also the socio-spatial construct of urban space, which includes the historical, cultural, as well as social meaning of the space as well as the use of it, and 'mobile phone' as inclusive of all generations of mobile phone technologies that are currently being used in Tokyo. To answer this research question, I will first break down the concept of mobile phone use in Japan and answer related questions. In every chapter of this thesis, I will address a part of this question, starting by asking questions on what defines mobile phone culture in Japan, followed by how mobile phone use has been looked at from scholarly perspective, to how the effect of mobile phone use can be 'measured' and analyzed, ending with a more in-depth discussion on what mobile phone use means for the Lefebvrian 'layers' of space in a city. Then, after discussing these aspects of mobile phone use in a Japanese context, I can attempt an answer to the research question.

This thesis consists out of three parts, each of which contributes to finding an answer to the main question. In the first part, I discuss questions on literature of both Japanese and international topics regarding mobile phone and internet culture. In this section, the question "what defines mobile phone use" and "what defines the literature on mobile phone use" are central. In chapter 2, I will first give a historical overview of mobile telecommunication media in Japan. In order to understand the current situation, but also the themes that occur during literature review, it is important to first grasp the characteristics of Japan's mobile phone culture and its extensive history. In chapter 3, I draw upon a variety of interdisciplinary frameworks including media studies, cultural studies, media sociology, urban studies, and anthropology in order to explore the literature on mobile phones in Japan until today. Comparing literature that centers on Japan with literature that focuses on the rest of the world, I seek out similarities and inconsistencies in the body of research that deals with the international and local socio-cultural impact of the mobile phone, mobile internet, and the effects on the experience and daily practice of urban space.

In the second part of my thesis, I discuss my proposed method and the collecting of data. In this section the questions “how should mobile phone use be researched” and “how is the mobile phone used in Tokyo’s streets” are discussed. In chapter 4, I will elaborate on my methodology. This chapter will first discuss the various ways previous researchers have used to look at the effects of the mobile phone on the urban environment, before explaining how I decided on the method for this research. In order to analyze the state of mobile telecommunication usage in the city and the effects the mobile phone use has on pedestrian behavior in a ‘real life’, natural setting, I decided to undertake extensive ethnographic research in the center of Tokyo. Making use of a new digital tool for urban ethnographers, the lightweight and mobile action camera, I filmed pedestrian behavior in several city parts in Shinjuku that are characteristic types of neighborhoods for Tokyo’s general set-up. This research is one of the first urban ethnographies in Japan that makes use of this tool and technique. Therefore, not only does this research contribute important insights to the study of mobile phone technology in Japanese society, but because of its methodology it is also a helpful contribution to urban ethnography as it evaluates a new digital tool for fieldwork. In chapter 5, I will give an overview of the data that I have collected during my fieldwork, with the first part of the chapter focusing on a quantitative analysis of the video material and the second part of the chapter focusing more on a qualitative interpretation of all collected data. It shows statistics and the maps of the areas I used for my research, and is illustrated by individual examples of mobile phone users in Shinjuku.

In the last part of the thesis, I focus on the questions ‘what are the effects of mobile phone use on the built environment of the city’ and ‘what are the effects of mobile phone use on the spatial experience of the city’. I answer these through a more in-depth discussion on the spatial experience of Tokyoites and the effects of mobile phone consumption on the built environment. I connect the results of the data discussed in the previous chapters to the themes that stood out from the discussions in the first part of the thesis, and review the results in the light of the prominent themes in the current discussion on mobile phone use in Japan as well as outside of Japan. In chapter 6, I attempt an answer to the research question on how mobile phone users interact simultaneously with online and offline space and what this says about spatial use in city in the era of the Information Age. In the conclusion, I summarize my main findings and suggest an outlook for the studies on mobile phones and urban space for future research.

SIGNIFICANCE

First and foremost, the main purpose of this research is to show how the mobile phone, and in particular the aspect of mobile internet, is changing the way people interact with the city they live in. By analyzing pedestrian behavior in Shinjuku my aim is to show the impact of almost two decades of mobile internet use and an even longer period of mobile phone use in general on the world's largest city, providing data of which some parts can be extrapolated to the situation of mobile phone use in the rest of the world. Mobile phone use in public is a topic that, although discussed much in everyday life, has so far seen relatively little 'real life' research that looks at this topic from a perspective of urban space – the main environment where the mobile phone is used. If mobile phone use is changing pedestrian behavior, it changes the way people make use of the city and thus shows potential changes in society. Information technology and its impact on society has been a popular topic for research during the past decades, and many researchers have argued its large impact on global scale. While reading the literature, even though agreeing with many points researchers have made before me, I could not help but think many of these studies to some extent lost their connection with everyday urban life and sometimes drift into a philosophical discussion of the distinction between virtual reality and physical reality. My own research is an attempt to reconnect this literature with both the real and the virtual city, taking Tokyo as a case study.

Mobile phone use in Japan, for a relative short time during the mid-2000s, actually became a rather well-studied topic internationally. When the Japanese mobile phone users became the first to use mobile internet and Japanese feature phones became much more technologically advanced than the general mobile phone in Europe or the U.S., researchers from different fields undertook projects to analyze the use of the device. As Japan entered the 'smartphone era', and the mobile phones started looking more and more like those that were used in the rest of the world, interest in Japan's mobile phone culture decreased. Nevertheless, like anywhere else, mobile phone culture in Japan is very region-specific. Japanese phone carriers still offer a significant selection of smartphones that cannot be bought outside of Japan, and general application use still largely depends on the region as well. Although Japan has now moved on to the use of smartphones, the use of the device is as locally specific as it was during the time of the feature phone. In my research, I mapped the ways in which the smartphone is used to show that mobile phone use and behavior are still very much locally defined. The importance of studies that focus on smartphone use and how it differs per region

was already pointed out by Mark McLelland in 2007. He emphasized that there is a need for more studies to map the socio-cultural impact mobile phones have had regionally in order to show that the use of technology is not universal. internet use, and especially mobile internet use which relies on applications made by separate companies developing software, is highly culturally specific, as many other researchers have also pointed out (McLelland 2013; Hjorth 2006; McLelland 2007a; Ito, Okabe, and Matsuda 2005; Gerard Goggin 2013). However, since 2010, there has been a significant decline in studies focusing on the specific aspects of Japanese mobile phone use.[2] Although there are, of course, important similarities among mobile phone users worldwide, this research tries to give a much needed update on Japanese-specific mobile phone culture. Instead of looking at *keitai* culture, as the subject of mobile phone studies on Japan was called in the 2000s, this study will show how *keitai* culture evolved after the introduction of the smartphone and how it interacts with the city.

While there have been many studies on the use of mobile phones from an international perspective, it is especially important to reflect on mobile phone use from a cultural perspective as mobile phone use is not a homogenous practice. The mobile phone and the relation between society and the use of mobile communication devices have been studied rather well by Anglophone researchers in Western European or American settings. However, these studies tend to treat mobile phone use as a global, universal phenomenon and treat 'Western' countries as the leading societies in the discourse of what is called the 'Information Era': our current 'age' where information technologies are central to everyday life. Although there are definitely many ways in which the U.S. and Western Europe have advanced in developing technologies related to IT, Asian countries should be regarded as one of the main players in the global process of digitalization as well. Not just as an example or case study, but as a major actors in the process. Additionally, it should be clear that there are multiple dominant language realms online as well, and that each realm has their own specific characteristics. In fact, a substantial number of the internet users use languages other than English, access different websites than most Anglophone internet users (P. Matsuda 2002; Nishimura 2003; Ito, Okabe, and Matsuda 2005), and make use of a different set of smartphone applications than Anglophone users. internet use in Japan, and as Miyata et al. (2005) have shown, especially through mobile devices, differs greatly from the Anglophone

[2] Although there have been some extensive studies on the socio-cultural use of the smartphone in Asia in general (Hjorth and Khoo 2015) and Korea (Jin 2017), Japan has received considerably less attention in the past few years.

norm. For example, Japanese mobile internet use took its form based on the large screens that the Japanese phones sported, which led then to an increased use of applications that make use of large amounts of visual data. Furthermore, the large number of youths who accessed the web from an early age made Japanese mobile internet use from the start a much more social practice than in many other countries. It is important to point out that the Anglophone view on mobile phone use is not a universal one, and that Japanese mobile phone use has not only been different from the Anglophone case, but has also shown to advance much earlier and thus should be included in a discussion on the characteristics of what it means to be an 'Information Society'.

Research that looks at the behavior of mobile phone users in the Japanese setting is also interesting since it highlights how urban life has changed due to the use of advanced mobile phone technologies. The use of domestic technology can change relatively fast in a short amount of time and keeping track of popular use of information technology devices has proven to be a challenge: "How do we discuss mobile technologies when there seems to be new mobile technologies released every month?" ask Adriana de Souza e Silva and Jordan Frith quite rightfully (2012, 188). Studies that have reported on the use of mobile phones in the early 2000s were already considered rather outdated ten years ago. Especially in the case of Japan, where international smartphone models like the iPhone have only recently (after 2010) entered the scene, mobile phone use has undergone several important changes in a short amount of time. The switch from mobile phone or 'flip phone' to smartphone has been one of the most impactful developments in the information era, after the implementation of mobile internet. Since there is still a general lack of research that specifically studies the use of smartphones as opposed to the previous generation of 'flip phones' in Japan, it is especially important to keep researching and documenting the current state of smartphone use.

DEFINITIONS AND LANGUAGE

Given the fact that I make use of both English and Japanese source material, before moving on to the background on mobile phones and Japan, I will elaborate shortly on names, language, and definition of the terms I use throughout my essay. First of all, I use the Western system of writing names (given name first, family name second) for Western researchers, and the Japanese system of writing names (family names first, given name second) for Japanese researchers. Second of all, as for language, Japanese words are Romanized and printed in italics, according to the Hepburn system, with their English translation given in between

brackets when I use them for the first time in text. In some cases, when a more extensive explanation of the meaning of the word is necessary, I have provided the original Japanese characters as well as the phonetic key. Thirdly, there is the issue of translation for the names of the devices I refer to throughout the thesis. The technical devices that I discuss in my research often have multiple names, and to add to that, there are English loan words that are being used as terms in Japanese that might not always have the same meaning as their English counterparts. A word to explain the used terms is thus in place.

First of all, the word 'mobile phone' has the same meaning as the word 'cell phone': that is, a portable phone that works on a (cellular) telecommunication carrier network. For reasons of consistency, I stick with the former. The term 'mobile phone' is a common denominator and includes all types and generations of mobile phones. Among mobile phones, there are many 'generations' of devices, which, especially in the case of Japan, differ greatly among technological specifications and appearance. Historically, the first generations of mobile phone, which were developed in the late 1980s and early 1990s are simply called 'mobile phone' or, in Japanese: *keitai denwa* (携帯電話, literally: 'portable telephone'). The second generation of mobile phones, used from the mid-1990s to the early 2000s, is generally called 'feature phone'. In Japan, unlike their Western counterparts, feature phones could already access early forms of mobile internet, which led to many researchers preferring to call them by their Japanese name when referring to them, as the Japanese feature phones had distinctly different types of usage and also looked slightly different than models from Western countries. In Japanese, these are either called フィーチャーフォン (*fiichaa fon*, transliteration of 'feature phone') or, more generally, *keitai* (ケータイ) which literally translates as 'portable' (note that unlike the first-generation phones, this is usually written in katakana, the Japanese phonetic alphabet, rather than kanji, Chinese characters).[3] As many of the second generation phones are of the foldable type, these are universally sometimes also referred to as 'flip phones'. Since in Japan, mobile phone culture boomed in the era of this particular type of phone, there was also a boom in "*keitai* culture" studies. This term (see also Chapter 2) is being used throughout this thesis to specifically refer to the mobile phone-related aspects of Japanese culture specifically related to the 'keitai' type of mobile phone.

[3] In many other languages, the feature phone-type mobile phones were referred to using abbreviations or special terms as well, i.e. *Handy* (from the word *Mini-Handfunkgeräte*, 'mini-hand apparatus') in German or *mobieltje* (from the word *mobiele telefoon*, 'mobile telephone') in Dutch.

Smartphones, a word used to refer to the type of phone that came into use largely after Apple's initial launch of the iPhone in 2007, are usually just called 'smartphone' both in English and in Japanese. The Japanese pronunciation for the English loan word is *sumaatohon* (スマートホン) or *sumaatofon* (スマートフォン), abbreviated as *sumaho* (スマホ) or respectively *sumafo* (スマフォ). For reasons of consistency and because people who live in the Kantō area of Japan (where Tokyo is also located) generally use the former, I will refer to Japanese smartphones only as *sumaho*.

Second, there is no strict definition of what exactly a mobile phone should be in order to be classified as a smartphone. In this research, I based my definition of the smartphone on its technical capability to connect to 3G (and higher) networks, and on its characteristic rectangular looks, its large screen, and absence of keypad. The reason why I based my definition on looks rather than technical aspects, is because of the fact that many second generation Japanese feature phones have similar technical qualifications as many of the earliest non-Japanese smartphones, which makes it hard to distinguish between the two types of phones based on technical aspects alone. For example, most of the feature phones that were produced in Japan in the late 2000s already functioned on 3G internet networks, much like the phones that Western countries usually call 'smartphones'. Therefore, I decided to choose a definition that is more close to the definitions used by the Japanese mobile phone user, which are mainly based on its shape and looks, rather than its specifications.

Lastly, as they will come up often in this thesis, I want to quickly elaborate on the usage of the words 'place' and 'space'. The terms, being used throughout disciplines in different ways, have been known for their many different interpretations (Lawrence-Zuniga 2017). As my research is primarily anthropological in nature, I decided to use the definition of these terms that Setha M. Low has used throughout her research on the roles of space and place in anthropology. Based on urban sociologists' assessments of the terms she defines the concepts as place being "the embodied experience of particular locales" and space as "a creation of movement and reflection" (2009, 23). In general, I use 'place' to refer to a particular point within context and 'space' to refer to the abstract, mathematical or 'measurable' concept.

2: MOBILE PHONE USE IN JAPAN
A Historical Overview

In this chapter I present an overview of the development of mobile phone technology and history of its use based on texts from both international and Japan-focused research. First of all, I will elaborate on the historical development of mobile telecommunication technology and on how there are two major misconceptions about the history of mobile phone use that are often present in many of the sources that deal with anything related to mobile phone use, both globally and with reference to Japan. After an analysis of the development of mobile telecommunication technology and discussing Japan's role in it, I will proceed with a historical overview of mobile phone use in Japan, starting from the early 1980's, and its main points of interest. I will then proceed to define the most conspicuous aspects of mobile phone use in Japan nowadays, at the same time also reflecting on how aspects from older mobile phone use are still visible in smartphone use today.

MOBILE TELECOMMUNICATION TECHNOLOGY AND JAPAN

When it comes to the history of mobile telecommunication technology, there are two persistent misleading assumptions that continue to influence research on mobile phone use and should be addressed. The first is the idea that the mobile phone is revolutionary in nature. While it is true that the mobile phone only made its entrance among the general public in the 1990s, the device actually has a long history that connects it to multiple other media such as the PDA, the pager, the radio, as well as older paper media. Some even argue that one of the main technological predecessors of the mobile phone has been radio technology from the 1800s (Ling 2004). The first development of the mobile phone in its recognizable form already started over half a century ago, in the 1960s. Details about its history are important, since they show us the transformation of media over time, but are nevertheless often ignored or overlooked as they go against the popular image of the 'Information Technology Revolution', which treats mobile phones as well as other ICTs as a sudden revolutionary development which defines our 'era'. The second aspect of the discussion of the history of mobile phone technology is that its origin and development are still often seen completely from a Western-centric perspective – something that also contributed to the fact that much of the academic literature on mobile phones is still written mainly from a Western perspective (Tenhunen 2008; Sneep 2018). The one thing that primarily contributes to this misconception

is the fact that the first ‘mobile phone’ is commonly thought to have been invented by the US-based company Motorola. In 1973, Motorola presented the first portable telecommunication device that worked on cellular network. However, before this 1973 invention, much research had already been done on mobile telecommunication technology.

The fact that the mobile phone is often seen as a revolutionary invention with an incredibly short history actually also contributes to the other false assumption that I will discuss here, which is that mobile phone technology developments are of Western origin. Many of the early crucial steps to mobile telecommunication media were actually made by inventors from Asia, and Japan in particular. In their work on mobile technologies in Asia, Sun-Sun Lim and Gerald Goggin also emphasize that Japan in particular „pioneered many of the technologies associated with cellular mobile devices [and] made key contributions to first-generation mobile networks and handsets“ (Lim and Goggin 2014, 663). Furthermore, according to engineer and historian Morishima Mitsunori (2006) Japan has always been a frontrunner when it comes to mobile phone technology. In his historical overview, Morishima systematically lists all the Japanese inventions that contributed to the field of wireless communication throughout the 19th and 20th century. For example, in 1885, ten years before Marconi’s work on long-distance radio transmissions, Dr. Shida Rinzaburo experimented with wireless electromagnetic communication methods, before founding the Institute of Electrical Engineers. Nevertheless, when discussing the history of radio transmissions, it is more often than not only Marconi who is mentioned. Furthermore, in 1912, Annaka Electric Corporation (now Anritsu) created the world’s first wireless telephone, the ‘TYK’, an important step in the development of mobile wireless telephony in the Japanese research scene. In 1916, the same company set up the world’s first wireless telephone network, in Japan’s Mie prefecture. In 1926 another Japanese invention paved the way towards radio communication and wireless telephony: the Yagi-Uda antenna (which is still being used worldwide). However, unlike the other mentioned inventions, the Yagi-Uda antenna is one of the inventions of which its Japanese origin is clear and relatively well-known.

The reason why Japan made such progress in wireless telecommunication technologies in the first half of the 20th century was a strategic one, and the majority of these developments were

government-funded.[4] Daqing Yang (2010), in his historical assessment on telecommunication technology of imperial Japan, rightfully points out that the rapid early progress Japan made on the field of wireless telecommunications can be attributed to the imperial expansions that Japan undertook in the beginning of the 20th century. The early advances in the field of wireless telecommunication should therefore be seen as military developments, similarly to many of the telecommunication technology developments in Europe, Russia, and the USA that were made around the same time. Telecommunication developments in general have a history of being driven by nationalist or semi-nationalist purposes, not only during its early discoveries but also later on in the 1990s and 2000s (Hjorth 2009, 91). Even the latest developments in the field of mobile phone technology can be seen as being driven by an underlying nationalist initiative. The pressure for Japan's main mobile carrier NTT DoCoMo to be the first to successfully implement a 5G network on time for the 2020 Olympic Games is an international race with, among others, South Korea's Samsung and Sweden's Ericsson.

After the Second World War, Japan re-entered the global economy by producing mobile domestic devices such as the Sony Walkman and portable gaming devices. Throughout the 1980s and 1990s, portable gaming became especially popular, led by companies such as Nintendo and Sony. Larissa Hjorth (2011) argues that gaming devices should be seen as playing an important role in the development and rise of information technology devices in domestic spaces. They also have many similarities to mobile phone use. For example, the use of portable gaming devices while walking in the city requires a mode of attentiveness to the screen that is similar to the use of mobile phones (albeit more dedicated). Furthermore, much like the mobile phone, it has been shown that portable electronic devices such as the Sony Walkman or MP3-players as well as portable gaming devices influence the way the way people experience their surroundings. Andrew Williams (2007) argues that portable music players are not merely used because people enjoy listening to music – it actually eases their interactions and seems to have a (beneficial) psychological effect on the way they experience their surroundings as the device empowers the user in the sense that it allows them to block environmental noise and modify their soundscape wherever they go (2007, 111). While the nature of portable gaming is of course different from the use of mobile phones (McCrea 2011),

[4] Japan's NTT, for example, was a national telecommunication network and as such was completely government funded until its privatization in 1990.

there are close similarities in the design and use of both types of mobile devices, with the most obvious resemblance being the presence of the (interactive) screen.

In the last decades of the 20th century, when portable technological devices became popular, the mobile phone started to gain ground as well. One of the companies that have led mobile telecommunication developments in Japan is NTT DoCoMo, which was called NTT (Nippon Telegraph and Telephone) until its privatization in 1990. Throughout the past forty years, they have made several breakthroughs in the field of wireless telecommunication media. In 1979, NTT already developed the world's first commercial car telephone 1G network (previously, car telephones had been using radio technology or pre-G networks), but after its privatization the company started to focus more on developing mobile telecommunication technologies. They also renamed themselves to 'NTT DoCoMo', standing for 'Do Communications over the Mobile network' and abbreviates to the word *dokomo* which means 'anywhere' in Japanese, hereby emphasizing their goal to make telecommunication in Japan mobile (also reflecting a more global trend in trying to develop mobile phone networks). The privatization of this company is regarded as one of the turning points in Japan's mobile communication history, since it created a competitive market for telecommunication carriers (Kohiyama 2005; Oniki 1993). Throughout the 1990s up until today, the rivalry between three main mobile phone carriers NTT DoCoMo, Softbank, and KDDI au, also called 'the big three' (*ōte no sansha*), created a highly competitive environment that brought forth many of Japans most important developments in mobile phone technology. By far the most influential development of the past decades in mobile phone technology has been DoCoMo's i-mode. On February 22nd 1999, NTT DoCoMo wrote history by implementing the first successful commercial internet network for mobile phones. Their invention quickly became popular: i-mode subscriptions skyrocketed from five million subscribers in 2000 to 20 million in 2001 and 35 million in 2003. After their initial invention, DoCoMo kept working on the development of faster mobile phone internet. In 2001 they launched what is considered to be the first 3G network, called 'FOMA', an abbreviation of 'Freedom of Mobile Multimedia Access'. Nowadays, although the number of competing companies on mobile phone developments has grown, DoCoMo is still a main player and is currently working on the development and possible implantation of the world's first 5G mobile network.

Along the development of the ICT, academic research on topics such as mobile phones, internet cultures, and the idea of an 'Information Society' became increasingly popular topics for academic research, globally, but perhaps even more so in Japan. This resulted in some important early breakthroughs on sociological research on information technology and society by Japanese scholars. As a matter of fact, the very word 'Information Society' (*jōhōka shakai*) was coined in 1980 by Masuda Yoneji, a Japanese futurologist and economist, who was later to become a source of inspiration for Manuel Castells for his trilogy on the Information Age. As Japan was a frontrunner in the development of mobile phones during the late 1990s and early 2000s, research on the device saw a surge during the early 2000s. When mobile internet became a vital aspect of people's daily life in Japan, the Japanese government coined the term 'Ubiquitous Society' (ユビキタス社会, *yubikitasu shakai*), meaning a society that has a mentality of connecting people and information 'anytime, anywhere'. Internationally the notion of Japan as a society characterized by its mobile phone culture sparked researchers' interest as well, resulting in a relatively large body of research conducted on Japan's early mobile phone culture during the 2000s. While in fact many similarities in terms of mobile phone use can be seen between Japan and other countries, especially bordering East-Asian countries such as South Korea and China, it is unfortunate that much of the research that has been published during the early 2000s has been used to pose Japan as having a different or 'unique' form of mobile phone culture.

Besides Japan, South Korea and China have also been main players in the field of mobile phone technology. In the past decade, especially South Korea has been exceptionally active. It has been said that South Korea owes most of its recent economic growth to smartphone technology companies such as LG and Samsung (Mun 2016), which has even led to South Korea earning the title of 'smartland' (Jin 2017). Despite their many contributions, these Asian countries are rarely discussed in literature on global mobile phone history before the 2010s –the only exception being Japan's invention of mobile phone internet in 1999 (Ling 2004; Woyke 2014; Klemens 2010; Agar 2004). This is in line with a Western-centric manner of thinking about technology and science which is still prevalent, overlooking and/or neglecting the influence and impact of technological developments outside of Western Europe or the U.S. (Bala 2006; Shohat and Stam 2013; E. Said 1993). In the history of technology, Asia (both the Middle East and East Asia) has actually been a particular influential player from a very early stage: algebra, the alphabet, and astronomy all came to Europe via the East.

However, as Ella Shohat and Robert Stam argue, the West "organizes knowledge in ways flattering to the Eurocentric imaginary" (2013, 14). The many forms of wireless and mobile telecommunication technology that already existed in Japan seem to have been neglected in a Eurocentric way of thinking by historians of the mobile phone, who instead often refer to the 1973 'invention' of the mobile phone by U.S.-based Motorola.

PERSONAL MOBILE PHONE USE IN JAPAN

As for the shape and character of personal mobile phone use in Japan, its history can be roughly divided into four periods: the 1980s when mobile phones first came into the picture and when the device was primarily a tool for rich businessmen; the first forms of popular individual mobile phone use in the 1990s; the rapid technological development that occurred after the implementation of mobile internet from 1999 until the late 2000s; and the 'smartphone era' which started when the smartphone slowly became the most widely used form of mobile phone after the success of the iPhone.[5] According to surveys by the Ministry of Internal Affairs and Communications, the smartphone has become the most used platform to access internet from in Japan (White paper on Information and Communications in Japan, 2017). The current smartphone-dominated market distances itself from earlier mobile phone use not just by technological differences, but also by language: whereas before, mobile phones would be called *keitai* (携帯 or, more commonly, ケータイ, both pronounced as *keitai*), the new generation phones are more often referred to as *sumaho* (sometimes also written as *sumafo*). On the other hand, something that stayed consistent throughout the history of mobile phone use in Japan is how urban space was always a major factor in the use of the device. This is obvious first and foremost, of course, from the fact that the mobile phone was created to enable mobile communication regardless of location. Second of all, the mobile phone has long been a symbol of urban lifestyle (M. Matsuda 2005a), initially especially regarded as part of places with large business centers, such as West-Shinjuku in Tokyo. Finally, the device has often been discussed in terms of transgressing or 'trespassing' the border between public and private space (M. Matsuda 2005a; Kohiyama 2005).

THE 1990'S – FROM PAGER TO MOBILE PHONE

The first forms of mobile phones, which came to the market in the 1980s, were used for business purposes, in Japan as well as in the rest of the world, and were thus intrinsically

[5] This division is roughly based on Fujimoto Kenichi's overview of the transition from pager to mobile phone use (2005, 82), but I extended it to include the period after.

developed and used in a male-oriented environment (Martin 1991a; 1991b). They were heavy, expensive, and had a very limited battery life. During this time, the much cheaper and lighter pager (which was developed and used already in the 1960s and 1970s) was the most used device for mobile communication. Similarly to the mobile phone, the pager was initially used for work purposes and mainly used by office workers as well. This changed, however, during the end of the 1980s and beginning of the 1990s, when young people, especially young women, started to use paging devices in order to communicate with friends and peers (Okada 2005; Tomita et al. 1997). During the early and mid-1990s, although mobile phones were already becoming lighter and cheaper, the pager was still the most popular mobile communication device, until the mid-1990s, when the mobile phone started to catch up (see figure 1). Before that, besides its relatively high costs, the mobile phone had an image of being 'uncool' and people using mobile phones in public were mainly seen as 'bothersome' and 'obnoxious' (M. Matsuda 2005a). When young people picked up on mobile phone use during the mid-1990s, similarly they were by the general public initially seen as 'annoying' or even 'stupid' (K. Fujimoto 2006, 80). Women who were using mobile phones at that time were even more looked down upon and judged for being vain or egocentric (M. Matsuda 2005a).[6] Nevertheless, mobile phones kept gaining in popularity and at the end of the 1990s and beginning of 2000s, the mobile phone as a device seemed to have largely gotten rid of their initial bad image.

The use of mobile devices among young people is generally seen as one of the most important driving forces behind the development of mobile phone technology in Japan (Okada 2005; Hjorth 2009; McLelland 2007b; H. Kato 2005; Habuchi et al. 2005). The shift from the use of mobile telecommunication devices as business tools towards personal use is characterized by activities that were popular among teens and adolescents such as for example texting peers, mobile gaming, and the downloading and creating of ring tones. Therefore, we can speak of a 'juvenation' of Japanese telecommunication technology (McLelland 2007a). From the mid-1990s onwards, mobile phones became increasingly popular (see figure 1). According to the Telecommunication Association of Japan, the number of mobile phone subscribers tripled between 1996 and 2000. While the mobile phone was primarily designed to be a tool for voice calling, texting has had a prominent function in mobile phone use in Japan from as early as

[6] This echoes online discussions about vanity and the perceived obsession with the self that is prevalent in women's SNS culture, called ‚selfie-shaming'. See for example Shah (2015).

1997 (Okada 2005, 49). Instead of SMS, the Japanese mobile phones used an e-mail-like network to send and receive text messages between mobile phones.

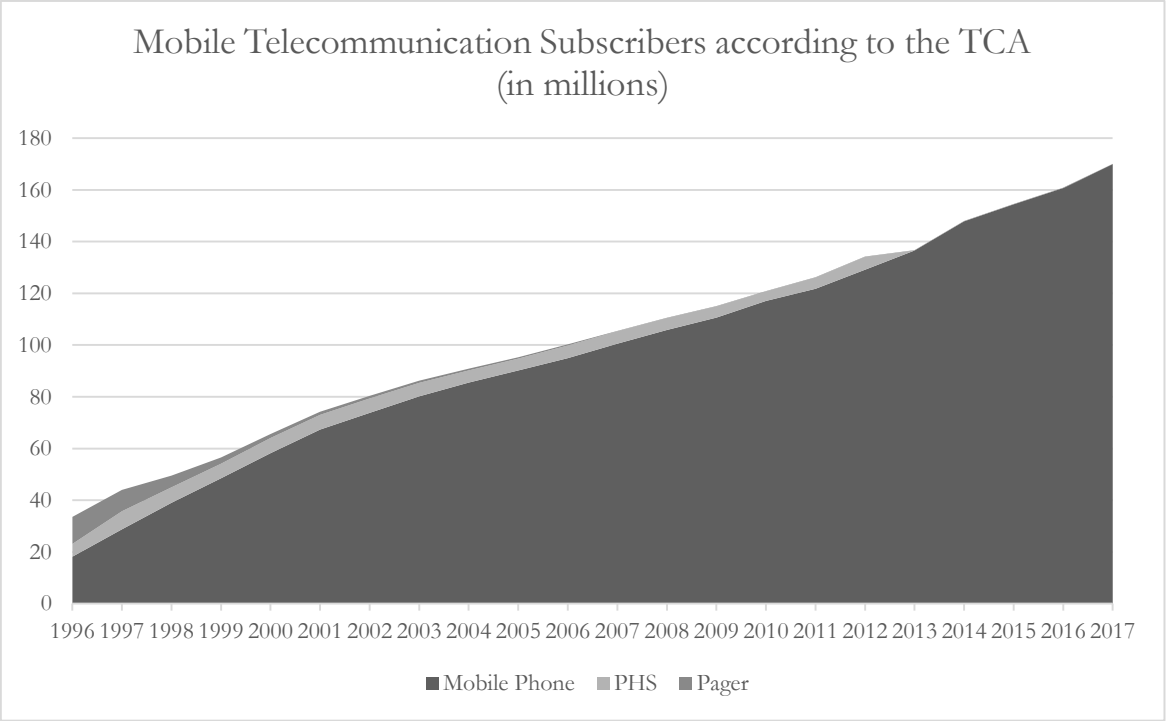


Figure 1: Mobile Telecommunication Subscribers in Japan according to the Telecommunication Carrier Association (TCA). Besides the mobile phone and the pager, there was also the PHS (Personal Handy-phone System). The PHS basically functioned and looked like a feature phone, but worked on a different, less widespread cellular network. The PHS was cheaper than the feature phone, which is why at first it was used by a considerable number of people. Although it was still being used in the early 2000s, most carriers have now halted the use of PHS networks.

THE 2000'S – THE EMERGENCE OF JAPAN'S 'MOBILE CULTURE'

A turning point in mobile phone use was the invention of mobile phone internet, 'i-mode', which was launched by NTT DoCoMo February 22nd 1999. It did not take long for rivaling competitors KDDI au and Softbank (the latter then still under the name of J-Phone) to launch similar mobile internet services for their clients. Shortly after the implementation of mobile internet, e-mailing and web-browsing became some of the mobile device's main functions. It is even argued that mobile internet hindered the spread of desktop PC internet in Japan in the early 2000's by offering internet services from a mobile device which in terms of specifications were comparable to internet services on a desktop PC running Windows 95 (Shukunami 2005). The rapid growth of the use of e-mailing and sending digital text messages was not a new phenomenon: texting had been a large part of mobile technologies

since the pager (Tomita 1994) and long before i-mode launched its e-mail service, there were already similar (although much less advanced) electronic texting services that could be used through regular telephones (Okada 1993). Mobile internet, however, did change the mobile phone landscape drastically. In the early 2000's distinct usage patterns became visible among mobile phone users in Japan. Mobile phone use started to facilitate a large part of one's everyday social interactions through online platforms, such as SNS and forums, which started catering specifically to people accessing their websites from mobile phones. The phone also became a big part of one's leisure time, as television, comics, radio, and music could be accessed from the device. Online shopping through mobile phones became increasingly popular as well (Funk 2007; Gehrt et al. 2007). From an economic perspective the *keitai* created a large business that relied on small (micro-)payments through the mobile phone in exchange for leisure and shopping services, on a scale that was unseen anywhere else in the world (Funk 2005) - all of this within five years after the implementation of mobile internet. Next to payments through and for internet-related services over the mobile phone network, the mobile phones that were sold in Japan in the early 2000s were equipped with a special chip that made it possible for the user to pay in stores and for public transportation with their phone through a system called *osaifu keitai* (mobile wallet). These Japan-specific usage patterns of the *keitai* which emerged after the implementation of mobile internet were quickly labeled as '*keitai* culture' by researchers on Japan (McLelland 2007b).

Keitai culture in the 2000s cannot be discussed without mentioning the important role young women have played in its consumption and development. It were young women who became the most avid users of the *keitai* and who started popularizing the customization of mobile phone devices in fashionable manners, for example by decorating their phones with charms, rhinestones, and stickers (K. Fujimoto 2005). But it was not only the outside of the device that they reinvented – young women also invented a mobile phone language, which played a large role in the creation of popular emoji's, and created, spread, and popularized mobile phone-based literature (so-called *keitai* novels) leading for them to become a popular topic among researchers of Japan and mobile phone culture (see i.e. Hjorth 2006; Hjorth 2004; Hjorth 2009; Kae Ishii 2009; Okada 2005; Habuchi et al. 2005). Another aspect of the *keitai* culture that sprouted in the early 2000s was the decoration of pictures taken with a mobile phone ('selfies', although this word was not yet in common use back then) among young women. This was initiated by the implementation of the camera in mobile phones in 2000 – another

Japanese invention – which, in combination with the large color screens, led to a more visual use of the mobile phone (F. Kato et al. 2005). Okabe (2005) argued that mobile phone picture taking became rapidly popular because it was reminiscent of the popular practice of taking photo booth pictures (*purikura*) that especially high school girls enjoyed. *Purikura* photo booths allow one to take pictures, afterwards modify them through an electronic interactive display, and then have them printed out as stickers or small pictures. It is an "accessible, inexpensive form of visual culture that is keyed to the aesthetics and sensibilities of teenage girls" (Okabe et al. 2009, 87–88). When cameras became implemented in mobile phones, the tradition of modifying pictures *purikura*-style spread to mobile phone technology and became a big part of young women's mobile phone culture.

During the late 1990s and 2000s, Japan developed a mobile phone market solely targeted towards the Japanese consumer. Because there was so little export, there was talk of a so-called 'Galapagos effect': Japanese manufacturers produced (technologically advanced) phones only for the Japanese market, which also led to the use of the word '*gala-kei*' (Galapagos-*keitai*) to refer to Japanese mobile phones. Its advanced phones and wireless internet, all in a distant setting, fueled the idea of Japan as technological utopia, and the mobile phone became part of what Douglas McGray calls 'Japan's gross national cool' (McGray 2009), an important part of Japan's 'soft power' strategy. It would be a misunderstanding, however, to assume that merely because of the difference in technology, the Japanese mobile phone culture was completely unique. Larissa Hjorth (2009) has shown through extensive fieldwork that there are large similarities in use of the mobile phone across several countries in East-Asia, even when mobile phone technology among the different countries was inherently different. Furthermore, although Japanese mobile phone culture was advanced compared to, for example, the European market, other Asian companies like South Korea's Samsung and LG were also frontrunners in the area of mobile phone technology and produced products much like those in the Japanese market. Due to this, and the fact that both countries have similarities in many other aspects of society, mobile phone use in South Korea closely resembled mobile phone use in Japan. Like in Japan, Korean mobile phone culture was mainly led by young women, who developed modifications, text language, and an online culture much like the situation was in Japan at the same time (Hjorth 2009). Unfortunately, a prominent focus on the uniqueness of Japanese mobile phone culture dominates the international body of literature (McLelland 2013, 127; Habuchi et al. 2005, 96), even though

the discussion, especially around that time, could have benefited from comparative research between Japan and other East-Asian countries.

KEITAI CULTURE CONTINUED: THE SMARTPHONE

The so-called *keitai* culture of the 2000s changed significantly around the time Apple's iPhone came to the Japanese market. The iPhone became incredibly popular in a short amount of time (something that is generally not only attributed to the device's technological merits, but also very much to the promotion of the image of the brand as being stylish and fashionable), and this slowly changed the Japanese mobile phone landscape into a more global, smartphone-focused one. The change from 'Galapagos phone' to smartphone started to occur from around 2008 and onwards, but increased especially after several successful iPhone marketing campaigns by Softbank[7] in 2010 (Shinohara et al. 2013). From 2010 to 2012, the percentage of individual smartphone users in Japan increased from around 10% to almost 40% (White paper on Information and Communications in Japan, 2017). The same survey showed that in 2016, around 72% of Japanese households possessed at least one smartphone device, compared to less than 10% of the households in 2010. Although numbers are increasing, the switch to smartphone is significantly slower in Japan compared to the U.S., Europe, and other East-Asian countries. It is argued that this can be explained by the fact that the Japanese mobile phone was already equipped with many of the functions smartphones were advertised for (Shinohara et al. 2013; Akematsu, Shinohara, and Tsuji 2012). The 2016 White Paper on Information and Communications in Japan by the Ministry of Internal Affairs and Communications specifically pointed out that Japanese consumers still lag behind other countries when it comes to smartphone diffusion and smartphone consumption. According to their statistics, Japan had a smartphone diffusion percentage around 60% in 2016, where South Korea and the U.S. usage percentages were closer to 100% (see figure 2). The number of smartphone users is significantly higher among the younger generation, however, with 87 percent of people in their twenties using smartphones (compared to 100 percent of Koreans and 93 percent of US citizens) (see figure 3). Smartphone diffusion rates are still increasing in Japan, and it is expected that Japan will soon reach numbers where three quarters of the Japanese are using smartphones.

[7] NTT DoCoMo, which was until then by far the most powerful mobile phone carrier, was not allowed to sell Apple's products, as Softbank had an exclusive deal with Apple until 2013. This is seen as one of the reasons NTT DoCoMo lost a significant market share to Softbank (Shinohara et al. 2013).

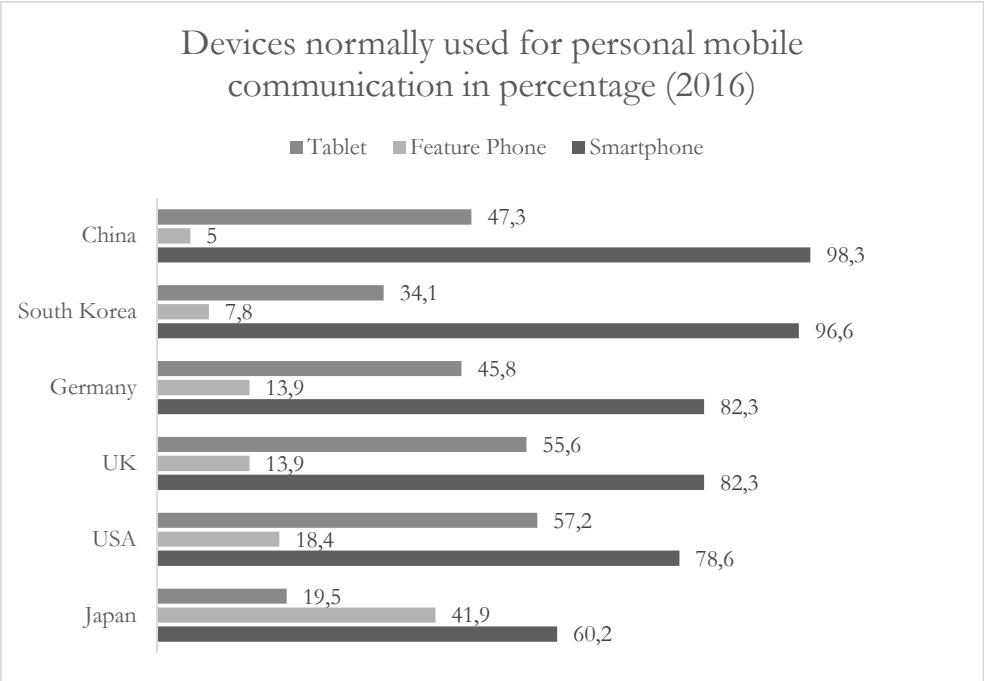


Figure 2. Devices normally used for personal mobile communication for all ages, in percentage (multiple devices possible). Data from a survey conducted by the Ministry of Internal Affairs and Communications (MIC) in 2016. (White paper, 2016)

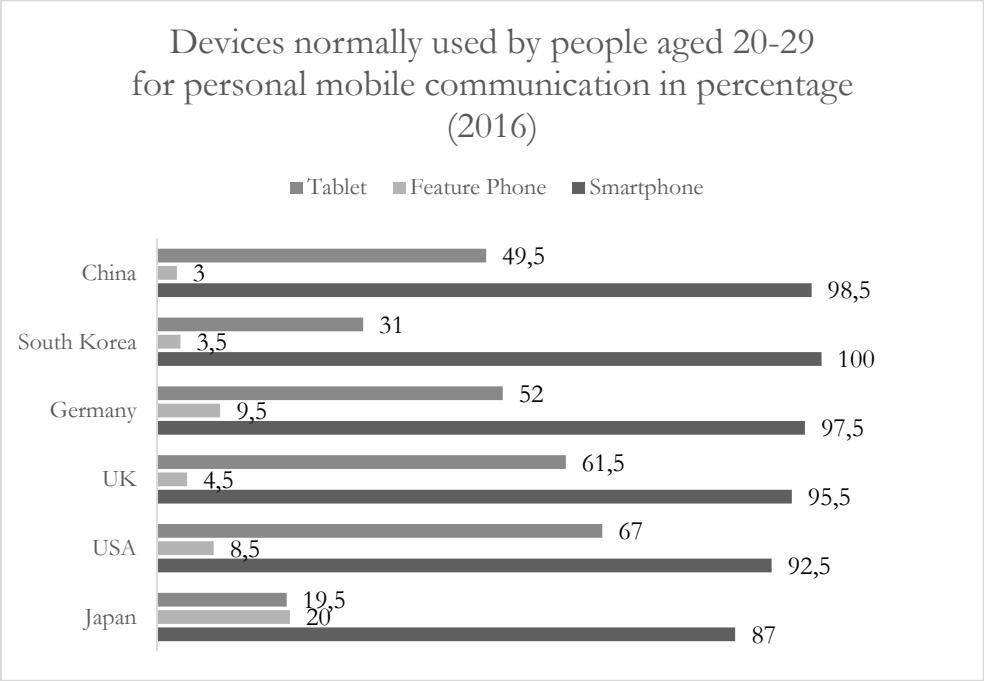


Figure 3. Devices normally used for personal mobile communication among people aged 20-29, in percentage (multiple devices possible). Data from a survey conducted by the MIC in 2016. (White paper, 2016)

Nevertheless, although the smartphone does not have such a high diffusion rate as in other countries, there are specific forms of its use in Japan that can be classified as a 'smartphone culture'. One of the most interesting phenomena of the current tendencies among mobile phone users in Japan is what is called the 'dual usage' phenomenon. In Japan it is common to possess not one, but multiple mobile phones, each for a different purpose. Often, this results in a combination of a more expensive, high-end smartphone (most likely to for personal use) and a cheaper, older model of a feature phone (often used for work-related purposes). Akiike Atsushi and Katsumata Sotaro (2016) define the current use of mobile phones in Japan as the era of the "dual product user". According to them, due to their extensive usage of multiple devices, these users possess a relatively high level of consumer knowledge regarding mobile phones. In earlier studies, too, the Japanese mobile phone user was found to be very much aware of their options and choices (Srivastava 2004). The dual product user has an extensive knowledge of both feature phones and smartphones, using each type for different purposes and comparatively knowing much about the specifications of their devices. Furthermore, since data plans in Japan are expensive (mobile phone monthly plans can easily top 8000 yen, which is about 60 euros[8]), the consumer will also have to choose carefully which option is best for their situation and for which of their mobile devices. Therefore, while smartphone penetration might be lower compared to other countries, the consumer knowledge about mobile phones (both smartphones as well as feature phones, as well as the complicated billing rates) is actually higher, and the fact that many people use a combination of multiple different devices is an indication that the Japanese mobile phone user is eclectic about its use.

There is another device that is used complementary to the mobile phone(s) that people often carry with them: the Pocket Router or Pocket Wi-Fi (PokeWi for short). Rather than connecting to a free public Wi-Fi network (of which there are several in Japan, especially in cities like Tokyo), for several years people have started to carry mobile routers with them that provide them with high speed internet (4G/LTE) access which is often unlimited, depending on the contract and provider. In a 2013 survey, the Pocket Wi-Fi surpassed the use of free Wi-Fi spots among Japanese mobile internet users, indicating that the rise in the use of the pocket

[8] On average, a user of one of the big three carriers spends almost 8000 yen (about 63 euros) a month on a mobile data plan. See "Genzai shiharatte iru sumaatofon no heikin getsukakuryoukin." *MMD Labo*. March 16, 2017. https://mmdlabo.jp/investigation/detail_1637.html (Accessed October 31, 2019)

Wi-Fi is most likely to be related to the diffusion and growth of smartphone use.[9] In a public survey among 707 internet users in April 2017, the Pocket Wi-Fi was mentioned as one of the most commonly carried electrical item that people put in their bags (ranked first on this list was their mobile phone, and the second a spare battery for their mobile phone).[10] One of the reasons people resort to a paid-for pocket Wi-Fi instead of using other Wi-Fi options could be the fact that many Japanese carry multiple mobile phones. It is after all easier and cheaper to pay for one single internet connection than to pay for several data plans. Additionally, the pocket Wi-Fi has a stronger signal and stays connected in many of the places where mobile phones would easily encounter network issues, such as within buildings or underground places like the subway. Another possible reason that Japanese mobile phone users resort to pocket Wi-Fi instead of public Wi-Fi is that of perceived net vulnerability. In a recent survey among smartphone users, only 40 percent said they made use of public Wi-Fi spots, with the number one reason why many chose not to use the publicly accessible Wi-Fi being that many of them fear that these are unsafe. [11] The growing use of Pocket Wi-Fi also indicates that fast and unlimited internet access is one of the main uses for smartphones in Japan. The main purpose of mobile internet is the usage of smartphone applications (apps), which are the 'core' of smartphone use. The mobile app market has grown tremendously and app usage not only differs according to age and gender, but also changes rapidly in terms of which apps are popular. There are, however, several apps that almost every smartphone user in Japan makes use of on a daily basis. By far the most used application types are of a social type, such as social networking and text communication apps. According to the 2017 white paper on Internet and Communications, more than 50% of the time that Japanese people spend on their mobile phones is either on SNS applications or e-mail or texting applications. Smartphone gaming is ranking third, together with web browsing. Besides apps used this, free video apps are also popular. According to a 2016 research among over 500 Japanese smartphone users between the age of 15 and 70[12], the most used SNS apps on a daily basis are first of all LINE, which almost 9 out of 10 people said to use daily. This was followed by Twitter and Facebook,

[9] "Shinseikatsu no internet kankyou nikansuru ishikichousa." *Iid*. March 13, 2013. http://www.iid.co.jp/news/report/2013/0313.html (Accessed October 31, 2019)

[10] "Anata no mochiaruki item wo oshiete?" *Asahi Group*. April 11, 2017. http://www.asahigroup-holdings.com/company/research/hapiken/maian/201704/00627/ (Accessed October 31, 2019)

[11] "WiFi Spot no riyou jyoutai nikansuru ankeito." *Biglobe*. June 10, 2016. http://enjoy.sso.biglobe.ne.jp/archives/wifi_report/ (Accessed October 31, 2019)

[12] Sasaki Rei. "Mainichi riyousuru SNS & Communication Apuri - Twitter ga LINE wo 4.9% uwamawaru." *MMD Labo*. May 26, 2016. https://mmdlabo.jp/investigation/detail_1565.html (Accessed October 31, 2019)

which 5 out of 10 people said to use on a daily basis. Other smartphone apps that were used by the Japanese smartphone user according to this survey were YouTube, *niconico dōga* (a free online video player similar to YouTube) and the phone's pre-installed internet web browser. A similar research conducted in 2015 among smartphone users in their 20s concluded matching results and ranked the most used applications as being LINE, YouTube, Twitter, Facebook, and *niconico dōga.*[13] These surveys also pointed out that most people who own a smartphone only use the device for voice calls less than 30 minutes per month, which emphasizes once again the internet-related services of the smartphone, and shows how the smartphone is seen less as a voice communication tool and more as a multimedia device (Shukunami 2005).

As also pointed out by the survey conducted by the Ministry of Internal Affairs and Communication (2017), one of the most prevalent characteristics of the current mobile phone market in Japan is the fact that smartphone gaming is extremely popular (Akiike and Katsumata 2016; Fan and Fujimoto 2016; Hjorth 2016; Jin 2016). Gaming has been significantly popular in Japan in general (Jin and Schneider 2016; Hjorth 2011), but Japan has also been a pioneer in the field of mobile gaming, and portable gaming devices have been popular for decades. Next to having a history of portable gaming devices which made it easier for game developers to start developing games for mobile phones, Larissa Hjorth (2016; 2007) argues that the success of mobile gaming in Japan can also largely be explained by Japan's early history with mobile internet. Mobile internet led to game developers working on mobile phone games from as early as the beginning of the 2000s, which led to a more established mobile gaming market than in other countries. Hjorth furthermore points out that video gaming culture in general is simply much larger in Asia, and especially in Japan – a factor that plays a big role in the popularity of smartphone gaming. There are hundreds of smartphone game developers in Japan alone and the annual market value of smartphone games in 2016 was calculated to be around 13 trillion yen or 10 billion euros, a number that is the result of a tripling in market value over the past four years, and is said to be the highest in the world.[14,15,16] Although research shows that it is young men that tend to play smartphone

[13] "An jyakunensou hakusho 2015." *Weban*. January 2015. https://weban.jp/contents/an_report/jakunen_pc/2015/01/ (Accessed October 31, 2019)

[14] "2018 CESA Games White Paper." *CESA*. July 23 2018. https://www.cesa.or.jp/information/release/201807230950.html (Accessed October 31, 2019)

games more often than women, women also play a significant number of smartphone games, although the types of games that are popular among them usually differ depending on gender.[17] Mobile gaming is also often a social act: many of the most popular smartphone games connect players with each other through the internet and have them compete with each other or play together. And even if the game is played without real-time social interaction with other players, players often share their game experiences with each other through social media and with friends, thus making mobile phone games a very social activity (T. Fujimoto and Yap 2016).

As discussed in the previous section, a big part of the *keitai* culture that was flourishing in the 2000s was the act of taking *purikura*-like pictures with the mobile phone and sending them to peers. Like with mobile phone gaming, this is another aspect of mobile phone culture that extends itself to the smartphone era. Customizing photos of oneself and one's friends and sharing them online through social networking applications is still a very popular activity. There are many applications on the market that allow the user to modify and decorate pictures of themselves and friends.[18] Often, these applications (like *purikura* booths) offer some forms of 'beautification', such as lightening and smoothing out the skin and enlarging the eyes of the persons on the picture. While these 'beautification' functions should be seen as conforming to the oppressive ideas about beauty that society imposes on women (I.e. adding red to the lips, enlarging the eyes, making the face smaller), the same applications also offer functions that defy these very ideas about what beauty should be. Just as there are functions for the user to get 'beautified', there are many functions that have the purpose of altering the face of the user into an 'ugly' or 'funny' way. Instead of 'beautifying' one's face, the user's face is digitally transformed into a caricature version of themselves: faces are transformed into those of an old person, or an animal, or even foodstuffs such as slice of pizza, and radishes. Taking pictures and making them 'ugly' or on purpose, and then sharing them with

[15] Toto, Serkan. "Japan Has A "Secondary Market" – For Servicing Mobile Games." February 22, 2017. http://www.serkantoto.com/2017/02/22/japan-secondary-market-mobile-games-2/ (Accessed October 31, 2019)

[16] Besides Japan, South Korea's smartphone gaming market is also of significant proportion, which shows again how these two countries' mobile phone cultures are similar (Jin, Chee, and Kim 2015).

[17] "Danjyo x nendaibetsu - Jissai ni yoku tsukawarete iru apuri rankingu." *PRTimes*. February 19, 2016. https://prtimes.jp/main/html/rd/p/000000041.000007396.html (Accessed October 31, 2019)

[18] Among the most popular applications are *LINE Camera*, *B612*, *SNOW*, and *Camera 360*. While *LINE Camera* and *B612* are from Japanese manufacturers, *SNOW* and *Camera 360* are made by Korean companies. See also "Snow, B612, LINE Camera nado kurisumasu ni osusume shitai kamera apuri matome" *Famitsu App*. December 23, 2016. https://app.famitsu.com/20161223_924898/ (Accessed October 31, 2019)

peers is a popular practice. This as well, is a continuation of activities associated with the *purikura* photo booths, where similar practices of 'uglifying' oneself for humorous purposes have been prevalent for decades. Laura Miller, in her research on Japanese high school girls' *purikura* style pictures sees this as a rejection of the dominant ideologies on what 'proper adolescent femininity' should be according to society, and argues that these kind of 'uglified' photographs should be seen as a visual argument or protest against dominant ideas about beauty and femininity (Miller 2005, 139).

The last aspect of Japan's current 'smartphone culture' I want to discuss is the importance of aesthetic appeal of the device. Whereas twenty years ago it was argued that the size of mobile phones should become as small as possible to be attractive to the Japanese consumer (Urabe and Itakura 1998), the smartphones nowadays are generally characterized by a large screen. Although all mobile phone carriers in Japan still sell feature phones (stores sell them under the name *keitai,* or *gala-kei* – an abbreviation from 'Galapagos phone'), the majority of mobile phones sold today are smartphones. The thing that one immediately notices when looking at the lineup of mobile phones in stores is the vibrancy of the color schemes that the phones come in (see image 1). Mobile carriers compete not only in prices, but also in terms of design of their smartphones, which the main providers can get very competitive about. NTT DoCoMo for example, has for several years run a smartphone line that is inspired by Disney characters. The color of the smartphone, the shape of the buttons, and also the interface of the operating system are Disney-themed, which turned out to be a great hit among the Japanese female smartphone consumers. In a similar way, Softbank has put on sale smartphones based on popular games and movies, but instead with the aim to predominantly target the male audience. Their latest movie-themed Smartphone is for example based on Star Wars, which includes free streaming of the latest movie, Star Wars emoticons for messenger applications, and a Star Wars figurine that comes with the device. Frequently, mobile phone carriers will also team up with fashion brands or designers. KDDI au has collaborated with, among others, Fukasawa Naoto and Yoshioka Tokujin in order to sell stylish smartphones. The importance of the exterior of the mobile phone has already been a much discussed aspect of *keitai* culture (Katz and Sugiyama 2006b; Hjorth 2006; 2004). Not just the design of the phone, but also the personal decoration of it by making use of cute accessories has been said to be an important facet of mobile phone use throughout the years. As Hjorth states: "Kawaii culture, adorning both the inside and outside of mobile phones, is used by individuals in diverse ways as a

means of self-expression and individualization" (Hjorth 2004, 2). Looking at the colorful designs and the stickers that were used to personalize the pager in the 1990s, 'kawaii culture' has a long history of being used to personalize technologies. But next to being used as a form of expression, decorating one's phone with cute straps and stickers also influences the way people perceive it. While technology is often associated with a lack of emotions and warmth, decorating the device with cute accessories 'humanizes' it (Hjorth 2004; Fortunati, Katz, and Riccini 2003; Fortunati 2003b). Decorating one's phone in a personal way emphasizes the intimate aspect of the mobile phone. The mobile phone, being close to the body at all times and constantly touched and a mediator between one's friends and family and the self, is an extremely 'intimate' piece of technology. While decorating the actual phone today seems to be less of a popular practice then it was during the early 2000s with the *keitai*, we can still see the traces of this practice remnant in 'smartphone culture' as cases, charms, and stickers are still often used to personalize the device.

1 2 3 4 5 6 7 8 9 10 11 12 13

Image 1: Advertisement for NTT DoCoMo's 2017 lineup. Number 1-6 are 'regular' type smartphones with an Android OS. Number 7: A Disney-themed phone. Number 8: A smartphone with an easy interface especially designed for elderly users. Number 10: A smartphone, designed for children, equipped with a sensor that sends the parents a message when the child arrives at home. Number 13: A pocket Wi-Fi device. (Source: https://www.nttdocomo.co.jp)

CONCLUSION

In the above, I have summarized the most important characteristics and the history and of mobile phone use in Japan. Earlier, I pointed out the two prominent misleading assumptions that are often present in studies on mobile phone use worldwide: first of all the idea that the mobile phone is a revolutionary piece of technology, which is an idea that disconnects the device from a long history of telecommunication media. Second of all - and also partly related

to the first idea - is the Eurocentric view on mobile phone development, which overlooks and/or neglects the important developments of mobile and wireless telecommunication technology stemming from regions other than Europe and the US, such as Japan. Additionally, I have made an attempt to structure the history and characteristics of mobile phone use in Japan. While mobile phone culture studies focusing on Japan surged during the time of the *keitai*, when the Japanese feature phone was seen as a unique case (the 'Galapagos' phone), the number of studies decreased after the switch from *keitai* to smartphone. Smartphone use in Japan is still a fairly recent phenomenon as smartphones only caught up on feature phones after 2010, and still only about 60 percent of mobile phone users in Japan own a smartphone. Nevertheless, the smartphone is winning ground among the younger generation of mobile phone users. Even though smartphone use is still in an early stage, it is already possible to define several characteristics that can help to create an outline of what can be regarded as Japan's typical smartphone use.

In the final part of this chapter, I pointed out the six aspects of smartphone use in Japan that I find most distinctive to the use of the device. First of all – and this is a development that is very much connected to the after-effect of the 'Galapagos' phone market – it is common to see dual usage among the Japanese mobile phone user. Often, the Japanese mobile phone user makes use of two or more mobile devices, often of which one is a *keitai* and one a smartphone. The other distinctive aspect that can be found is the common use of a pocket Wi-Fi for fast and the unlimited internet access that the user gets through this way. Besides this being a good option for acquiring large amounts of fast data for a relative cheap price, the use of Pocket Wi-Fi is also a result of a common concern for net safety and online privacy. Third, we can see the importance of texting functions and free video applications as the smartphone's main purposes. Its use as a tool for social networking indicates that the smartphone is still in essence a tool for communication, even though the smartphone has many other functions. But besides communicating, the smartphone also plays a big role as a device for leisure. In Japan, this manifests itself especially in the popular pastime of mobile gaming. The Japanese gaming application market has outgrown any other nation's application market in terms of revenue. A fifth aspect of Japan's current mobile phone culture is the creative use of photo altering applications and sharing these creations with friends as a fun pastime and part of socializing. These applications actually are a continuation of *purikura* trends that already started in the 1990s and are mostly a part of girls' culture. As some researchers of gender studies have

argued, the graffiti-like photographs show nonconformity to dominant ideas about femininity. Lastly, we can still see how design and color schemes, which were important features of the *keitai*, are important aspects when acquiring a smartphone in Japan. Partly, this is a result of the highly competitive mobile phone carrier market, with three main companies rivaling on selling the newest and most fashionable phones. On the other hand, it shows that mobile phones are (still) seen as a fashion item and besides being a tool for communication, are a way in which the users express their identity. The personalization of the device, which is still an important part of owning a mobile phone, then furthermore reflects the personal and even the intimate aspect of the mobile phone.

As we have seen, many of the above aspects are connected to or are continuing aspects of *keitai* use or older forms of technology such as the pager, which shows how there are 'traditions' in the use of technologies that are transferred from one generation of technologies to the next. The transfer of these technology 'traditions' is not complete or creates an identical use of technologies – rather, it is eclectic. Aspects of these traditions will always evolve and transform according to the technological specifications of the 'new' generation of technology. This finding furthermore negates the idea that smartphones are revolutionary in nature, as it shows a consistency not only in mobile phone use, but seeing the historical background of some of the aspects of what we can call 'smartphone culture', in ICT and usage of media in general. In the following chapter, I will further discuss some of these consistencies and connect them to the use of mobile phone technology not only in Japan, but also more globally.

3: THE MOBILE PHONE, ANALYZED

Themes and Gaps in Mobile Phone Research

Both internet and the mobile phone have been defined as the central developments in communication technologies with the largest impact on society during the past decades. The smartphone, combining both the internet's function to retrieve and store large bodies of information as well as having the versatility of being able to communicate regardless of place, is seen by many as the most revolutionary invention of the 21st century so far. If the internet is the Information Technology that symbolizes the Information Age, the smartphone is the device that embodies it. Until the invention of mobile phone internet, internet use was mainly something that was bound to a specific place, such as the home or the office. With mobile internet, the mobile phone user became able to retrieve and store all kinds of information regardless of location. The device has undeniably made a large contribution to our lives, but much as it has been praised, it has also been criticized. While on one hand, virtually everyone uses smartphones on a daily basis, on the other hand our dependency on the mobile phone has met with suspicion, as many believe the device is disturbing our ties with the 'real' world, in the sense that it harms our emotional connection with other people, damages our mental health, and is seen as 'taking over' our lives. The positive and negative views on mobile phone use have led to a plethora of research on mobile phone use from a socio-cultural perspective. In order to understand the body of research related to the mobile phone and urban space, it is important to first understand how research that focuses on mobile phone use from socio-cultural perspectives has been formed over the years, globally as well as with a focus on the Japanese case.

This review of the relevant literature will discuss several of the most influential studies on mobile phones and society that have been published in the past decades. The chapter is divided into two parts. In the first section of this chapter, I provide an overview and discussion of the broader themes that have emerged in the discussion of mobile phone use and how these relate to the earlier research on ICTs. Only after addressing these themes and identifying the common misconceptions that are present in the overall discussion on mobile phones can we move towards a constructive debate on mobile internet and urban space, which will take up the second part of this chapter.

COMMON THEMES

The mobile phone is a complex technological device with many functions and its form and use continuously changes as there are new devices and new applications and software updates released literally all the time. According to many, the combination of this renewal cycle and the complexity of the device makes the mobile phone a difficult topic of research (de Souza e Silva and Frith 2012). Research that focuses on the mobile phone, however, seems to be affected by several common assumptions. These stem not only from the device's complexity in nature, but also from the ambiguous relation between society and technology in general. Influenced by an ambiguous stance towards technology, the mobile phone is merely the latest form of technology that is subject to an irrational, emotional kind of logic. Before the mobile phone, research on the internet struggled with similar problems, some of which can be seen repeated in the research on mobile phones. Research on the internet and its influence on society, from a wide variety of fields, has had a tremendous impact on academia, with entire new fields emerging based on the social, economic, political, and cultural impact of the technology. When the technology was just being implemented in our daily lives, the internet was often seen as potentially politically revolutionizing and researchers had high hopes for the future of its diffusion. It was anticipated by many that it would influence the world positively, finding early evidence of a more engaged, more deliberative, and more inclusive political community (Hill and Hughes 1998), unifying people all over the world (Negroponte 1995) and closing the gaps in our society (Anderson et al. 1995). At the same time, people noticed the possible dangerous side of the internet, arguing that the privacy of individuals would be heavily compromised (Beniger 1996; Lessig 1999) and that the internet was just another platform for commercialism and power play, indistinguishable from commercial television (Rheingold 1993; Davis 1998; Margolis and Resnick 1999). From a psychological perspective, the internet was closely scrutinized and widely researched concerning the effects on the human mind, especially with regard to dangers of addiction and the harmful effects on the development of the psyche of children and teenagers. While the internet has been one of the most studied ICTs, the mobile phone saw an increase in attention since the late 1990s. There are many similarities in research focus between research that centered on the socio-cultural impact of internet and research centered on the impact of the mobile phone. Much like with the internet, the social impact of the mobile phone was at first perceived to be groundbreaking, and research has generally been just as heedful, if not more so, for the possible harmful

effects that the use of the device could have on society. As James Katz and Mark Aakhus write in their account on the social impact of the mobile phone: "the pessimistic view is rampant in the field of communication studies" (Katz and Aakhus 2002, 317). As was the case with the internet in general, research on concerns regarding the use of mobile phones among children and teenagers flourished (Ling, 2004; Boyd, 2014). Other concerns that emerged also reflected earlier studies on the influence of the internet on society and looked, for example, at the issue of privacy (Bachrach and Rzeszut 2014; Karniel and Lavie-Dinur 2016; Murray 2011), and harmful psychological effects related to mobile phone use (Reinke 2017; Young and Abreu 2017).[19]

UTOPIA VERSUS DYSTOPIA

The most common assumptions that can lead to misguided conclusions in research on ICT stem from technological determinism and are due to a bias towards technology, which is often either extremely positive (utopian) or extremely negative (dystopian). Technological determinism can be defined as being the idea that technology is an independent, tangible agent (often referred to as a specific machine or device), that causes events and changes in society. The idea that technology determines societal development is centuries old, and early accounts can be found already in the works of seventeenth and eighteenth century scholars, for example in the works of Anne Robert Jacques Turgot (1729-1781), most notably in his famous speech *Discours sur les progrès successifs de l'esprit humain* (1750), in which he elaborates on global history and how specific technological inventions (i.e. the printing press) brought forth new eras in history (Williams 2005).

But most well-known is perhaps the technological determinism evident in Karl Marx' the Poverty of Philosophy (1847) where he states: "the hand-mill gives you society with the feudal lord; the steam-mill, society with the industrial capitalist" (Marx, 1962 [1847], p. 122). Not only does this statement imply that a technology is the main cause of a social paradigm, it also implies that this technology brings forth the same social paradigm regardless of

[19] Two regions that have been producing a considerable number of studies on the mobile phone and its socio-psychological effects are the Scandinavian countries and Japan. Much of the research that deals with early mobile phone cultures and the effects of mobile phones on society, in particular with regard to teenagers and adolescents, are conducted in a Scandinavian or Japanese setting (see for example Boase and Kobayashi, 2008; Ishii, 2009; Katz, 2003; Ling, 2004). The past five years have also seen a significant increase in studies on South Korea and smartphone addiction as well, especially concerning adolescents (see for example S.-W. Choi et al. 2014; H.-S. Choi, Lee, and Ha 2012; S.-W. Choi et al. 2015; Kwon et al. 2013; H. Kim 2013).

environment. Technological determinism can be defined as being the idea that technology is an independent, tangible agent (often referred to as a specific machine or device), that causes events and changes in society. Technological determinism shifts the focus towards the effects or results of technologies on society and neglects other power dynamics such as socio-economic, political, ideological, or cultural factors. This is a reductionist view that sees ‚the machine' as the sole agent of change in many cases in history and technological innovation as linear and, to some extent, predictable and inevitable (i.e. „the car created suburbia") (Merrit Roe Smith and Marx 1994; Heilbroner 1967; 1994; Bimber 1994).

In the case of the mobile phone, a pessimist view stemming from technological determinism has come to dominate the discourse (Katz and Aakhus 2002). However, there are overly positive accounts that glorify the mobile phone as well. For example, in Japan, the utopian view on mobile phone technology has for a long time been connected to nationalism (Hjorth 2009; Habuchi et al. 2005). The case of the reception of i-mode serves as a great example that shows how achievements made by Japanese mobile phone companies have been misrepresented as being an example of Japanese technological superiority – something that has been demonstrated on multiple occasions by the government, as the achievements in the field of mobile phone technology have been promoted in the yearly white papers.[20] For a while, the mobile phone and Japan-made mobile phone technologies were even thought to be able to save the stumbling Japanese economy from further decline. In his book *The Mobile Phone will save Japan!* (*Keitai ga Nihon wo sukuu!*) (2000) Tsukamoto Kiyoshi emphasizes the various positive impacts the device has had, but most of all, argues that the device has the power to save the Japanese economy. His optimism is not entirely ungrounded: in the 1990s and beginning of the 2000s, Japan was doing well in the development of telecommunications, which many compared to Japan's earlier technology-driven economic boom in the 1980s. When NTT DoCoMo developed i-mode, it was well-reported on for being the first successful

[20] One recent example of this is an article called "Leading Innovation with Japan's Information Technology" that was published in the spring 2017 international report of the Japanese government, elaborating on Japan reaching a 99% 4G mobile internet saturation. The article claims Japan to be the first country in the world to reach this and emphasizes they are ahead of most other countries by 20%. However, recent research by *Open Signal*, an application that gathers information about mobile internet speed from over a million smartphones worldwide, placed Japan 10th in their ranking on fastest mobile internet. South-Korea came out as the fastest with almost twice the average mobile internet speed of Japan. See "Leading Innovation with Japan's Information Technology" in: *We Are Tomodachi* (22), spring 2017. http://www.japan.go.jp/tomodachi/2017/spring2017/index.html; for *Open Signal*'s research, see "Global State of Mobile Networks." *Open Signal*, February 2017, opensignal.com/reports/2017/02/global-state-of-the-mobile-network. (Accessed October 31, 2019)

mobile internet-system in the world. Natsuno Takeshi, sometimes called 'father of the mobile internet' wrote several books on NTT DoCoMo's business strategy and Japans early mobile phone successes (Natsuno 2002; 2003), which helped to re-establish Japan's image as home of cutting-edge technology after the crash of the bubble economy (Negishi 2003; Okada 2016; Habuchi et al. 2005). Japan's early success in the area of telecommunications was reported on worldwide and i-mode was applauded for being a revolutionary, high-tech system that the rest of the world could learn from (see i.e. J. Beck and Wade 2003). However, it's important to not forget that i-mode did not develop out of thin air. Around the time it was developed, there were many other mobile technology manufacturers experimenting with mobile internet connections, both in Japan as well as internationally. The first commercial mobile internet system was developed not in Japan but in Finland, by Nokia in 1996. Before i-mode there were also already established mobile services in Japan, which NTT DoCoMo used as examples to develop i-mode. By portraying i-mode as a 'spontaneous' invention, the system (incorrectly) receives the status of revolutionary. The discussion on the invention of i-mode, in this light, serves to contribute to a nationalist sentiment - something that is more often the case with ideologies of technological determinism (Heilbroner 1967; 1994; Williams 1994; Merrit Roe Smith 1994).

The utopian view on mobile phones also benefited those companies who created the Japanese 'mobile phone revolution'. NTT DoCoMo, together with (albeit to a slightly lesser extent) Softbank and KDDI au, managed to secure a stable oligarchy position within the Japanese mobile phone market by creating and implementing mobile internet. By being the only mobile phone carriers who had the means to use the cellular network and mobile internet, and by making mobile phones suitable for these networks only, these three companies were able to establish a very powerful position in a relatively short period of time. However, this oligarchy of the 'big three' mobile phone companies arguably has had some negative side-effects. The economic position of these companies was questioned and challenged by the government in 2016 because of sky-rocketing subscription fees they were asking of their subscribers. The prime minister had to issue a statement asking the telecommunication carriers to lower the prices as they grew out of proportion to the average income.[21] Furthermore, some argue that it

[21]"Government leans on mobile carriers to simplify pricing" *The Japan Times*. October 20, 2015. See http://www.japantimes.co.jp/news/2015/10/20/business/governmentleansonmobilecarrierstosimplifypricing/# (Accessed October 31, 2019). Slowly, cheaper data plans and SIM only data plans started being launched

was exactly NTT DoCoMo's monopoly-like position in the mobile phone market that has actually caused a major setback for the Japanese economy around the early 2000's. According to Robert Cole (2006), the development of Japan-specific telecommunication technology markets as well as i-mode not only dissuaded foreign players from entering the Japanese market, but also made it difficult for the Japan-made technology to be exported. Additionally, Kushida Kenji (2006) argued that NTT DoCoMo's success actually might have been largely due to a policy error, and a result of a flawed and misconfigured telecommunications regime. When Apple entered the global market in the early 2000's, Japan lost the last of its grip on the international telecommunication technology market, John Zysman and Abraham Newman (2006) argue. Thus, while i-mode was initially seen as a revolutionary Japan-made form of technology which could serve as an example for other countries' mobile phone carrier strategies, not only was the technology for i-mode based on already existing systems and therefore not entirely 'revolutionary', the invention of i-mode contributed to a monopolization of the Japanese telecommunication market to the benefit of the three largest mobile phone carriers and the exploitation of mobile phone users, which was only as late as 2016 opposed by the government. The utopian view on mobile phones should rather be seen as a narrative that was promoted to benefit these companies. Robert Heilbroner, in his 1967 essay on the definition of technological determinism, already states that technological determinist ideologies can be and are being used as a powerful force working for those who have the objective to maximize possibilities for gain (Heilbroner 1967). Similarly, Rosalind Williams (1994) argues that advocates of technological determinism even work towards creating a discourse of technological determinism of specific technologies or machines, which they then use in order to benefit from the production and consumption of it. In the case of i-mode, we can identify how a large company made use of a utopian discourse, actively promoting the 'uniqueness' and 'revolutionary' aspects of it not only through marketing but also by publishing books on their mobile phone technologies, in order to achieve exactly this.

But more than a utopian view, research on mobile phones has been dominated by a dystopian view, which ranges from irrational horror stories about mobile phone-induced brain tumors, to addiction, to more rational fears such as privacy theft, all through mobile phones. Many of the accounts discussing the problems that mobile phones echo similar stories about the harmful

among mobile phone carriers, especially among growing, smaller mobile phone carriers outside of the ‚big three' companies NTT DoCoMo, Softbank, and KDDI au.

effects of internet use, caused by research such as Kraut et al.'s famous and often quoted report on the malicious effect of internet on family life and the home (Kraut et al. 1998), or earlier accounts on the supposed brain-killing effects of television. Generally, we see that there are two types of dystopian images that are connected to the mobile phone: the idea that the mobile phone has a harmful effect on our body and/or mental state, and the idea that the mobile phone has a destructive effect on society. Both of these ideas stem from an age-old fear for technology, or 'technophobia' as it is also called (Dinello 2005; Marshall 1997; Brosnan 1998). The first part of technophobia, the fear of technology 'infecting' our body is centuries old and already a theme in for example, Mary Shelley's Frankenstein (Waldby 2002).[22] The mobile phone, being a device that has a particular close bond with the body – so much that some have argued our brain perceives it as an extension of itself (Oksman and Rautiainen 2003; Fortunati, Katz, and Riccini 2003; Fortunati 2003b) – is, as a result of this very close proximity, perhaps particularly prone to a technophobia-driven anxiety. The continuous closeness to the device is usually connected to fears of technology 'infiltrating' or 'penetrating' the body, which often expresses itself in the fear of mental decline: it is generally thought to have an addictive, anti-social, and stupefying effect on the mind of the user, much as was also the case with earlier media such as television and the internet (Lupton 1995).

The mental decline the device is feared to bring forth is sometimes thought to manifest itself through the body of the user in some way. A research on Finnish teenagers, for example, reported one teenage girl stating "it's no wonder about people becoming lazier and lazier when you may as well lie in bed with your mobile phone and key in all sorts of stuff, you don't have to move or think, just keep on pressing the buttons" (Oksman and Rautiainen 2003, 301), showing how people around an early stage of mobile phone penetration, already from a young age, developed a fear that these devices numb their minds and disable their bodies. Researchers who reproduce this technophobic view will often focus on the 'obsessive' use of the device among the younger generation (and no doubt partly due to a gendered view on technology, seem to be especially interested on the use of mobile phones among young

[22] Possibly, the history of fear of new forms of media goes back even further. For example, when novels became a popular medium for entertainment, there was a time when books were seen as 'tranquillizing' our minds and as inducing strong individualistic, anti-social behavior in people (Briggs and Burke 2014, 53). This remarkably closely resembles many of the accounts that speak about the brain-killing, anti-socializing effect of the smartphone.

women). However, their studies are likely to lack in terms of thorough methodologies, instead relying largely on the reader's own fear for technology to make the arguments seem more plausible. Eija Kasesniemi and Pirjo Rautiainen, for example, who looked at texting behavior among young girls in Finland, conclude that young girls are more inclined to engage in texting behavior than boys only because of a desire to keep a diary, which they portray as natural for women (Kasesniemi and Rautiainen 2002). While this argument is of little correlation with texting behavior, the authors then expect the reader to conclude that young women are then thus more prone to 'addictive' mobile phone use than men.

After the mobile phone 'boom' in the beginning of the 2000s, many studies dealing with the negative effects of mobile phone use emerged in Japan as well – so much so that some even spoke of a mobile phone 'moral panic' (Habuchi et al. 2005). Researchers started to link mobile phone use to mental problems ranging from personality disorders (Takao, Takahashi, and Kitamura 2009), aggression (Takahira, Ando, and Sakamoto 2006), truancy (Tayama 2011; Mishima et al. 2016), stress (Ogata, Izumi, and Kitaike 2006; Hirose et al. 2011), eating disorders (Komeyama et al. 2013), autism (Okonogi 2000), and some studies even went as far as to connect the laziness or numbing affect mobile phone use would induce with 'passive' sexual behavior among adolescents (Habuchi 2016) – hereby connecting Japan's declining population rate indirectly to the 'addictive' use of the mobile phone. What these studies have in common, is that almost all of them solely rely on results from surveys. However, (as is common with research that is influenced by a fear of technology) these surveys often show prejudice. Kamibeppu Kiyoko and Sugiura Hitomi, for example, in their research on the lethargic effects that mobile phones are supposed to have on children, start out their research by comparing excessive mobile phone use to pathological gambling as it is described in the DSM-IV. After pathologizing mobile phone use, they then proceed to interpret their survey data with a tendency to identify 'obsessive' mobile phone use. Even though the majority of their respondents indicated that the mobile phone helped them with maintaining social relationships and making friends, the authors instead focus on the much smaller proportion of the respondents who stated they had experienced difficulties with communicating by using mobile phones, underlining ostracism that the children experienced because of mobile phone use. Furthermore, research like Kamibeppu and Sugiura's often consciously or

subconsciously appeals to an emotional response of the reader, as it deals with young adolescents and children.[23]

More in-depth ethnographic accounts, however, have proven that the mobile phone is not as harmful as it is often portrayed as. According to Takahashi Toshie, who conducted over ten years of ethnographic research on mobile phone use among young women in Japan, research that focuses on the negative effects of mobile phone use and the Japanese discourse on youth and digitalization in general, has been characterized by fears of the collapse of the home, school, and society (Takahashi 2011). In short, in the above mentioned studies on mobile phones in Japan we see a reflection of a complex combination of hope and fear, resulting in the overemphasis of a generation gap. Additionally, the kind of research that focuses on the damaging effects of the device portrays the mobile phone as a device that 'induces' effects on the human mind, and makes it seem to have the power to negatively impact an entire generation. It is relatively easy to point at a tangible object in order to identify the source of social issues. However in doing so, so argue Merrit Roe Smith and Leo Marx (1994, xi), these researchers are ignoring larger, socio-economic, political, cultural, and ideological formations and give up a profound analysis of a situation in order to create an easy sense of causal efficacy. The situation of the mobile phone can also be regarded as a moral panic (S. Cohen 1972) in the sense that the discussion on its harmful effects mainly focuses on children and young adolescents, but the reaction to the issue tends to be disproportionate and should be seen as symbolic of a general sense of fear considering a particular part of society. In the case of the aforementioned studies, none of them were actually able to prove a link between the mobile phone and a distinctive damaging effect – they all merely imply a possible correlation between a specific deviant behavior and mobile phone use, and rely on the reader's own subconscious technophobia to extrapolate the result.

Technology in general is often part of general feelings of risk and unsafety (U. Beck 1992), but the mobile phone seems to have been surrounded with a discourse of risk specifically with relation to the mental state of young adolescents. The discussion is, moreover, characterized by a revival of previous fears concerning the internet in the discussion of the allegedly mind-

[23] This dystopian view has of course been inconvenient for the manufacturers of the mobile phones. However, instead of denying the negative effects of the mobile phone, we can see that in Japan the mobile phone carriers actually help informing people about the possible negative effects of the device, by sponsoring advertisements that warn against mobile phone use while walking, for example. This is a strategic decision that in turn contributes to a beneficial and caring image that further benefits their sales.

numbing and addictive effect the mobile phone, as well as a focus on how the mobile phone allegedly induces an extreme individualist mentality, leading to feelings of ostracism and, eventually, to forms of deviant behavior. In sum, with the discussion on the mobile phone, we can see how ideological and reductionist the response has frequently been so far and how this has hindered the development of a more in-depth and inclusive analysis of the socio-cultural aspects of mobile phone use.

Technological Othering

Somewhat related to the utopian/dystopian discourse surrounding mobile phones is the body of comparative research that specifically sets out the Japanese case against other parts of the world. Since Japan was, especially in the early 2000s, seen as a country with a particularly flourishing mobile phone culture, it was often researched in comparative studies on mobile phone use (i.e. Baron and af Segerstad, 2010; Clark, 2009; Cui et al., 2007; Daliot-bul, 2007; Funk, 2007; Kenichi Ishii and Wu, 2006; Katz and Sugiyama, 2006; Mizutani et al., 2004; Kamibeppu and Sugiura, 2005). Although some comparative studies on Japanese mobile phone use definitely succeed in showcasing the variety of cultural differences in mobile phone use all over the world, many studies have resulted in conclusions that reinforce existing stereotypes and pay too little attention to the technological differences in devices that are or were used in different countries. As pointed out in the previous chapter, the technological differences between the mobile phones used in Japan, other parts of Asia, and the rest of the world resulted in significantly different usage patterns and applications of the device. Instead of acknowledging that different types of devices will have different forms of usage, researchers of comparative studies, especially those conducted in the 2000s, often focus on the apparent uniqueness of the Japanese mobile phone culture, reinforcing a 'unique Japan' narrative that makes Japan seem as if it is inherently different from other countries. Ishii and Wu, for example, state that Japan has its own unique media and usage patterns that are unlike what they deem the 'general usage' of mobile phones (c.f. Kenichi Ishii and Wu, 2006: 95; similar statements found also in Kamibeppu and Sugiura, 2005). In these researches, the results predictably show that Japanese people talk less and text more: Naomi Baron and Ylva af Segerstad (2010), for example, show that Japanese are four times more likely to use text messages compared to people from the USA and Sweden. The fact that this could be caused by the specific data plans and textual applications present in Japanese mobile phones is not taken into consideration. Instead the researchers refer to a Japanese characteristic of being

quiet, a stereotypical image of the Japanese that stems from an Orientalist image of the Japanese as being silent and docile. Since these studies, then, do not (or do not sufficiently) explain the causes for this behavior, or take into account the large differences in specificities of the devices, the results reinforce this stereotypical image of the 'silent' Japanese – a paradox seeing that the mobile phone is, in fact, constantly being used to communicate, whether in textual or audio-visual form. The misleading results of this research are highlighted now that the smartphone and its instant messaging applications have become the dominant use for communication in most other parts of the world as well.

Some researchers go even further and dive into a techno-Orientalist image when they, for example, discuss how mobile phones allegedly caused a sort of 'inability' among Japanese teens to read analogue books anymore (R. C. Clark 2009). An earlier study mislabeled the KDDI au flagship store in Harajuku for a 'mobile phone amusement park' (Daliot-bul 2007). Another even went so far as to make it seem that it is common in Japan to have QR-codes on gravestones (Breuer 2009), which – although it might exist – is not common practice at all. In these comparative studies, researchers consciously or unconsciously seek out stereotypes, not only reinforcing them but also using these cultural stereotypes to further develop their own arguments.[24] Using the Japanese example of mobile phones and setting it up next to a Western country will, because of the large differences in device and application use, always result in a significant statistical difference necessary to make the research seem more relevant. For that reason, the use of the Japanese case in comparative studies on mobile phone use (especially those conducted around the 2000s) often exploits cultural stereotypes, which contributes neither to an understanding of mobile phone use in general, nor the use of technology in different cultures, but instead confirms age-old stereotypical images and hereby increases the gap between different societies.

The Mobile Phone Historical 'Vacuum'

The third issue that continues to influence researchers when studying the case of mobile phone technology in Japan is one that, like the binary utopian/dystopian view on mobile phones and ICT in general, is also connected to technological determinism. According to a determinist view that sees technological progress as linear, the mobile phone is merely the

[24] Through research on the mobile phone, stereotypical images are being forced upon Japan, however, there are few cases where stereotypical images are forced on Western countries as well: one account, for example, speaks of the Northern Europeans as stern and quiet people who only communicate 'when necessary' and hence only use very short text messages as standard for communication (de Mooij 2004).

'next step' bound to occur after the invention of the landline phone. Researchers affected by this type of thought will treat the mobile phone as if being invented in a 'vacuum', by only connecting its development historically to the landline phone. Subsequently, these researchers tend to be surprised and exaggerate the novelty of the functions of the mobile phones, inevitably comparing every single aspect of the device to its 'parent' technology, the landline phone. The idea that the mobile phone is a 'logical offspring' of the landline phone is then often reinforced by stating that the mobile phone was invented in 1973. While it is true that one form of mobile phone technology was invented in 1973, mobile communication media have a much longer history and borrow technologies from various other media and apparatuses. Especially the smartphone, implementing other media technologies such as internet, television broadcasting, and radio (to name a few), can hardly be compared to the landline telephone alone. Because of its capacity to connect to the internet, some researchers have even argued that the mobile phone should be compared to the desktop PC rather than the landline phone (de Souza e Silva 2006). It is impossible to look at a form of media without its relation to all other forms, as media will always 'repeat' functions, aspects, and usage patterns of older media (Briggs and Burke 2014; Bolter and Grusin 1999). Media are continuously being re-invented and innovated, a characteristic that is particularly present in mobile, 'screen-related' media (Verhoeff 2010). Seeing the long history of communication media and information distribution in both Japanese as well as 'Western' settings, we have to put the mobile phone in a broader framework of communication technologies when we talk about its history.

Mobile phone text messaging, for example, has been found to show similarities with much earlier forms of writing. Text messaging is an important aspect of the mobile phone, especially in the case of the smartphone, and was also a big part of the Japanese feature phones. As for the Japanese case, where mobile internet made it possible to send and deal with larger bodies of text early on, the first generations of mobile phones were very much inspired in design by the pager (Natsuno 2002). However, the text messages do not only represent the short pager messages, but have also been pointed out to have much in common with the ways in which Japanese people wrote each other postcards in the early 20th century (Iida 2006; K. Y. Kim 2014; 2016), indicating a much longer history of 'text messaging' in Japanese society. Kyoung-hwa Yonnie Kim (2016; 2014) furthermore emphasizes the way emotional language, especially, is being used both in the case of postcards and text messages,

and how the writer will often find ways to be creative with letters and characters. She compares this to the use of emoticons and smileys that are now an essential part of texting. The popular Japanese smartphone application LINE, for example, allows the user to decorate their chat screen, photos, and profile page with an endless variety of cartoon clip arts of popular characters (called 'stickers'), gifs, text effects, and emoticons, indicating that the sending of text messages is a very creative act. Outside of Japan, the relation between postcard writing culture of the early 20th century and mobile phone texting has been pointed out to be similar as well. For example, similarities and continuities in nature and expression of written information between postcards in British postal history and messages used in Social Networking Sites have been pointed out as well (Milne 2010).

Not connecting the usage patterns of the mobile phone to other, age-old usage patterns of communication media that exist in all societies, contributes to an image of the mobile phone as a 'revolutionary' device, something that is also a result from the reasoning of the aforementioned utopian accounts on mobile phone technology. This view of mobile phone technologies as 'revolutionary' is in turn very much connected to several main theories that major thinkers of the 20th century have advanced concerning IT. Saskia Sassen, for example, has argued in her theory on global cities that information technologies have induced a new form of economy, which has changed cities all over the world and led to the emergence of several main global, technologically advanced urban agglomerations. While Sassen argues that this is an IT-induced recent development, some researchers argue that she focuses too much on the revolutionary aspect of these urban areas. Gottdiener and Budd, in their assessment of Sassen's theory, argue that although IT might have accelerated it, the global cities Sassen mentions already were international economic nodes in a global system well before the 20th century (Gottdiener and Budd 2005, 40–41). In a similar way, Manuel Castells, by far the most influential sociological theorist on IT and society, has been criticized by historians who doubt the very revolutionary aspect of the ICTs that stand at the center of his theory (Tomlinson 1999; Callinicos 2004b; 2004a). According to Callinicos, Castells takes the information technology development out of context and ignores centuries-old continuities in global information exchange (Callinicos 2004b), hereby pointing out a typical form of technological determinism in Castell's work. Furthermore, Neo-Marxists critics like Michael Hardt and Antonio Negri (2001) have argued that in Castell's discussion of the change of global economies due to ICTs, he ignores the obstinacy of structural corporate capitalism. In

his later work, Castells revisits this critique and admits that economies have always been knowledge-based. Nevertheless, he remains convinced that the technological progress at the end of the 20th century has set forth a global "technological paradigm based on the augmentation of the human capacity in information processing" (Castells 2001a, 159). His argument that society has changed drastically due to ICTs then rests solely on this technological paradigm, which he calls 'informationalism'. But by far the most problematic aspect of Castells' theory is the fact that he takes communication media out of context in a homogenizing attempt to create a universal theory. In proving his argument on this global technological paradigm, Castells uses Japan as one of his main examples, but bases his information on Japan solely on statistical yearbooks (Castells 1998, 252), which significantly limits his information on the broader context of Japan's relation with information communication media (Tomlinson 1999, 6; Calabrese 1999). If Castells or Sassen had looked at the history of Tokyo and the production of written information, instead of using the city as a means to envelop their own arguments without much in-depth research in local aspects, they would have encountered a rich body of literature previously contributed by Japanese scholars. Information as a commodity part of the larger economy between cities and even countries was already identified by Japanese historians in the 1970s as one of the most important developments in Edo-Japan (Yoshihara 1978). Edo-Tokyo, already throughout the 17th, 18th, and 19th centuries was called the 'Information City', and was during the last days of the Edo period (mid to late 19th century) called a *jōhōshakai*, an 'Information Society' (Iwashita 2000, 28; 2006). Historically, Tokyo has successfully taken up the role as a catalyst for information distribution and has thus, as urban sociologist Wakabayashi puts it, "always been an inherently information-oriented social organization" (2002, 10).

Global Implications of Assumptions in Mobile Research

In the study of mobile phone technology, technological-determinist assumptions are particularly present, and the implications have been significant for the overall quality of research. Most frequent is the influence of the either utopian or dystopian view on the mobile phone, which leans towards a negative, pessimistic view about mobile phone technology and its perceived influence, especially when it comes to the use of the device among the younger generation. As we have seen, the studies that portray the mobile phone in this way often confirm and reinforce a gap between generations, something that indicates the wide-spread presence of fears concerning the future of young people and the collapse of the home.

Research that plays into these fears furthermore adds to a gender division that women are affected by most severely, because especially women are scrutinized in these kinds of studies. On the other hand, the mobile phone is by some used as a catalyst to show Japan's 'uniqueness', which connects the device to a deeply-rooted form of nationalism that leans heavily on the technological superiority of the country. It is important to add to this is that the utopian idea of the mobile phone as a technological 'pillar' to save the crumbling Japanese economy at the end of the 1990s is a powerful image that greatly benefited the largest telecommunication companies in Japan, which to this day continue to be among the most profitable companies in the country. In a similar way of thinking, which also underlines differences between groups, there is a body of research that poses the mobile phone as a tool to point out and display cultural disparities. When looking at foreign researchers studying the 'uniqueness' of mobile phone use in Japan, we often see a strong influence of technological Orientalism. This results in a technological 'othering' of Japan that overstates the role of individual technology use and reinforces and confirms stereotypical images about the Japanese. Lastly, like the utopian/dystopian view stemming from a technological-determinist way of thinking, the mobile phone often seems to be treated as if developed in a historical 'vacuum'. This view is supported and reinforced by some of the most influential thinkers who theorized IT during the late 20th century, eager to fit IT devices in a linear timeline in their search for signs of a Weberian 'zeitgeist'. By marking the mobile phone along other ICT as the tools that are necessary to construct a so-called 'Information Society', researchers suggest a fracture in the history of technological development, which is then indirectly used to the benefit of those companies that capitalize on the Information Technology Revolution: because, unlike what Castells argues, the IT revolution does not produce itself – wealthy companies produce the IT revolution. It adds to a global, capitalist-driven zeitgeist of 'innovation' and 'newness' which justifies a juggernaut-like production process that exploits the periphery. And unlike the often heard claim that our world is increasingly dematerialized because of the process of digitalization, IT requires an extensive material system that is produced by the assemblage of conflict minerals and metals, and produces large quantities of toxic waste (Taffel 2015). Although research on mobile phones in no way directly is of any influence, it can be argued that the large body of research does have an indirect impact on this increasing global problem.

SPACE AND THE MOBILE PHONE

It is the age of entropy, marked by the cessation of kinesis

(Bukatman 1993, 120)

Keeping in mind the previously discussed assumptions in academic literature on mobile phones, I will use the next part of this chapter to lay out the relation of the mobile phone and mobile internet to urban space. Besides research that looks at the social impact of the phone in general, during the end of the 1990s and early 2000s, a subfield of mobile phone studies emerged that specifically looked at the effects of the mobile phone on urban space, influenced by earlier studies on the effects of internet use on the city. In the following section, I will discuss the important literature regarding mobile phone use and its impact on the structure and experience of the city, relating it also to the literature on the general effect of ICTs on urban space, as well as critically assessing the influence of the assumptions that are frequently present in studies on the mobile phone.

A Spatial Tool from the Start

The mobile phone as a tool has always been connected to urban life. The first commercial mobile phones were, after all, typically designed for work-related purposes in suburbs and business districts. When in the 1970's the first cellular type mobile phones came on the market, being on the move but still being able to discuss work-related matters was an important improvement from a business point of view, which is the reason that so many phone manufacturing companies were competing to create a wireless, battery-fueled phone. The main function of a device that could connect to the telecommunication network regardless of the geographical position of the user would be to be able to work from anywhere, anytime. This is stemming from a capitalist functionalist impetus to make use of time that would otherwise be 'lost': that is, not being used for lucrative purposes. After all, the elimination of space and therefore optimal usage of time is essential to the dynamic of capital accumulation (Harvey 1990, 425). The control of space is therefore a vital source of economic power (Harvey 1985; 1989). The invention of a device that would be able to re-figure the meaning of the space that is 'in-between' work places would be worth massive amounts of money to business – and it was, judging by Motorola's profit from the invention of the world's first cellular telephone.[25] The smartphone, seen from this perspective, is the 21st

[25] While there are no numbers on the actual revenue, it is established that Motorola made billions with their invention. Recently, Google paid 12.5 billion dollars to buy up Motorola, only to sell the company for 2.5

century's ultimate attempt in accelerating the elimination of time and space. The infiltration of work into more aspects of our life due to ICTs such as the mobile phone, has been said to severely decrease the quality of our lives by allowing work to 'infiltrate' personal space, as some critics argue (Chesley 2005; Duxbury et al. 2006; Fligstein and Sharone 2002; Towers et al. 2006). Some studies showed that the usage of mobile phones and earlier, Personal Digital Assistants (PDA's), were linked to the behavior of people who reported longer working hours than others (Duxbury et al. 2006; Towers et al. 2006). In addition, some researchers found a relation between use of ICTs such as mobile phones and an increase in work effort and overall level of stress, and argue that the devices seem to generally facilitate ways of working and management of work that negatively influence employees (Green 2005; Green and McIntosh 2001).

However, although it is not difficult from a Marxist perspective to see the immediate connections to the capitalist desire to maximize working hours and criticize the use of mobile phones, we should be aware of the fact that the smartphone and ICT in general, cannot be reduced to 'simple' technological tools that are used to optimize working hours. A tool is never only used according to only one purpose, and rarely is a complex tool used for the function it was intended to. Media, as Arjun Appadurai (1986) already argued, are always negotiated and the use might differ greatly from its intended use. This seems to be especially true for (mobile) internet technologies, as the 'user' takes on a very creative position by producing content with and for the device as well as consuming it (Bruns 2006; Oudshoorn and Pinch 2003). More recent studies actually contradict the above previous statements that the mobile phone increased workload and stress levels, or at least imply that previous research has overstated the results (Bittman, Brown, and Wajcman 2009). Contrary to the idea that the mobile phone has made work more efficient, devices like the mobile phone are often also said to have created only *more* work because of the difficulty to program devices for specific tasks and operating them, leading to more time spent on improving the way the devices work than the actual work (Katz and Aakhus 2002; Zysman and Newman 2006), and are often seen as a

billion shortly after. Although at first sight this looks as if Google lost 10 billion in this deal, it is estimated that the company made at least 3 billion profit, because of the patents concerning early mobile phone technology that Motorola owned. See Su, Jean Baptiste. "Google Profits Billions With Motorola Sale To Lenovo, Keeps Patents." *Forbes.* January 29, 2014. https://www.forbes.com/sites/jeanbaptiste/2014/01/29/google-profits-billions-with-motorola-sale-to-lenovo-keeps-patents/#27a5bcea78c1. (Accessed October 31, 2018.)

distraction, rather than helping us to be productive.[26] The discussion on whether or not the mobile phone is a tool for capitalist efficiency or for the individual's leisure is thus two-sided. On one hand, the mobile phone is said to infiltrate personal, private time and space by enabling a constant access to 'work'-related issues, but on the other hand this access works both ways, as work-related spaces can now be 'evaded' through the device as well. In both cases, however, what is central is that the device disturbs the traditional division between what is considered space for work and private space.

It is not just in the division between work and private life that the device has disturbed traditional boundaries between public and private spaces. The mobile phone – especially the more diverse smartphone – has greatly influenced the way in which we communicate not only with others, but also with the city, challenging traditional perceptions of space (de Souza e Silva and Frith 2012; Wellman 2001; Urry 2000, 102; Sheller and Urry 2006; Farman 2012; de Souza e Silva and Sutko 2009). Receiving real-time information about our direct environment, for example about traffic or the points of interest in the vicinity, has altered the spatial 'experience' of the city (de Souza e Silva and Frith 2012; Farman 2012). How exactly this is taking place is something that has been widely discussed – but in order to understand the discussion, it is helpful to place this idea in relation to Lefebvre's spatial triad first. Space, as Lefebvre (1991) argues, is essentially a social product. Lefebvre distinguished between three aspects of space: representations of space, representational space, and spatial practice. All of these aspects can be seen changing over time with the wide-spread use of the mobile phone and mobile internet. The first of these, representations of space, refers to the abstract 'ordering' of space: maps, grids, borders, designs, etc. It plays an important role in the capitalist production of space and the structuring of the socio-political order. The mobile phone, using GPS-based applications and being able to retrieve information about the spatial structure of the environment of the user, influences this on an individual level as well as on an institutional level, as maps and routes provide information about location and access. Representational space, or lived space as Lefebvre also calls it, is the spatial embodiment of ideas and meaning of a particular place. Because the mobile phone is able to provide the user with information about an environment, this can alter the individual's perception of a place.

[26] A recent online survey in Japan by *Goo Ranking* showed that smartphone games as well as LINE messaging were named as the number one and two activities that held people from being productive at work. See "Shigotochuu ni kossori shite iru koto rankingu." *Goo Research*. May 20, 2017. https://ranking.goo.ne.jp/ranking/category/014/vote_1067/ (Accessed October 31, 2019)

Spatial practice, in turn, refers to the physical space as perceived by an individual. It refers to the daily routine of urban reality and the bodily interaction with space. As the mobile phone influences people's route and information about the city, as well as functioning as a 'filter' for people to decide what aspects of their direct space they interact with (de Souza e Silva and Frith 2012, 5), the device is expected to have a significant influence on people's relation with urban space. In fact, as Farman argues, we "create space as we create our bodies across digital media" (2012, 22) 'rendering' our own, personalized versions of urban space by using a mobile phone.

As Lefebvre (1991) and Harvey (1990) also noted in their theories on the production of space, time has an inherent relation with space. Seeing the fact that the mobile phone is altering the experience of urban space, it is simultaneously altering the meaning and perception of time. Castells, in his explanation of his concept of the 'space of flows' (by which he refers to the electronic 'space' of direct communication) also touches on the concept of what he calls 'timeless time': the temporal order of the Information Age. He argues that our experience of time and space has been influenced by ICT, specifically ICTs that allow direct communication which is not bound by place, which is precisely the mobile phone's main function. When Castells formulated this concept, in 1996, the mobile phone was not yet a widespread tool for individual use. However, his definition of the concept, which Castells unfortunately never fully developed, would suit the mobile phone well:

> The space of flows […] dissolves time by disordering the sequence of events and making them simultaneous, thus installing society in eternal ephemerality. The multiple space of places, scattered, fragmented, and disconnected, displays diverse temporalities, from the most primitive domination of natural rhythms to the strictest tyranny of clock time.
>
> (Castells 1996, 467)

Indeed, undoubtedly, the mobile phone has had a large impact on the way people use space for direct communication, connecting places through digital ways even more quickly than previous forms of communication media did. Space that would otherwise have been merely 'in transit' now became open for new interpretations, and this, as Castells argues, created a fragmented experience of time and space. Although some might argue that 'direct communication' is subjective (how 'direct' is instant messaging truly, for example?) and that the space in transit in some form has always been used for communicating, the fact that the

smartphone has greatly accelerated communication as well as freed it from many spatial constraints is undeniable. In short, the mobile phone, by adding a 'digital' layer of space on top of our everyday lived space, has also transformed our temporal order into something much more scattered because of the constant connection to the large body of information that is the internet.

IT Cities

While the influence the mobile phone has had on the individual and the various aspects of space in the city is becoming more obvious with the spread and growth of mobile internet, the idea that IT, especially mobile ICTs like the smartphone, have created a new space for communication has been taken further by some of the most influential sociological theorists of the last decades, who argue that around the 1980s, ICTs created a new kind of city. At the base of this idea are two other main sociological theories: the first is the Marxist idea that every socio-economic system has its own dominant technology of production; the other is the theory that space is an expression of this dominant socio-economic system, a theory that was developed in the 1970s by urban sociologists like Lefebvre. If we proceed along this line of thought and argue that the structure of the world economy has changed from the late 1980's forward as a result of IT developments, then, in turn, cities, constructed along to the lines of the dominant socio-economic structure, must have changed as well, as Sassen (1991; 1998) and Castells (1996; 1998; 2001b) have argued. Based on the concept of 'timeless time', 'the space of flows' and the spirit of Informationalism, Castells outlines what he calls the 'Informational City': a city embedded in a network of global cities, characterized by its connectivity to electronic space and its informational capacity. This would result in a new, nonlinear pattern of land use in the city (Castells, as quoted in Stalder 2006, 166). According to Castells, we can already see this kind of city taking form. However, the idea that IT has created a new global economy and, in turn, a new kind of city, has been harshly criticized. Historians argue that both Sassen and Castells fail to see the continuities of a technology-based corporate capitalism that has been the dominant system in most societies and that the cities used to serve as examples in their theories have been vital nodes in the global economy for centuries (Tomlinson 1999; Callinicos 2004b; 2004a; Gottdiener and Budd 2005; Hardt and Negri 2001; Calabrese 1999).

In the development of both Sassen and Castell's theory, Tokyo, being one of the world's major economic nodes, plays an important role. In his famous trilogy on the 'Information

Age', Castells takes Tokyo as one of his main examples, just as Sassen refers to Tokyo as one of the main cases for her theories on new global cities. However, if we take a closer look at Tokyo, the actual structure of the city has been pointed out to have been influenced by several events, but Informationalism might not be so much one of them. As a city, Tokyo has often been labeled a city of renewal: it experienced several massive destructive events during the 20th century and has been rebuilt many times throughout history. Nevertheless, if we look at its structure, contrary to what one might expect, we see much continuity. Geographers of the city (Cybriwsky 1991; Hein 2008) have shown that the earlier pre-Meiji period urban developments are still an influence on the structure today. Some argue that these continuities in city structure go back even further. Jinnai Hidenobu, in his analysis of Tokyo's old neighborhoods (1995), argues that much of Tokyo's urban structure is based on rivers (of which some have now disappeared) that have shaped the city's layout throughout the epochs. In terms of urban planning, the urban planning and development policies that were put into effect shortly after the War continue to be the most defining factor in Tokyo's growth (Sorensen 1999). It should be noted that all of these factors, but especially the post-war planning policies, still make Tokyo's urban structure inherently different from cities in Europe or North America (Sorensen 2004; 1999), even though both Castells and Sassen argue the structure of global cities worldwide has become similar.[27] If we have a closer look at the diffusion of business centers in particular, we can see that the major centers have actually not changed since the post-war construction of business centers (Y. Tsukamoto, Fujimura, and Shiner 2008). What is interesting, however, is the emergence of two areas in Tokyo where internet and media businesses have clustered: Kanda and Shibuya. According to Arai et al. (2004), the new media companies that make up these clusters operate with other companies in business centers close by. Arai et al. argue that although these clusters do resemble media clusters that can also be found in, for example, New York and L.A., the set-up of these two concentrated clusters in fact *more closely* resembles older, more traditional metropolis-oriented industry clusters like the metropolitan film industry clusters of the 1920s. With this

[27] Sorensen points out that unlike major cities in other developed countries, Tokyo sees a rare intermixture of residential, agricultural, commercial, and industrial land use; as well as a scarcity of large-scale suburban housing estates and residential developments. The reason for this, Sorensen (1999) argues, is the scattering of urban development and a commonness of unplanned growth in the suburbs of Tokyo, all of which due to the urban planning policies that were adapted shortly after the Second World War. This does not mean Tokyo is unique in the sense that it is 'different' or has received less foreign influence – seeing the large influence European and American architecture and planning have had through the years (Seidensticker 1991) this would be a gross misconception – but rather once more shows that every city has its own local history that creates its structure.

argument they indirectly question the recent notions of IT company clusters as a phenomenon belonging only to the new world economy. Thus, in spite of the many restructuring and large urbanization processes that Tokyo underwent in the 20th century, we find a consistency in the structure of the city, especially its business areas – a structure that is furthermore different from cities in Europe and the U.S. From this, we can conclude the following: first of all, it shows the importance of space and how historically attached meanings of certain spaces continue to affect the structure of cities until today. Second of all, if we take Lefebvre as a starting point and accept that the dominant economy shapes space, Tokyo's consistent structure might disprove the theory that the allegedly new dominant economy, one that is based on IT networks, is so radically new after all. Or, if it is, the effect is rather limited, and instead of being universally similar, has profound local characteristics.

Online 'Space' and the City

One of the oldest discussions on IT and space goes back well into the 1980s and looks at the idea that being online, being electronically connected to a network of other devices and being able to interact with them, is much like entering a separate kind of space. Initially, this type of 'space' was named 'cyberspace'. The word was coined by science fiction writer William Gibson in the following paragraph of his novel *Neuromancer*:

> Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding...
>
> (Gibson 1984, 67)

At the time Gibson wrote about the concept the internet was still in its early stages and was not yet a part of people's everyday life. While the idea of cyberspace has its roots in the science fiction genre, it was picked up on by researchers in the late 1980s and beginning of the 1990s, with Scott Bukatman's analysis of the future city being one of the first academic accounts of what then became 'cyberspace studies' or 'cyberculture studies'. Bukatman argued that in cities where IT is part of everyday urban life, cyberspace becomes a form of produced space that people interact with and that reflects the individual's relation to culture and politics (1989; 1993). According to Bukatman, cyberspace has always been defined by

urban-kinetic metaphors and is therefore naturally linked to the physical city. A space, he argues, does not need to be inhabited to be defined as a space – it merely implies position and negotiation (Bukatman 1993, 155). As a space, Bukatman argues, cyberspace fulfills all the conditions of spatiality that were defined by Lefebvre: "whether a real space or a 'consensual hallucination,' cyberspace produced a unified experience of spatiality, and thus social being, in a culture that had become increasingly fragmented" (Bukatman 1993, 156).

If we look at the definition of the word 'cyberspace', we see that it has connections not only with space, but also with the hybridization of technology and the human body. The component 'cyber' implies a connection between the biological and technology. This word was first used as part of the word 'cybernetics' in the 1940's by scientists to refer to the systems of control and communication in animals and machines (Wiener 1948). In Wiener's early influential book on cybernetics, the human mind and the machine were treated as being similar enclosed systems adapting and adjusting to the environment on the basis of the flow and control of information. Wiener's work is seen as the start of what is called the 'cybernetic turn', the idea that the human and the technological are no longer separated (Tofts 2002). The word eventually also became a part of the scientific study of the human as a special kind of information-processing device that incorporates technology: cyborg theory (Haraway 1984). The word 'cyberspace' thus not only implies a connection of the online with urban space, but also of the mind with technology – a connection that in the case of the intimacy of the mobile phone, is especially prominent (Fortunati, Katz, and Riccini 2003).

The terminology we use for actions related to being online and the retrieval of information interestingly enough always seems to call for spatial connotations. Since the internet is abstract and exists only in the realm of bits inside our information storage devices, made visible by screens, the word 'cyberspace' and the other spatial metaphors used to describe information sending and retrieval through information communication technology, are mere reifications. Nevertheless, many of the terms indicate that being online invokes spatial experiences. According to Julie Cohen, people tend to use spatial metaphors for these actions because: "we are embodied, situated beings, who comprehend even disembodied communications through the filter of embodied, situated experience" (2007, 213). Cyberspace, or the practice of going online, is experienced in terms of "distances, landmarks, and juxtapositions, exactly as the theory of embodied cognition would predict" (2007, 229). We

refer to them with a vocabulary that resembles the 'real', physical space: we 'surf' on the internet, a link 'takes us' to a 'site', and we speak of 'windows', 'walls', and 'forums'. In the case of the mobile phone, we 'go' to the app 'store', and unlock the 'home' screen. Early metaphors for the internet included the words 'Informationbahn' or 'Information Superhighway', invoking images of infrastructure. Even though these online 'distances' are measured in clicks or retrieval times rather than meters, we still, mentally, experience them as distances (J. E. Cohen 2007, 229).[28] The need to put online actions in a spatial context is not only inherent to the internet. It resembles the same spatial thinking that telephone conversations evoked before. When talking to people on the phone we experience a sense of bodily disconnect, because any form of communication that is not face-to-face initially feels unnatural. To overcome this unnatural sense that accompanies electronic communication, we create an imaginary space that links us to the other person (Rey 2012). Regardless of the extent in which the internet has an influence on the user's experience of space and embodiment, we should be careful comparing this type of electronic space or experienced spatiality to physical space of the city (Cartesian space) (J. E. Cohen 2007, 210). While both can be classified as a spatial experience, urban space is many times more complex and incomparable to electronic space or cyberspace, which is nothing but a space mediated by embodied human cognition.

The difficulty of grasping the concept of 'cyberspace' can also be seen as one of the reasons that ICTs are seen as revolutionary and different from earlier media. As discussed in the previous section, several historians have pointed out the similarities of the applications of the mobile phone with earlier forms of media. Nevertheless, we generally do not talk about the 'space' of books or letters – yet when it comes to ICT suddenly there is a need to verbally emphasize the spatialization of information and communication with terms discussed in the above. While this is perhaps a psychological phenomenon that is very much linked to direct electronical textual communication, it has transformed into a discussion on urban space that is based on something undefined and abstract: the spatial experience of digital information. It is

[28] While these kinetic metaphors helped embodying the concept, some argue that the word 'cyberspace' is not neutral. In the beginning of the 1990s the word was often used to refer to the internet in a romanticizing way of imagining a space with no socially constructed boundaries, and was incorporated with notions of anarchy, fueled by a leftist utopian view. Later, as the internet diffused among a wider population, the word 'cyberspace' became associated with a moral panic that centered on internet use being imagined as a dangerous place (especially for children and young adults) (Dzieza 2014; M. Graham 2012; Sandywell 2006).

impossible to compare these spaces with each other. Nevertheless, some researchers go far to prove that both 'spaces' can be measured according to the same yardsticks: Rebecca Bryant (2001) argues, for example, that online space matches the definitions of palpable space that physicists such as Newton, Leibniz, and Einstein have formulated. After the act of being online becomes loosely defined as 'space' it then becomes subject to a plethora of theories that either romanticize or demonize this kind of 'land' of information, and transforms the discussion on ICT into an undefined, highly abstract and philosophical rhetoric. Thus, while we can see online activities as spatial experiences and the use of the internet can be classified as a space in the sense of Lefebvre's theories on space, we should be careful first of all not to compare urban space with online space as they are incomparable; and second of all, we should be aware that online space is not something that is incomparable with other 'spaces' that information media produce.

In the years shortly after the implementation of internet in our daily lives it was quite common to see comparisons of those two types of 'spaces' (electronic, online space, and urban space). During this time the idea emerged that this electronic space or cyberspace would eventually 'replace' all functions of physical space. Among those who advocated this thought was Nicholas Negroponte, who predicted a future where physical space would hold almost no meaning to us anymore (1995). Negroponte stated that with the rise of cyberspace ('the world of bits', as he called it), we would transcend physical space in order to become electronic communities: "we will socialize in digital neighborhoods in which physical space will be irrelevant and time will play a different role" (Negroponte 1995, 6). Besides Negroponte, there were other cultural critics who predicted similar changes in society due to the implementation of the internet throughout the 1990s and the early 2000s (Virilio 1997; S. Graham and Marvin 1996; Mitchell 1995; Kurzweil 2005). "The Net," William Mitchell argued, "negates geometry […] it is fundamentally and profoundly *antispatial*" (Mitchell 1995, 8). He then argued, through meticulously finding metaphors for every action online as if it was a spatial action, that by using the internet we will eventually be 'freed' from the constraints of physical space. There would be no need for us to physically move our bodies to places, as all we need would become available through simple clicks in the internet network. The physical world would become useless over time. The issue with accounts like these, as Kevin Robbins (1999) explains, is that they tend to assume that the act of being online results in a culture of retreat or withdrawal from the 'real world': theorists such as Mitchell and

Negroponte see online and offline space as two different forms of space, which the individual can only experience one or the other at the same time. Accessing the 'virtual' thus means actively rejecting the 'physical' (*anti*-spatial behavior, as Mitchell has put it). The rejection of physical reality, however, be it part of a utopian or dystopian discourse, is prominent in accounts throughout history. Robbins emphasizes that this rejection of physical space as a theme that is prevalent in the accounts of early cybercultures theorists has in itself probably little to do with being part of virtual space but should be seen as part of the rejection of reality which can be seen prevalent in philosophy and literature since decades: "the withdrawal from reality is something that has more profound origins – and it must be considered, therefore, beyond just the narrow terms of the virtual technology debate" (1999, 166). The theme is being seen discussed perhaps most importantly in the 20th century's modernist culture. It was discussed by Heidegger, who wrote that "all distances in time and space are shrinking. […] [Man] now receives instant information, by radio, of events which he formerly learned about only years later, if at all" (Heidegger 1971, 163). In the 19th century as well, after the invention of the steam-powered train changed the way people saw and experienced space, it was argued that space became a trivial factor in society (McQuire 2005). It is thus a recurring theme that is connected to the invention and spread of technologies connected to infrastructure and communication.[29]

Although the initial discussion by early cybercultures theorists on which space would be 'dominant' ceased to be of importance throughout the late 2000s, the spread of fast mobile internet seems to have re-opened the discussion somewhat. Again a new technology is challenging our values and ideas about the meaning of urban space. The mobile phone, as a

[29] The discussion on (mobile) internet and the digitalization of space has been widely discussed in Japan as well, especially after the Japanese government passed a law on the "Formation of an Advanced Information and Telecommunications Network Society" in 2000, that set the goal for a 'Ubiquitous and wireless society'. The law, which had the objective to make Japan into a fully functioning IT society that is "one step ahead of other countries", places great emphasis on the creation of a Japanese paradigm for IT strategies that can set the lead for other countries (T. Murakami 2003, 4) (an objective that also very much demonstrates the underlying national pride Japan takes in its IT-related achievements). A subsequent strategy in 2009 set the goal for Japan to become a 'digital society' by 2015. Around the same time, research on the digitalization of everyday life and institutions increased significantly (Kubo and Shimada 2007; T. Murakami 2003; Shiode 2000; 2004; Tawara 2008; Y. Murakami 2004), discussing the transformation of Japan into a 'ubiquitous society', where physical space is of secondary importance to internet access (Tokuda 2004; Shiode 2000). The idea that physical space has become of less importance was argued to have large effects on Japan's society (Shiode 1997; 2000), which is largely urban in nature, raising the question of whether urban space was able to 'adapt' to a society of wireless internet (Shiode 2004).

mobile ‘portal’ to connect to other devices, people, and information, became imagined as a tool that gave access to a space different from physical, urban space. It became a “city in your pocket” (Kopomaa 2000; 2002). Because of its constant presence and ability to access the online world, the mobile phone came to be seen as the ultimate example of what Negroponte called the ‘schizophrenic existence’ between ‘bit-based’ space and ‘atom-based’ space. With everyone collectively experiencing continuous shifts between the ‘real world’ and ‘being online’, researchers started to define the contemporary ‘experience of space’ in cities as alternatingly online and offline – dividing these spaces and portraying them as two equally important yet non-overlapping dimensions. Being mobile, moving through (urban) space, the mobile phone user came to be described as

> [i]mmersed in the crowd, yet able to communicate *beyond* it. Texting provides them with a way *out* of their surroundings. Thanks to the cell phone, they need not be present to others around them. Even when they are part of a socially defined group – say, commuters or mourners – cell phone users are always *somewhere else*, receiving and transmitting messages from *beyond* their physical location.
>
> (Rafael 2003, 405) (Emphasis mine)

In this regard, both spaces are still seen as inherently opposed to each other, even though the discussion changed slightly from the previously dominant idea that online space would negate the need for physical space as a whole. Instead, in the early 2000s we see the beginning of a discussion of virtual space as omnipresent *within* physical space. However, the idea that virtual space is dominant over physical space, i.e. that even when it is omnipresent, it is overshadowing ‘real’ space, has kept increasing.

Online and Offline Space in the Mobile Age

The latter is perhaps most visible in the recent discussion of smartphone walking, which shows how the idea is still of influence. In many cases, research that deals with mobile phones and their relation to the city focuses on the dangerous aspects of the device, implying a ‘migration’ of the mind into cyberspace that echoes older misconceptions on mobile phones and cyberspace discussed in the above. As is the case with many of the studies dealing with mobile phone addiction, research on mobile phone use while walking (often limited to only the smartphone) often lack in research design and show prejudice. In many cases, mobile phone walking distraction levels are tested in a laboratory-like environment (Nasar, Hecht,

and Wener 2008; Nasar and Troyer 2013; Hyman Jr et al. 2010; Lamberg and Muratori 2012) or tested with the mere use of a computer simulation where the participants stay seated (Banducci et al. 2016; Stavrinos, Byington, and Schwebel 2011). Reducing a city environment to a laboratory or a virtual simulation means that the research does not take into account the complexity of urban structures, or the people's natural behavior. Furthermore, participants are often asked to perform tasks while walking and texting that have little relation to 'real life' urban space or traffic situations. In the above-mentioned research, activities that were used to assess people's engagement with the city were, for example, spotting a clown on a unicycle (Hyman Jr et al. 2010), and listing all the muscles in the upper body (Lamberg and Muratori 2012). In order to develop their arguments, the studies also often refer to the dangers of effects diminishing situation-awareness of mobile phone use while driving, a task that is hardly comparable to walking. In reality, as Julie Hatfield and Susanne Murphy (2007) have shown in their observations of mobile phone users around pedestrian crossings, 89% of the mobile phone users, while simultaneously glancing at their screen, check the surrounding traffic environment regularly by looking up, effectively combining both their environment and their 'online' actions. Hatfield and Murphy's case study shows that instead of being in conflict, online space and 'offline' space are in reality often combined.

Similarly, somewhere during the mid-2000s, and influenced by the technological change of the mobile phone as a mobile voice communication tool towards a multimedia device and an increased awareness of digitalization of space from urban planning perspective (i.e. Paay, Dave, and Howard 2007), the discussion on mobile phones and urban space took an important turn from a discussion about cyberspace that negates or dominates physical space to a more inclusive theory on the interconnectedness and reciprocal effects of both spaces. One of the main theorists behind this idea is Adriana de Souza e Silva who, basing her research on mobile phone use in East-Asia and Northern Europe, argues that because of mobile phone technologies, urban space has become a 'hybrid' experience of both online and offline actions. De Souza e Silva bases her idea of hybrid urban space on Lefebvre's spatial triad and understands urban space as a product of social practices, constructed by movements of people, and their bodily use of space (de Souza e Silva and Hjorth 2009, 3). As people use a combination of physical (offline) and digital (online) practices to create space, urban spaces should therefore be seen as so-called 'hybrid spaces' (de Souza e Silva 2006). Hybrid space can be defined as

> [a] conceptual space created by merging the borders between physical and digital spaces, due to the use of mobile technologies as social devices. [It is] not constructed by technologies. It is built by the connection of mobility and communication, and materialized by social networks developed simultaneously in physical and digital spaces.
>
> (de Souza e Silva 2006, 11)

With this, de Souza e Silva initiated a shift from the argument that (mobile) internet is weakening the importance of physical space to the argument that the two are dependent on each other. Furthermore, since the internet has become such a normal part of everyday life, she argues that it makes little sense to talk about how one 'experiences' different spaces when going online. She rejects previous accounts on the spatial embodiment of cyberspace by stating that if this ever was the case, people now experience digital space as part of everyday lived space, without clear borders between the two. De Souza e Silva's theory is more or less in line with Lev Manovich's idea of 'augmented space'. Manovich defined urban, physical space as increasingly 'digital' not only because of the mobile phone but also because of other networked devices, screens, and digital information that are scattered all over the city (Manovich 2006). In their notions, both scholars place an emphasis on mobility and sociability of pedestrians in the creation of these hybrid or augmented spaces. More than de Souza e Silva, however, Manovich stresses that it is not just people who are increasingly connected to the internet, but objects and buildings in the city as well:

> [a]lthough historically built environments were almost always covered with ornaments, texts (for instance, shop signs), and images (fresco paintings, icons, sculptures, etc. – think of churches in most cultures), the phenomenon of the dynamic multimedia information in these environments is new. […] In the longer term, every object may become a screen connected to the net with the whole of built space eventually becoming a set of display surfaces.
>
> (Manovich 2006, 220–21)

De Souza e Silva's notion of urban space as 'hybrid space' is a significant development in the discussion that deals with the concept of online space. While previously, online space and 'offline' space were treated as separate 'spaces' and the discussion tended to rest on highly speculative, philosophical accounts about the sensory experience of space, de Souza e Silva treats both spaces as complementary. Although her view can be seen as a successive one in

the discussion on mobile phone use in the city, de Souza e Silva developed her ideas in the mid-2000s in an environment that did not yet see an advanced state of the use of mobile internet (even though she based her arguments on the use of mobile phones in Scandinavia and Japan, where mobile phone technologies were more advanced than in many other parts of the world). Her arguments mainly rest on an analysis of users of location-based augmented reality mobile phone games and hybrid reality games that are played with both mobile phones and desktop PC's, and therefore she therefore bases her discussion – which she seems to treat as universal – on a demographic that is highly unrepresentative of the general population. We see a similar use of unrepresentative, experimental mobile phone games and applications as case studies in other approaches to the spatial aspect of the mobile phone as well (c.f. Tajima 2006; Farman 2012). De Souza e Silva, however, insists that the notion of hybrid spaces as she defined it, is a universally applicable one. Indeed, with the growth of mobile internet, her views on the hybridity of urban space seems to have become more plausible, as the smartphone has increasingly more functions that interact with the physical environment of the user and the combination of GPS and internet brings forth a variety of location-specific applications and functions such as maps, location alerts, location-tagging, and location-based mobile games (c.f. also her later work: de Souza e Silva and Frith 2012; de Souza e Silva 2017). Therefore, even though her study initially seemed somewhat far-fetched, its plausibility only increased over the years.

There are two issues left with de Souza e Silva's views on hybrid spaces that should be addressed here. First and foremost, she tends to treat urban space as homogenous in her discussion, generalizing the many different types of spaces within the city and how the mobile phone user can interact with them. The issue of misleadingly treating urban space as homogenous in the discussion of mobile phones and the city is unfortunately common, as Fujimoto Kenichi has stated as well (2016, 105). De Souza e Silva's ideas could benefit from a more specific analysis of mobile phone use in different types of spaces/places, looking at how different types of urban space are 'hybridized' in different ways. Furthermore, she, as well as Manovich and other researchers who build on their ideas, such as Ingrid Hoelzl and Rémi Marie (2015b; 2015a; 2016), 'universalize' cities and mobile phone use, in their development of ideas largely neglecting local and cultural differences in mobile phone use and use of urban space. The other issue is how de Souza e Silva acknowledges that she based her theoretical framework on the situation of mobile phone technology in Northern Europe

and East-Asia, specifically Japan, but relies heavily on secondary sources for information about these countries. Especially her analysis of the Japanese case is merely a literature review of some English-language texts about mobile phone use in Japan. None of her works on mobile phones and space (de Souza e Silva 2006; de Souza e Silva and Hjorth 2009; de Souza Silva 2009; de Souza e Silva and Frith 2012; de Souza e Silva 2017), show many concrete examples or an in-depth analysis of the actual state of mobile phone use in urban space. This is perhaps also one of the reasons she tends to generalize urban space. Thus, what is ultimately missing from her theoretical framework is a concrete, real-life case study to back up her arguments about the hybridization of space, something that could further specify and develop her notion. Nevertheless, the important aspect of her idea of 'hybrid spaces' is how the concept of electronic 'space' should be seen as an *enhancement* of physical space, and is treated by individuals as such. It emphasizes the reciprocity between the online and offline, which is especially important as the previous dominant rhetoric that 'online space' and 'offline space' as separate, competing entities was dominant in the discourse on (mobile phone) internet. The ideas formulated by de Souza e Silva have shifted the discussion towards an analysis of the interaction and reciprocal effects of the two, away from earlier accounts of one being dominant over the other.

CONCLUSION: THEMES AND GAPS IN MOBILE PHONE RESEARCH

Since its diffusion in the late 1990s and 2000s, mobile phone use has been a popular topic to analyze from a socio-cultural perspective. Throughout the past decades, we can identify several themes that have been most prominent in mobile phone-related research, which often have been influenced by strong technological determinist thinking. The complexity and the speed with which the device seems to be continuously updating its form makes it a difficult object of research, and researchers have struggled with the same obstacles as earlier cybercultures theorists have struggled with when looking at other forms of information technologies. From the analysis I presented in the first part of this chapter, it can be concluded that assumptions stemming from technological determinism, having either an overly positive or negative view on the impacts of the device, and the idea that the mobile phone is part of a linear progress, are the most common problem. Not only has this contributed to enlarging gaps between generations, gender, and cultures, but it has also contributed to an uneven power play from which large ICT-related companies such as for example Japan's NTT DoCoMo benefit most. Technological determinism as present in accounts on the topic of the mobile

phone also led to a general tendency in research to treat the mobile phone, along with other ICTs that accompany the so-called Information Technology Revolution, as a 'revolutionary' invention, forcing a teleological view on the history of technology. By not addressing the long history of wireless communication media and textual communication media, the mobile phone is taken out of historical context in order to construct a homogenizing theory on Informationalism.

In the second part of this chapter, I discussed the research on the mobile phone, IT, and the city. In the available literature, we can identify problems related to the assumptions that we identified in the first part of the essay, but the technological determinism that is underlying in the idea that the Information Technology Revolution is bound to have an unprecedented effect on the city seems to be particularly present. Without denying the impact of IT on global information networks, we should nevertheless be careful to determine changes in city life. Instead of focusing on the alterations that IT has brought, and of getting carried away in a discussion on the renewal of urban structure, it can be more beneficial to instead focus on the historical continuities. Doing so, we discover interesting aspects of the city, such as for example certain stability of urban structure in the case of Tokyo. This indicates that the supposedly new IT economy and the accompanying new spatial order seem to have had little impact on the structure and zoning of Tokyo. Furthermore, a popular theme emerged in cybercultures research stating that IT, especially the internet, is to 'replace' or 'substitute' real, physical city space. This idea, which stems from a highly abstract philosophical point of view that was present in studies on cyberspace in the 1990s, has extended itself to the 2000s and 2010s, and has developed into a notion that smartphones enable us to 'transcend' urban space by logging into cyberspace. The discussion on mobile phones and this clash between online and offline space has not only been influenced by the idea that online space becomes more important than 'offline' space, but also sometimes echoes earlier dystopian views which stated that the human brain and body is prone to be taken over or infiltrated by the malicious, mind-numbing and addictive effects the mobile phone can have.

In the past decade of research on ICT, observing the emergence of high-speed mobile internet, several researchers tried to shift the discussion on mobile phone internet and the relation with urban space away from a clash or contrast between online and 'offline' space and more towards a more inclusive view that shows that rather than contrast, the two spaces

complement each other. Slowly, the idea that online space enhances or augments the city through mobile phones and other screens is becoming a more important part of the discussion. However, the theory of the city as a 'hybrid' digital and analog space still has much room left for improvement, especially since there is still a lack in observational case studies. It could also benefit from more detailed analysis of mobile phone use in the city – this is important because many of the studies that deal with the effect of ICT's on city life in general are abstract in nature, tend to generalize space, and pay no attention to the possible cultural or local differences in mobile phone use. A more naturalist approach could contribute to a more detailed, better specified overall theory on the effects of mobile phone use on urban life.

4. METHODOLOGY OF THE RESEARCH

Designing a Method to look at Mobile Phone Use in the City

Because of the novelty and changing nature of the topic, finding the appropriate method to use for looking at the relation between urban space and mobile phone users has proven to be challenging. Previous studies have experimented with several types of research design in order to examine the relation between mobile phone users and urban space. However, so far the used methods are lacking in several aspects and therefore fail to provide an in-depth view on the relation between mobile phone users and their urban environment. As will become clear from this chapter, I developed a method based on behavioral mapping and ethnographic observation, thus combining a quantitative method from environmental psychology with a qualitative method from anthropology. The chapter starts off with a justification for the selected neighborhoods for research, proceeds with a discussion of the methods previous studies with similar scopes have used, and finally explains the choice of method for this case study.

SELECTED AREAS FOR FIELDWORK

One of the main issues that arise with research on Tokyo is the problem of its size, both in terms of surface as well as population. Because in classic participant observation ethnography the researcher focuses on small groups, when it comes to analyzing the city researchers often limit themselves either spatially (by picking only one area, like a neighborhood) or culturally (by focusing on for example a minority group) (Prato and Pardo 2013). In order to deal with the spatial immensity of modern cities, some anthropologists make use of so-called multi-sited ethnography in their fieldwork. Multi-sited ethnography, as defined by George E. Marcus (1995), consists of doing fieldwork in multiple areas to generate samples that represent the whole area of study. It is "designed around chains, paths, threads, conjunctions, or juxtapositions of locations in which the ethnographer establishes some form of literal, physical presence, with an explicit, posited logic of association or connection among sites" (Marcus 1995, 105). In consonance with the philosophical thought of the World System theory, Marcus argued that as long as there is coherence in connection of the sites, it does not matter how much physical space is in between them. The exact definition of this kind of connected spaces, however, is not clearly described in Marcus' original text and is still widely

discussed by anthropologists who question whether trans-cultural multi-sited ethnographies are able to cope with the cultural differences in different areas (Coleman and von Hellermann 2012, 4). In my case, I decided on a multi-sited ethnography by taking examples from different neighborhoods in one of Tokyo's wards. Since the neighborhoods are in each other's vicinity, there are little to no cultural boundaries that I cross within my fieldwork. Although it is undeniable that in one city there are already plenty of cultural realms to take into account – think of the differences between ethnic quarters, slums, elite shopping centers, tourist spaces, etc. – the areas I picked are in the same ward, sharing a common history and one local government, which minimizes the possibility of crossing cultural boundaries that could have a significant effect. In a city as big as Tokyo, it is difficult to find areas that represent an average in terms of statistics or environment. And even if an average like this could be found, it is questionable whether this kind of area could actually be considered to be representative of Tokyo as a whole, seeing the fact that there are so many different types of neighborhoods in the Tokyo Metropolitan Area. Therefore, I decided on referring to common types of neighborhoods and selecting in total four of these located in the central part of Tokyo to serve as places for my case studies. Observing mobile phone behavior in different environments allows us to see whether mobile phone behavior differs according to the environment and function of the urban setting.

Japanese cities are traditionally known to consist out of multiple small 'towns' (*machi*) or neighborhoods that fulfill different purposes, making Tokyo a 'patchwork' of smaller neighborhoods that each have specific main functions (Hein 2008). For example, a neighborhood block that caters mainly towards business, or shopping. This 'patchwork' character of Tokyo's neighborhoods or *machi* makes Tokyo an interesting environment for those who are interested in studying different types of spaces within a city. The ward in which the neighborhood blocks or *machi* that were used for this research all are located in Tokyo's center ward, Shinjuku. Shinjuku is the official metropolitan 'capital' ward of Tokyo, and spans an area of 18.2 square kilometers in the center of the metropolitan area, housing about 345,722 inhabitants[30]. It ranks 13th in size and 10th in number of inhabitants among all of the 23 inner wards, and it is as such slightly above average in terms of both. Shinjuku is therefore relatively average in terms of inhabitants and size, but has an interesting thriving center. As

[30] According to the latest statistics from 2018, see Shinjuku's official home page: https://www.city.shinjuku.lg.jp/kusei/index02_101.html (Accessed October 31, 2019)

for the type of spaces that are used for observation, four different types of city blocks were selected that are common not only all over Tokyo, but can also be seen in other parts of the world. These are a) the residential neighborhood; b) the business district; c) the retail district; and d) the entertainment district. Shinjuku houses several of these types of neighborhoods, of which I picked four that matched the aforementioned types. As a side note, I took into consideration the ethical aspect of filming in these areas when selecting them. In Shinjuku, filming in public areas is legal and not uncommon: as it is also a popular destination for tourists, filming on the streets in Shinjuku is common practice and it is not disturbing the order of the day in any way.

Shinjuku represents the center of Tokyo in the sense that it is a central area for business, retail, and entertainment. Being one of the most densely populated places, and also because of the fact that the daytime population is much larger due to an influx of people who work in the area, Shinjuku is a crowded place. While this can make observations challenging due to the large number of pedestrians, at the same time it ensures a large number of mobile phone users for this case study. Overall, Shinjuku, having the position as a commercial and administrative center of Tokyo, provides a great example for observing mobile phone use in different environments. Within its center Shinjuku houses one of the largest areas for business and commerce in Tokyo, called Nishi-Shinjuku (West-Shinjuku). Besides Nishi-Shinjuku, Shinjuku is also host to the large shopping district Shinjuku Sanchōme (Shinjuku City Block number three) and well-known entertainment district Kabukichō (*Kabuki* City Block). After the Second World War, this area of Tokyo was completely rebuilt and became an entertainment district (also to cater towards the many US soldiers who were stationed not far from the area). There were plans to build a large *Kabuki* theater, hence the name '*Kabuki* City Block', however, the plans were cancelled due to financial reasons and only the name remained. As for a residential district, I picked a close-by residential neighborhood called Ookubo. Appendix I shows how these blocks are situated compared to each other.

NISHI-SHINJUKU

The central business district known as Nishi-Shinjuku is often seen as a center not just for trade and business, but also as an important asset of Tokyo's cityscape in terms of architecture. As one of the few areas of Tokyo where there are skyscrapers, the buildings are important landmarks that give Tokyo its characteristic skyline. Nishi-Shinjuku mainly consists of company headquarters and offices, a number of which belong to some of Japan's biggest

companies. With its global business offices, the Nishi-Shinjuku district is a global financial center where top-level control and management of the economy cluster together. At the same time, Nishi-Shinjuku is also home to the office of the Tokyo Metropolitan government, which is a large and prominent building complex in the middle of the area. The Metropolitan office building was designed in 1988 by Tange Kenzo and its futuristic design is based on the design of a computer chip, emphasizing the importance of the role that Information Technology plays in the city. The Metropolitan building is representative of the area, where futuristic looking sky-scrapers form what is thought to be one of the most iconic skylines in the world (Worrall, Solomon, and Lieberman 2010). With hundreds of hectares of office space, it is now one of Tokyo's densest business districts. However, although there is a large influx of people during rush hours, the streets of Nishi-Shinjuku are broad and provide plenty of space for the large number of pedestrians (see image 1), which is in stark contrast to most of the other pedestrian paths in Tokyo: Nishi-Shinjuku is one of the few high-rise areas in Tokyo that show a more spacious pattern of pedestrian paths. In most other areas, the smaller, low-rise housing patterns have created a pattern of narrow, more 'intimate' pedestrian paths and streets (see also Sorensen 2009).

Image 1: A pedestrian crossing in Nishi-Shinjuku, with the high-rise iconic Mode Gakuen *building as a backdrop.*

SHINJUKU SANCHŌME

Shinjuku is not only important in terms of being Tokyo's political and economic center, but also in terms of providing spaces for consumption. Just outside of the building complex that is Shinjuku Main Station, which is considered to be the busiest train station in the world, lies a large shopping area that is home to some of Japan's most popular department stores and retail shops: Shinjuku Sanchōme. This district ranks number two among the biggest retailing centers of Tokyo.[31] The many department stores in Shinjuku Sanchōme sell clothes, accessories, electronics, and luxury food items. Large LED screens on top of several buildings around Shinjuku Sanchōme show advertisements and broadcast sponsored events. Japan's mobile phone carriers *DoCoMo*, *Softbank*, *KDDI Au*, and *Yahoo!* have multiple stores scattered around Shinjuku Sanchōme as well. The combination of electronic stores, shops that sell clothes and accessories, and department stores makes Shinjuku Sanchōme one of the main destinations for the mainstream public. Through Sanchōme, there is a large road that creates an open space as well as several pedestrian crossings with a large surface, and many of the buildings that surround the area directly out of the train station are relatively high-rise, all of which contribute to a more spacious feel of the area (see image 2). Another aspect of Sanchōme that gives it a more open 'feel' is the fact that it has a square with greenery in front of the main station that divides the station exits and the shopping area. Open space, especially open space that has greenery, is relatively scarce in Tokyo's closely packed urban center. It provides a rare opportunity for Tokyo's pedestrians to rest and sit down.

[31] According to the Tokyo Statistical Yearbook, Shinjuku ranks second in retail sales. It comes second closely after Chūo, which is host to the more luxurious and elite-centered shopping district of Ginza. See *Tokyo Statistical Yearbook* (2016) http://www.toukei.metro.tokyo.jp/tnenkan/tn-index.htm (Accessed October 31, 2019)

Image 2: A pedestrian path next to a car road in Shinjuku Sanchōme. The buildings along the road are department stores.

KABUKICHŌ

Located next to the shopping district of Shinjuku Sanchōme is Kabukichō, Tokyo's largest and best-known entertainment and night-life district. It mainly consists of cinemas, cafes, restaurants, *pachinko* (gamble halls), and host(ess) clubs[32]. After the Second World War Kabukichō was built strategically close to the U.S. army bases that were stationed in Shibuya, the neighboring ward, and to the newly arisen business center of Nishi-Shinjuku. Nowadays, the general public in Kabukichō is a mix of office workers going for after-work drinking parties, students meeting with friends, and tourists who are looking for Tokyo's famous night-life. The narrow alleys of Kabukichō show a colorful and slightly chaotic mix of entertainment facilities (see image 3), which is in stark contrast to the clean, white and grey buildings that are characteristic of its neighboring district, Nishi-Shinjuku. In the middle of Kabukichō there is the *Toho* cinema building, a large cinema that also houses several restaurants and bars, which features an iconic 12 meter replica of Godzilla on top of the building as a symbol of the block's focus on entertainment. As it is a neighborhood that caters

[32] 'Host Clubs' and 'Hostess Clubs' (resp. *hosuto kurabu* and *kyabakura*) are a type of bar where customers pay not just for drinks, but also for the company of one of the so-called 'hosts' or 'hostesses', companions who entertain the guests during the evening and pours their drinks. Often, these types of bars are associated with some form of prostitution or illegal activity.

towards night-life and late afternoon entertainment, the area starts coming to life later in the day compared to the other neighborhoods. In the morning hours, unlike its neighboring business district, Kabukichō looks deserted. Furthermore, unlike Nishi-Shinjuku and Sanchōme, the Kabukichō district has less high-rise buildings and does not have any broad roads for cars, but only narrow streets that are used for bringing supplies to the shops. Overall, the buildings are more packed and there is less open space. There is, however, a more open, square-like area just in front of the *Toho* cinema building, which is often used by people as a meeting place.

Image 3: A typical alleyway in Kabukichō. On the left a pachinko *hall and on the right a Hostess Club, as well as some restaurants.*

OOKUBO

In the area north of Kabukichō, we find several residential areas, such as the Ookubo neighborhood. Ookubo houses a mixture of lower middle class, middle class, and upper middle class houses, and is in general much like any other residential area in the 23 wards of Tokyo. The streets between the residential buildings are relatively small, as is characteristic of residential neighborhoods in Japan in general and is the result of urban planning reformations that were introduced shortly after the war (Sorensen 2001; 1999; Cybriwsky 1991). The residential buildings are packed closely together and the pedestrian paths are particularly

narrow compared to the other neighborhoods selected to serve as case studies. In between the residential buildings, several smaller shops can be found. Almost all of these shops are small *konbini* (convenience stores) or shops that sell groceries such as fruit and vegetables (see image 4). The one remarkable thing about Ookubo, which makes it different from other residential neighborhoods in Tokyo, is its relatively large number of residing foreigners. In Ookubo, about 33 percent of the population is non-Japanese, which is eleven times the city's average of 3 percent.[33] More than half of the foreign residents in Ookubo are Korean and Chinese. Compared to its neighboring district, 'Korea Town' Shin-Ookubo, the presence of the many foreign residents in Ookubo is, however, less 'visible'. While in the neighboring block, the identity of being Korean is used to attract customers, and Korean music and products are present wherever one looks, Ookubo has a much more low-key presence of foreign residents. However, there are a few shops in the neighborhood that sell foreign products, and the mobile phone shops in the area have their special sales advertised not only in Japanese, but also in Chinese, Korean and Thai.

Image 4: A liquor store and a small fruit and vegetable stand in between the residential buildings in Ookubo.

[33] In Ookubo, 5709 out of 17.190 residents are foreigners. Numbers taken from the *Tokyo Statistical Yearbook* (2016) and the Shinjuku local government statistics (2016) See http://www.toukei.metro.tokyo.jp/tnenkan/tn-index.htm and https://www.city.shinjuku.lg.jp/kusei/24.html (Accessed October 31, 2019)

PREVIOUS RESEARCH

Earlier studies on mobile phones and the notion of space in Japan for the majority consist of sociological research in the form of surveys. Naomi Baron and Ylva af Segerstad (2010), for example, compared the use of mobile phones in public space in Sweden and Tokyo. Their research focused on how mobile phone users behaved differently according to the local cultural codes. They have indicated that there is a tendency among Japanese to refrain from making phone calls in public spaces, and instead suggests a higher rate of use of text to communicate in public space (Baron and af Segerstad 2010, 27). The research was based on the answers of a questionnaire among 18 to 24-year-old students, and no real-life observations were made. The research is limited because there is no clear definition of what they mean by 'public space' nor do they distinguish between different types of spaces, and seeing the fact that they rely on survey answers given by 18 to 24-year-olds, it is at best a rough indication of how young people in Japan use their mobile phones when out in the city. In 2008, Ohmori Nobuaki and Harata Noboru also used a questionnaire to see how people in Japan used their mobile phones when traveling from one point to another, gathering data (mainly) from business men who commute to their work every day. In their research, Ohmori and Harata have a more detailed definition of public space: they classify public space according to means of transportation (2008, 550). However, they focus only on mobile phone use within train cars, which means their scope is very limited. In an extensive research on how Japanese teenagers use mobile phones, Kamibeppu Kiyoko and Sugiura Hitomi (2005) took another aspect of urban space into account. They analyzed how spatial proximity to friends made it more or less likely that the mobile phone users would contact them. 'Space' in their context is seen rather as distance, homogenizing the different kinds of spaces there are in the city. As different types of environments are expected to have different influences on people's behavior (Barker 1968; Peponis and Wineman 2002; Gifford 2016), their generalization of space as distance is a limiting factor of their research. Kamibeppu and Sugiura, too, made use of a survey to acquire data. Their results are valid for a specific demographic of Japan, in a specific time-frame. Since there were little to no natural observations made during these studies, the data is undetailed, especially in terms of relation to public space, as it only takes into account the pre-set answers of a survey. There are some studies that include a more interesting and spatial-focused method of analyzing mobile phone behavior in Japan, such as the GPS-based study by Phithakkitnukoon et al. (2015). In this study, the researchers acquired location data

provided by one of Japan's largest mobile phone providers to track the locations that tourists in Japan are most attracted to. They then proceeded to observe and analyze spatial patterns of the movement of tourists and their mobile phone actions on the way. Their outcome, not very surprising, was that tourists spend most time visiting temples, shrines, building landmarks, and event spaces (2015, 35). Their method of tracking spatial patterns through the phone's GPS did succeed, on the other hand, in providing an interesting view on the spatial behavior of tourists in Japan. However, the study does not tell us anything about the way subjects interact with their environment while making use of mobile phones: it merely shows the route they are taking.

In the past few years, research on how mobile phone users react on their environment increased due to an increase in the concern about the phenomenon of 'smartphone walking'. In Japan, the phenomenon of smartphone walking, or *aruki-sumaho* (from the verb *aruku*, 'to walk', the stem *aruki* implies that something else is being done while walking), has been researched since 2014, when the Tokyo Fire and Disaster Management issued a public statement to create awareness for the issue. Research on smartphone walking in most cases focuses on mobile phone users' awareness of their direct environment and how it is influenced by use of a device (see for example Masuda and Haga 2015; Matsuzaki and Zhang 2016; Murakoshi et al. 2015; Obara, Kashiwagi, and Nakamura 2016; Sasao, Zhang, and Sugamura 2016). In essence, most studies related to mobile phone use while walking – both from Japanese researchers as well as outside Japan – reduce their research to a study on how the act of focusing on text or images influences the manner in which pedestrians walk and interact with other forms of traffic. Research that analyzes mobile phone use while walking more often than not largely relies on observation of subjects in artificially simulated circumstances and rarely takes any environmental factors into account, making the study of *aruki-sumaho* of less relevance to the topic of mobile phone users' usage of space in the actual city. It is, however, interesting to see how the literature on *aruki-sumaho* seems to reflect a more general opinion on the use of mobile phones (see also chapter 5).

As we can conclude from the above, the methods used in the research that analyzes mobile phone user's experience and interaction with the environment have several limitations. The most obvious limitation is that the studies tend to rely either on questionnaires or on laboratory-set experiments, and thus involve no 'real-life', natural observations. The

questionnaires only offer pre-set answers that give little room for detailed analysis, which makes drawing conclusions difficult as mobile phone use is a type of behavior that is more likely to be like a habit than a thoughtful act (Oulasvirta et al. 2012; Aakhus 2003; K. Fujimoto 2005). This means that people might not be fully aware of the ways in which they use their mobile phones in everyday, mundane situations. When it comes to the analysis of the interaction with the built environment, respondents will only be able to provide data that was already provided by the researcher – and in most cases it is not clear whether or not the researchers have made natural fieldwork observations prior to creating the questionnaire. Even if they did, there is a chance that the researcher influences the results by providing only a specific set of answers or by way of phrasing the answers. Methods that are used in laboratories or artificially created environments are confining the depth of analysis even more. Urban areas like Tokyo, even if it is on small sub-area level, are highly complex socio-cultural spaces that cannot be replicated in laboratories. Any information on mobile phone users' behavior in urban environment that is gathered in laboratory experiments is of very little relevance to the real city. Another limitation of the above studies is the fact that in each of these studies, the term 'space' is either poorly defined, missing any definition at all, or is simply used to refer to distance. Furthermore, 'urban space' is homogenized and the researches do not distinguish between the many different types of environments in a city. Besides this, the aforementioned previous studies also artificially separated the two types of spaces – 'online space' (mobile internet use) and physical space – instead of acknowledging their interdependency when it comes to mobile phone users and taking into account that the experience of urban space is also increasingly digitalized. Because of the limited focus on space as well as the other limitations of their research methods, these studies tell us very little about the actual relation between mobile phone users and their physical environment.

QUALITATIVE RESEARCH: URBAN WANDERING AND URBAN ETHNOGRAPHY

In order to design a fitting method, it is necessary to look outside of the case studies that have dealt with mobile phone use and use of space in Japan so far. Mobile internet is not the first media technology to change the way people interact with their city. In the past, technological inventions, as well as the invention of other forms of media, have changed urban life many times in ways that are at least comparable to the mobile phone and mobile internet. Technological changes that happened in the industrial or post-war period, for example, have

been studied extensively by urban sociologists because of the influence these inventions have had on the use of urban space. In order to conduct such research, as has David Frisby (1985) has pointed out, several of these urban sociologists adapted methods from the field of anthropology. Some of the oldest accounts of researchers trying to analyze a city use natural observation methods that resemble ethnographic participant observation. There are two concepts stemming from 19th and 20th century urban sociologists that particularly inspired the development of the method used for this research: Charles Baudelaire's concept of the *flâneur* (coined by Baudelaire in the mid-1800s), which was later developed by Walter Benjamin (in the 1920s), and Guy Debord's concept of the *dérive* (1955). Both concepts emerged around times of urbanization and industrialization of cities in Europe, a time where new forms of technology strongly influenced the shaping of and the life within cities. Although there is almost a century between the inventions of both concepts, both stem from a similar realization that there was a transformation of urban life due to new forms of technology, and that there was a need to investigate these transformations. Based on the idea of a changing urban environment, these concepts emphasize the need for being observant to small changes in the 'laws' of everyday life in the city. Although stemming from different periods in time, the *flâneur* and the *dérive* are still relevant to the topic of mobile phone use in a city.

The Flâneur

The *flâneur*, the 'wanderer of the modern city' or 'urban spectator', was a modernist archetype of the European city conceptualized by Walter Benjamin, basing it on the poetry of Charles Baudelaire, who first coined the concept in the mid-1800s. During his stay in Paris in the first half of the 20th century Benjamin collected notes and sketches of the city and its inhabitants in his notebooks that were later brought together and published posthumous as *The Arcades Project*. The *flâneur* was one of the typical new types of inhabitants of the city that Benjamin encountered. The *flâneur* would walk through the city, without any particular goal or purpose other than to stroll and watch those around them, something that the scholar regarded as a previously unseen activity in European cities. As a city stroller, the *flâneur* "feeds on the sensory data taking shape before his eyes" (2002, 417). Later, Benjamin's concept of this kind of city observer became characteristic for new forms of mobility in the modern city. In a sense, Benjamin's interpretation of the *flâneur* can be seen as an early form of participant observation. By becoming the *flâneur*, one can discover things that one is not able to see when using the city space for functional purposes. To stroll around the city merely

for the aim of observing one's surroundings and the behavior of others is a means to learn about the nature of city life and meaning of urban space. In this sense, Benjamin's concept of the *flâneur* is in itself a method that emphasizes close attention to people's daily behavior in a natural urban environment, in an ethnographic manner. In essence, as argues Frisby (1985) argues, because of his use of a form of natural observation Benjamin's research is ethnographic. Instead of starting his research from a macro-perspective, as was more common in his days, with the conceptualization of the *flâneur* and by becoming the *flâneur* himself, Benjamin reflects on the real, everyday fragments of society, using participant observation as a natural research method.

Psychogeography

The idea of strolling through the city without any other purpose than to be a spectator of city life in order to come to new discoveries of the city was something that in the 1950s was further developed by the situationist Guy Debord, who named it 'psychogeography'. He defined it as follows: "Psychogeography could set for itself the study of the precise laws and specific effects of the geographical environment, whether consciously organized or not, on the emotions and behavior of individuals" (Debord, translated by Knabb 2008, 23). This idea was one of the foundations for what is now called the field of environmental psychology, the study of the impact of the environment on individuals and society. But what is particularly interesting about psychogeography is its method: urban wandering, urban drifting, or as Débord called it, the *dérive*. Debord described is as being "a mode of experimental behavior linked to the conditions of urban society: a technique of rapid passage through varied ambiances" (Debord 1958). Practitioners of the *dérive* often use alternative maps, such as historical maps or symbolic maps, to look at the city from new perspectives. The *dérive* was picked up by various researchers and thinkers who studied urban life. Because of the impact of the few but valuable studies that use a form of urban wandering, it is seen as an important movement in literary studies as well as urban studies (Coverley 2012). We can see a form of urban drifting mixed with the idea of the *flâneur* even in Michel de Certeau's work, as he alternates between being the participant and the spectator of urban life in New York in his work *The Practice of Everyday Life* (1984). As urban drifting, like with the concept of the *flâneur*, focuses on approaching the city from an observational perspective and not from a functional perspective, it allows the researcher to discover details of urban space and focus on the observation of human behavior in the city. In addition, the *dérive* encourages the

researcher to discover about the psychological effects that spaces cause.[34] In this regard, the *dérive* places a focus on the psychological effect of specific environments on human behavior, which makes the researcher aware of the importance of environment and the characteristics of a place when it comes to observing human behavior.

THE PHONEUR

Both of these concepts have been re-interpreted in the age of the mobile phone by researchers of the city. According to Robert Luke (2005), if the *flâneur* epitomized modernism and the rise of the industrial city, the cities in the Information Age are epitomized by the '*phoneur*': the mobile phone user who strolls the city using their phone. Becoming the *phoneur* means strolling through the city, being a spectator of not just the physical city but also (through *scrolling* instead of strolling) the 'online' city – the realm of the internet – and means to become a node in the informational network. But where the *flâneur* was mostly influenced by signs of buildings, landmarks, and general human behavior, Luke argues that the *phoneur*'s urban wandering is mapped by "the commercial grids and communication vectors (the sociotechnical constructs of communication)" (Luke 2005, 189). While Luke sees the *phoneur* in a rather dystopian way (he argues the mobile phone is primarily a tool for corporate data collectors to make profit with), his description of the mobile phone user being 'guided' as well as 'lost' in the information that they access through their device does capture an important aspect of 21st century city life. As for the connection between mobile phone use and the *dérive*, there are very clear similarities between urban drifting and the exploration of urban space because of virtual reality mobile gaming. Adriana de Souza e Silva and Larissa Hjorth (2009) compare the act of the *dérive* with mobile gaming in public spaces, especially with location-based mobile gaming that makes use of GPS technology in order to have the user experience the urban space around them in a completely different way than usual. Both actions, they argue, "provide a rich source of ideas for exploring and possibly understanding cities" in a ludic way (de Souza e Silva and Hjorth 2009, 610).

PSYCHOGEOGRAPHY AND URBAN WANDERING IN JAPANESE RESEARCH

Furthermore, we see the concepts also being re-interpreted in a Japanese setting. Thus, urban wandering has inspired ethnographer Jinnai Hidenobu to use it as a basis for his work *Tokyo:*

[34] In the past few years, there are even mobile phone applications developed that encourage people to take up new routes through the city for the purpose of 'getting lost' and paying attention to their environment rather than going somewhere specific in order to deepen their understanding of the city. See for example the free smartphone application *Dérive app.* http://deriveapp.com/ (Accessed October 31, 2019)

A Spatial Anthropology (1995). Jinnai takes up a form of urban wandering as he uses a historical map of Tokyo to explore the city. Although Jinnai calls his work an 'anthropology', he explains that rather than a typical ethnography, his method consists of wandering through urban space in Tokyo and to regard it as "replete with the meanings and memories that are the accumulation of human activities; conducting surveys of the field; and applying a comparative perspective to elucidate the special structure of the city" (1995, xi). Thus, rather than a traditional ethnography, it is more of an oral history that makes use of psychogeography and participant observation to collect data about the city. In doing so, Jinnai discovered the actual importance of water in the development of early Edo (later Tokyo) and how it continues to shape the city, centuries later. In his work, Jinnai often encounters 'lost spaces' (spaces that lost their old function and became renovated or re-structured) and how these spaces continue to exist in people's memories. From the interviews he conducted, it also becomes evident that there is a strong sense of nostalgia that arises when people talk about places in the city in relation to the past. Nostalgia through the memories of urban space is something that is also an apparent theme in the *dérive*. Some connect psychogeography or urban wandering to coping with the loss of the past and argue that it is entirely driven by nostalgia (Bonnett 2009). In this sense, the outcome of urban drifting is always a critique of the modern and a longing for a past 'lost' identity. In Jinnai's work, however, we find an appreciation for the present as well as for the past. According to Jinnai in Tokyo:

> [t]here is unexpected variety in the topography, with the high city's hills and cliffs, winding roads, shrine groves, and large, verdant estates; and the low city's canals and bridges, alleyways and storefront planter pots, and crowded entertainment centers. For the walker in Tokyo, the unexpected is always waiting. Tokyo may not have the old buildings of New York, but each place evokes a distinctive atmosphere nurtured over a long history: this makes Tokyo what it is. Recently, we have also begun to encounter marvelous works of architecture, overflowing with the kind of contemporary sensibility that uses the environmental context to heighten the appeal of the site as a whole.
>
> (Jinnai 1995, 2)

Although he starts out with a reference to the past, Jinnai emphasizes the present condition of the city in his description, and refers to the city as becoming part of a global network of cities ("we have also… works of architecture"). There is no sign of 'dwelling on the past' in this case. Rather, Jinnai used a form of the *dérive* to explain the present and show that, although it

might not seem like a typical historical city because of its many new buildings, Tokyo has as valuable ties to its past as any other city.

Reinventing Urban Drifting

Both taking on the role of a *flâneur* and using the concept of the *dérive* have similarities with anthropological fieldwork, but more than a typical ethnography place emphasis on the value of urban space and the way in which people in the city are influenced by it. For this reason, these concepts inspired me to develop a way of participant observation that includes a form of 'urban drifting'. I decided on combining video-based participant observation with urban drifting by walking through the city purely for observational purposes and discovering where the flow of pedestrians was strongest throughout the day, leading me to eventually develop four routes in the four different neighborhoods based on pedestrian behavior in Shinjuku. For urban studies, participant observation anthropological studies are important, yet possibly underused because urban studies started out as being dominated by a strong sociological influence. The idea that researchers have to immense themselves in urban environments to be able to grasp its complexity, however, was already urged by several of the early urban theorists of the Chicago school. Already in the 1960's famous urban theorist Kevin Lynch, for example, called for a stronger participant perspective. Lynch argued that in order to understand a city "we must consider not just the city as a thing itself, but the city being perceived by its inhabitants" (1977, 354). To include how people experience particular spaces, is also the goal of Edward Soja's concept of 'Third Space'. In Third Space, Soja explains, all aspects of urban space come together: "the abstract and the concrete (...), mind and body, (...), everyday life and unending history" (1996, 56–57). Therefore, a purely analog analysis of space could never grasp its complexity. As the city is a complex combination of a man-made physical structure, with people, symbolic meanings, and an extensive set of codes and rules on behavior in public space, in order to find an answer to the question how mobile phone users interact with urban space one has to take into account the natural environment of the user. In order to emphasize the role that the urban environment plays in my research, like a form of urban wandering, I chose to make my observations while walking a route in the city and paying attention to the set-up and atmosphere of the street as well as the behavior of the pedestrians.

METHOD AND OBSTACLES

Although the use of multi-sited ethnography should limit the number of people and density of the population to ensure a more achievable pool of subjects for research, some of the areas I decided on are still very crowded in terms of pedestrian traffic and thus difficult to grasp in terms of participant observation. Not only is it difficult to observe many people in one space, people are also constantly moving. Seeing that classic pen-and-paper participant observation was initially developed to study remote villages and the surveyable number of people that inhabited them, it needs no explanation that the method requires some adaptations before being suitable for to Tokyo's central shopping district. Therefore, a video camera was added to enhance the observations. Video footage has been used among urban anthropologists for many purposes and studies and video-based fieldwork (the act of filming subjects in a natural, non-staged environment) is one of the most common in the field of ethnography (Jewitt 2012, 4). Film captures details that the eye might miss at the first glance. It also allows the researcher themselves to participate in the activity of the subject without having to concentrate on writing down what happens around them. Video data can be re-watched, paused, and slowed down to note small details of the subject's actions. To shoot and analyze film, however, is a meticulous practice. The video data needs multiple rounds of coding before analysis. Without the right amount of coding and recoding, much potential data will get lost (MacDougall 1999, 283). It should be noted, however, that when video data is recorded, it is not by definition a neutral reflection of reality. Rather, it is a production of the person operating the camera, influenced by both subjective and cultural factors (Henley 1998, 36). In the case of the video material collected for this research as well, this might have been a factor of influence. However, as the routes through the areas of research were picked based on pedestrian activity and the camera was used equipped a wide-angle lens, I have tried to gather as much data around me as possible, and have not focused on a particular part of the street or a particular group of people.

By far the most challenging aspect of using video footage in an observational study is making sure that the subjects of study are not influenced by the fact that they are being filmed (Collier 1986, 9), which is also called the issue of reactivity. To a certain extent, reactivity occurs in all research conducted on human subjects. It is the psychological effect on a person when they are aware that they are being studied, which can affect that person's behavior. Using equipment such as video cameras during fieldwork has been argued to augment this effect. It

is a major issue, since reactivity distorts the basic idea behind video-based fieldwork: to catch the subject in a natural environment, without any falsifying influences from outside. Some argue that because all video data shot is influenced by the subjects' reactivity, video research data poses a distorted view of the real situation and cannot be used for empirical research (Flick 2013, 427). In reality, however, it has been proven to be possible to keep the influence of reactivity to a minimum. First of all, the extent of behavior change among subjects does not always influence the result of the research – reacting to the presence of a camera does not always mean that the subject is disturbed by its presence, nor does it always mean that the subject's actions before or after reacting, are less relevant to the research (Heath, Hindmarsh, and Luff 2010, 49). Secondly, a researcher can diminish the effect of reactivity before starting the research and also when analyzing the data by assessing their own behavior and taking into account the context (Bernard 2011, 315). Nevertheless, there is always the possibility that reactivity influences the research, making it one of the main problems of any kind of video research. In general, it is deemed best if during the research the camera is used as unobtrusively as possible (Jewitt 2012). The more obvious the presence of the camera is, the larger the possibility that the act of filming disturbs the objectivity of the situation. For this reason, I decided to record with a less obtrusive (but still clearly visibly present) action-type video camera (41 by 59 by 30 mm, of the brand GoPro Hero 4). The unobtrusiveness of the small camera minimalizes the reactivity of the subjects and makes the camera furthermore easy to carry when shooting film while walking. The wide-angle lens that this camera is equipped with furthermore ensures that the broadest possible area around the camera is recorded, which enables the researcher to look at almost a 180 degree view of pedestrian activity around them (see also Borgmann and Sneep 2017).

Filming: Ethical and Legal Issues

Although my method of data gathering did not include collecting any private information of individuals, and only took place in open, public areas, it is still necessary to make an ethical statement because of the nature of video research (Barbour 2013). The use of visual images for ethnographic work has long been one of the main discussions in the field (J. Prosser 2000; Andrew Clark, Prosser, and Wiles 2010; Andrew Clark 2013; Papademas 2004; Fluehr-Lobban 2014) and the discussion has led to the creation of various guidelines on how to make use of photographic material in ethnographic research. According to the guidelines posed by Caroline Fluehr-Lobban, the method used for this research can be classified as unobtrusive,

low-risk participant observation: "the observation of behavior in public spaces where questions of privacy do not exist" (2014, 184). As my videos were shot in public places and the identity of the individuals has been made unrecognizable by making use of face blurring technology (applied afterwards), there is a low risk of invasion of privacy of any of the individuals published in this research. It is also important to note that in Shinjuku, and in the center of Tokyo in general, there are quite a number of tourists and other people filming Tokyo's street life. The use of cameras in Shinjuku's public spaces is not uncommon. During my fieldwork, I noticed several other people (among whom many tourists) who were filming using similar action-type cameras. The Shibuya Scramble Crossing and Shinjuku Kabukichō in particular, seem to be popular spots among tourists to film their experience of Tokyo's city life. As filming in public is quite common in the center of Tokyo, albeit most of it is undoubtedly for private purposes, it can be argued that making use of a video camera in these places is, first of all, not something that is seen as intrusive to people's privacy and, second of all, also strengthens the argument that the use of a video camera does not alter the subject's reactivity as cameras are not uncommon in the middle of Tokyo.

Filming in public spaces in Japan is allowed, but when the footage is used for any objective other than private use, there are relatively high restrictions on what can be shown and what cannot be shown when publishing images. Taking into account the official laws concerning portrait rights in Japan and the quite strict laws of protection of privacy of the individual, researchers who make use of video material must be very careful. According to the *Kyōto Fugakurenjiken*, an act endorsed in 1969 by the Japan Supreme Court, one cannot publish anything without the consent of those pictured. However, there is no strict set of codes when it comes to photographs taken in public spaces. Furthermore, it has been argued that in some cases where the pictures can be beneficial for society, publishing without consent is allowed, as the *Japanese Professionals Photography Society* outlined in one of their recent online publications.[35] Since the invention of mobile phone photography, the Japanese court has often been confronted with the issue of privacy and portrait rights because of incidents where people took pictures of other people with the mobile phone cameras unnoticed and shared these pictures online (in most cases the victims of these crimes were women). Lawsuits that followed these incidents actually led to an unwritten rule that every mobile phone sold in

[35] "Shashinchosakuken to jyōzōken." *Japanese Professionals Photography Society*, 2014, www.jps.gr.jp/rights-2/ (Accessed October 31, 2019)

Japan should come with a pre-installed loud camera shutter sound that the user cannot turn off, which indicates that a picture is being taken.[36] Hence, it is clear that taking photographs in public in Japan is a sensitive subject. This has led for researchers of visual ethnographic methods to revise their standards and discuss the matter of privacy even more careful. Steven Fedorowicz elaborates on the difficulties of doing visual anthropology in Japan and advocates a form of visual anthropology that is beneficial to society, as long as the privacy of the subjects is honored (2009). For this reason, I decided to publish examples in the form of video stills, but in order to keep the privacy of the subjects shown in these stills I have made sure they are not recognizable by blurring their faces with a photo altering program.

QUANTITATIVE RESEARCH: BEHAVIORAL MAPPING

In order to deepen the analysis, I decided on complementing the qualitative analysis with a quantitative analysis, seeing the fact that the number of subjects that I encountered was large enough to make for a relevant sample size. To analyze the collected video material, I used a form of behavioral mapping to collect information on the captured mobile phone users: every individual mobile phone user that was filmed was coded on spatial behavior and position and additionally added information on gender, type of mobile phone use, and general behavior. Originally, behavioral mapping was a method from environmental psychology and is a form of systematic, unobtrusive observational research (Bechtel and Zeisel 1987). The method consists of the combination of the following elements:

> (1) a base map identifying the essential physical features of interest; (2) behavioral categories with their definitions and codes; (3) a schedule of observation; (4) a systematic procedure of observation; and (5) a system of coding and counting (yes/no, or frequency).
>
> (Ittelson, Rivlin, and Proshansky 1976, as quoted in Ng 2016, 33)

Behavioral mapping tends to be mainly a quantitative research method, with less attention to detail and more focus on discovering similarities, patterns, and consistencies among a large number of subjects. Since it allows the researcher to make notes about many people in crowded spaces (such as busy intersections or city squares) in a relative short time-frame, the method is often used by those from fields of urban related studies (such urban planners, architects) to look at the social interactions or spatial behavior of people in specific places in a

[36] Akimoto, Akky. "Google Glass may shatter Japan's 'manner' mode." *The Japan Times.* 15 May 2013, www.japantimes.co.jp/life/2013/05/15/digital/google-glass-may-shatter-japans-manner-mode/#.VPhO3fnF-1c (Accessed October 31, 2019)

city. In crowded places, it is common that video cameras are used to aid the researcher(s). Keith Hampton, Lauren Goulet and Garrett Albanesius (2015), for example, for their study on civic engagement in New York City, used a video to record pedestrian behavior in crowded spaces, and based their coding on the video stills; they were thus able to record over 100,000 pedestrians' behavior.

Behavioral mapping was established in the second half of the 20th century based on the notion that people behave differently according to their environment, which developed in the 1960s and 1970s (c.f. Barker 1968). By making use of behavioral mapping the researcher gets more insight in answering research questions related to how people are influenced by context, especially physical, built context. The method was first introduced to environmental psychology in the 1970s and was then further developed into a more detailed tool for researchers, its principles subsequently leading to multiple other research methods, such as the more recently developed space syntax (Peponis and Wineman 2002). One of the strengths of behavioral mapping is that it shows the social aspect of physical space – something that places the development of the method within the framework of the spatial turn that happened around the same time, from the late 1960s throughout the 1980s. In their work on social logic behind physical space Bill Hillier and Julienne Hanson emphasize that "[buildings] appear to be physical artefacts, like any other, and [follow] the same type of logic. But this is illusory. Insofar as they are purposeful, buildings are not just objects, but transformations of space through objects." (1989, 1–2). As Harvey and Lefebvre also argued, it is through the built environment that relations and order between people are established in society (Lefebvre 1991; Harvey 1990). Going online, as we discussed in the previous chapter, can be regarded as a 'spatial experience' as well. Making use of behavioral mapping that includes mobile phone behavior, the behavioral maps that are the results of my video analysis not only show the interconnection between physical space and mobile phone users; they also show how online space can exert an influence on the everyday experience and practice of physical space through the behavior of mobile phone users in the city.

Behavioral mapping has several advantages over forms of self-reporting behavior such as the use of questionnaires and interviews. First of all, people might not be completely honest in self-reporting: using one's mobile phone while walking is, after all, seen as a dangerous practice that is advised against (perhaps even more so in Japan); and secondly, it is very much

possible that many people are not even aware that they carry out certain spatial actions in the first place (Ng 2016). Mobile phone use can be categorized as a habitual action (Oulasvirta et al. 2012; Aakhus 2003; K. Fujimoto 2005), which makes relying on subject's own reports alone difficult, as people are not always aware of their own habitual actions. Besides this, mobile phone use while engaging in traffic is looked down upon and people might not be completely honest when making statements about their own mobile phone use while being a (pedestrian) traffic participant. Therefore, the use of behavioral mapping and observing mobile phone use in a natural environment is, considering my research question, a more apt method than relying on a subject's own statements. On top of that, behavioral mapping has the advantage that it takes physical context into account, which is an important factor in behavioral sciences (Ng 2016; Barker 1968; Peponis and Wineman 2002; Gifford 2016). In large, dense urban areas of the kind we find in Tokyo, behavioral mapping is furthermore an accessible way of doing research (Marušić 2010; Cosco, Moore, and Islam 2010).

Behavioral mapping, in contrast to ethnographic methods as participant observation, pays more attention to direct spatial movements and activities of the subjects and their position towards other objects in space. Ethnographic observation, in turn, pays more attention to detailed social behavior, while at the same time allowing the researcher to experience the situation of research as a participant. In several previous studies the combination of environmental psychology and anthropology has been argued to be a natural and fruitful one. According to Edward Liebow (2003), the integration of research methods from environmental psychology is particularly useful for anthropologists, as it helps the researcher to be aware of the social impact of specific spaces and areas, something that is often overlooked but is nevertheless an important factor. The outcome of a combination of behavioral maps with an ethnographic analysis is a detailed account of observations of mobile phone behavior linked to the physical environment. Thus, both methods combined provide a balanced analysis of the video data, which takes into account both the place and environment of the subject, as well as the subjects' actions.

DATA COLLECTION

Based on initial observations and pilot video shootings of the locations for an impression of when the areas were typically visited, I picked out walking routes and time schedules to shoot videos all through the neighborhood blocks of choice, making sure all four routes were roughly the same in length (see Appendix I). Along these routes are the typical buildings and

street elements that characterize the built set-up of that particular block (see also images 1-4 as shown previously in this chapter). Based on Ittleson et al.'s (1976) ethnographic video observation guidelines, in order to make sure the data is consistent for a quantitative study, each of the areas I selected for research were filmed five times at regular intervals, over a total time span of four months. The route and time slot of each shooting was similar, with a little leeway (plus or minus one to two hours) for time slots in Ōkubo, Shinjuku Sanchōme and Kabukichō. For Nishi-Shinjuku, I filmed only during the morning rush hours – the times that Nishi-Shinjuku's streets are crowded with office workers, and ensured the time slots were strictly similar as the pedestrians peaked during a very specific time in the morning. For Shinjuku Sanchōme, I filmed on weekends during noon. Shinjuku Sanchōme is an area that is almost always crowded with people. During the weekend, however, there is a rise in pedestrian activity, and on Sundays the center is closed off for automobile traffic, allowing the pedestrians to use the broader car road for walking. As for Kabukichō, I filmed during the afternoon on weekdays. Many people working in Nishi-Shinjuku or the near vicinity go to Kabukichō for drinks after office hours. I did not shoot video during night-time, when Kabukichō is most active. The reason for this is that first of all, because of the lack of natural light, I would not be able to see the pedestrians' behavior clearly, and second, I found the practice of filming people during that time and in such an environment unethical. Thus, Kabukichō is filmed as an area of after-work entertainment with bars, restaurants, cinemas and arcade halls. As for Ōkubo, I filmed during the weekends before or slightly after noon, when people are usually at home and schools are closed. As one would expect, this area is by far the quietest of all four blocks selected. However, it is still a valuable addition to the other three blocks, since it shows how people use their mobile phone while out in what is presumably their own neighborhood. It also emphasizes the large contrast between pedestrian activities in Tokyo's city centers versus the residential areas.

The video footage shot in these neighborhoods makes up for the largest and most important part of my data. I recorded it with an action-type camera, which I carried with me by hand and shot the footage as from a pedestrian's point of view. The action camera I used is a Gopro Hero 4+, silver edition. It is small, being only 4 by 6 by 3 cm, but its size increases with the protection case which was used, to 7 by 7 by 5 cm. Despite its small size, the camera is able to shoot high definition footage. Footage was collected with 60 frames per second in a resolution of 1920x1080. One of the advantages of the Gopro type camera is the fact that it is able to

shoot a wide-angle setting, enabling the filmmaker to include a lot of the physical environment in their video shootings. The wide-angle setting, however, slightly distorts the image towards the edges, which is also why some of the video stills that are published in this work show a slightly distorted image of the buildings on the edge of the photographs. For my pilot studies, I shot 122 GB of data all throughout Shinjuku, and I collected another 154 GB of video material for the specific routes used for my quantitative analysis, making the total analyzed video material 276 GB, which amounts to about 15 hours of video. After I collected all of my video material, I proceeded with coding. I coded all of my material for a minimum of three rounds. In places where there were many pedestrians, I went through the material more than three times. I coded the material first in an ethnographic way, by selecting re-occurring meaningful observations that allowed for a grounded theory to be developed. Coding is, in essence, a heuristic device (Saldana 2012; Richards and Morse 2007; Bernard 2011) of which the main aim is to find repetitive patterns in human interaction in data (Saldana 2012, 5). In the case of visual anthropology, the focus lies on behavior and bodily gestures of the subjects. In my case, I developed a set of codes that is focused on mobile phone behavior in relation to the urban environment. To ensure my set of codes are relevant in a research with a spatial focus, I based my forms for coding on lists from behavioral mapping research. I was particularly influenced by Henry Sanoff and Gary Coates' (1971) research on behavioral mapping and their example of children's out-of-the house behavior in an urban residential area. They coded the children on participant inventory, action patterns, and behavior mechanism rating; and marked their activity on a map. Another research that I took as an example for my method, especially in the design of my coding list and method of using video stills as 'snapshots' for coding, was Hampton, Goulet and Albanesius' (2015) research on pedestrian behavior in crowded places in New York City. Similar to the above studies, I developed a list of coding categorized in three divisions: information on the participant, action pattern, and mobile phone behavior. I rated mobile phone behavior on 'level of focus' by using a value system, as I deemed some actions to be part of a more intensive form of mobile phone use than others. In addition, I added a field where I could elaborate on a description, in case the behavior needed more explanation. For the finalized form that I used to code the mobile phone users' behavior, see Appendix II.

I coded the action and mobile phone behavior of every mobile phone user that I encountered on the videos, first listing their gender and then proceeding to describe their physical activity.

In case the user was doing something besides sitting, standing, cycling, or walking, I tagged it as the action it was closest to and specified their behavior in the notes. I then looked at the way they were using their mobile phone, noting down whether they were using it for something other than the textual function first – so either making a phone call, using voice chat, or using the camera function of the device. Please note that under the header 'device use' there was the option to tick multiple boxes. For example, there are entries of people who first scrolled, and then started typing (or vice versa). If the user was not doing something other than using the phone for its textual function, I first noted whether the phone was used horizontally or vertically, and then noted down in detail how the person interacted with the screen. The detailed hand moves that correspond to the ones I put in the list of codes are the following: typing (one-handed); scrolling; navigating (two-handed); and tapping (two-handed). By labeling the action of the user and their phone, I created a 'scale' of mobile phone concentration level. The more attention (i.e. in forms of hand gestures) was pointed at the screen of the phone, the higher their mobile phone 'engagement level'. For example, a person who uses both hands and keeps looking at their screen has a high level of mobile phone engagement. People who seemed involved in several of the engagement activities (i.e. both holding their phones with two hands and not looking up from their screens, while typing) and/or who generally seemed more focused on the screen were labeled 'concentrated users'.

CONCLUSION

In this chapter, I have discussed the underlying thoughts behind designing my research method. I started off with an explanation of why I chose the particular case studies within Tokyo, describing each of the blocks that were used in my research. I then proceeded to a discussion of the methods used by other researchers of mobile phone use in the city. As I have shown, the research that has been published on the relation between spatial use and the (Japanese) mobile phone user are lacking a natural approach to city, and largely overlook or ignore the importance of the function of urban space in the assessment of mobile phone behavior of the individual. Looking at urban studies, and in particular some of the earlier accounts of researchers who wanted to know about everyday city life after major urban innovations, I decided to base my choice for observational method on the concept of the *flâneur* and that of the *dérive*. This led me to use a combination of urban wandering and video-based participant observations, which ensured many everyday life encounters with mobile phone users while at the same time paying attention to their physical surroundings. By

paying attention to the pedestrian rhythm of Shinjuku, I picked routes for observation for the four neighborhoods. In order to gather data for analysis, I made use of an unobtrusive action-type camera and coded the behavior of the mobile phone users I encountered afterwards. I coded the data not only in a qualitative, ethnographic way, but enhanced it with a quantitative method based on behavioral mapping, a method from environmental psychology, in order to give more depth to the analysis. By going over the video material using both qualitative and quantitative analysis, I was able to not only analyze behavioral aspects of the mobile phone users, but also to analyze each individual mobile phone user on spatial behavior. As a result, the combination of qualitative participant observation and quantitative behavioral mapping ensures a data set that fully focuses on the socio-spatial behavior of pedestrians using mobile phones.

5. RESULTS AND ANALYSIS

Mobile Phone Use in Four Blocks in Shinjuku

In this chapter, results of the fieldwork will be discussed. The chapter is divided in two parts. First of all, I will show the quantitative results, which will be illustrated by a graph and a map visualizing the statistical data for each block. In the second part of the chapter, I elaborate on the qualitative interpretation of data, which will be illustrated with examples in the form of stills from the videos I took. For the statistical data I recorded the movement, behavior, and location of a total of 1291 mobile phone users in Tokyo. The data I use for this analysis is 154 GB or about 8 hours of video (for the entire, qualitative analysis a total of 276 GB, which amounts to about 15 hours of video, was used). The statistical data only includes pedestrian behavior activities of the video material I shot at regular intervals in the dedicated areas. For my qualitative analysis, I have used all of the video data that I collected in Shinjuku, which includes pilot studies. As for the quantitative data, although I filmed around the same amount of time in each neighborhood or block, the number of pedestrians differs, and hence also the number of mobile phone users differs per block. Almost 60 percent of all of the mobile phone users I analyzed were spotted in Shinjuku Sanchōme, which is not surprising since it is the most crowded part of Shinjuku and takes the lead by far when it comes to pedestrian activity among all the blocks I have filmed. In Ookubo, which is a quiet neighborhood, there were far fewer pedestrians and only about 10 percent of the recorded mobile phone users were spotted there. The large difference in entries between the different blocks should be taken into account when comparing the blocks with each other. In terms of quantitative analysis the case of Ookubo is prone to result in outliers. I nevertheless included the block in my analysis because it is a good representative of a residential space in Tokyo. The most precisely comparable are Nishi-Shinjuku and Kabukichō, since the number of mobile phone users spotted in these two blocks is of a comparable number.

In the following part, an overview of the quantitative results of each block will be presented. It consists of maps, tables, and graphs, all of which should be read next to each other and give information about the mobile phone-using pedestrians that were recorded in that area. First is presented the average breakdown of gender in that particular block based on random samples of 100 people out of all the people that were filmed in that area. I furthermore also calculated

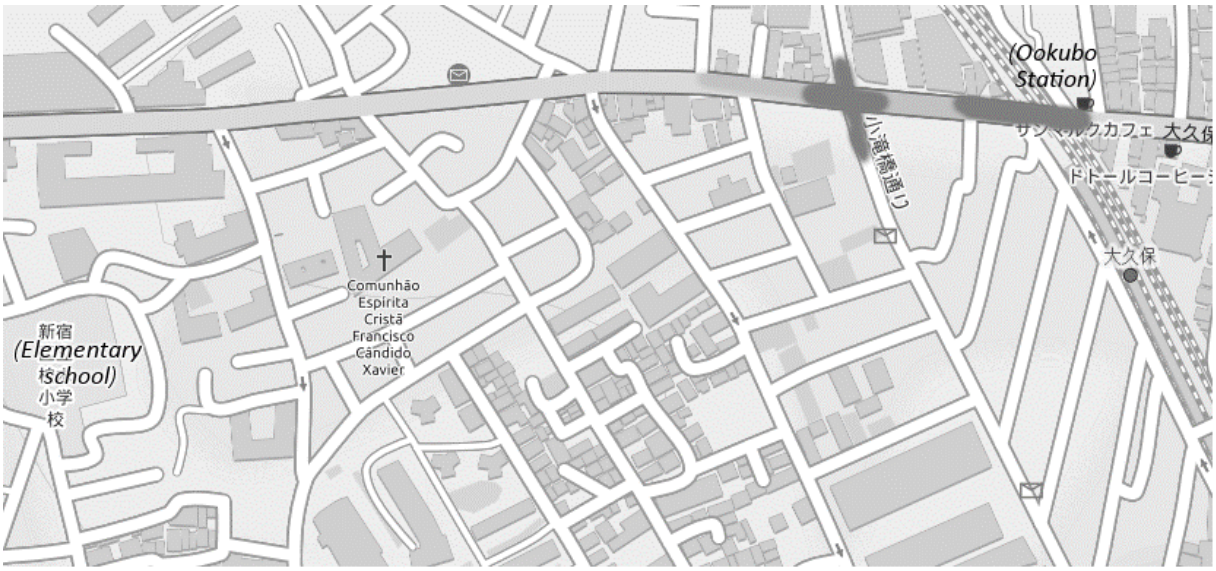
the average percentage of mobile phone users among 100 random samples of pedestrians, in order to be able to see whether the gender division among pedestrians has any correlation with the gender division in mobile phone-using pedestrians. Below the general information concerning pedestrian activity, I present a map that highlights where the largest number of mobile phone users was spotted on my route through this area. Below the map there is the exact data of the mobile phone users that have been observed and coded. The data is presented in tables showing first of all the number of mobile phone users observed, a breakdown of gender, physical activity, and type of mobile phone activity. The graphs that are presented next to the table visualize the data in percentages from the tables. I proceed to discuss the results in the section that follows, focusing on mobile phone use per location, types of usage and the relation to physical activity of the mobile phone user.

OOKUBO

PEDESTRIAN INFORMATION

Gender: ♂ 50% ♀ 50%
Mobile phone use: 10%

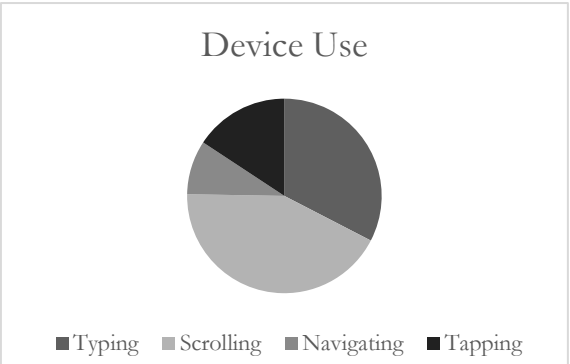
MOBILE PHONE ACTIVITY DENSITY

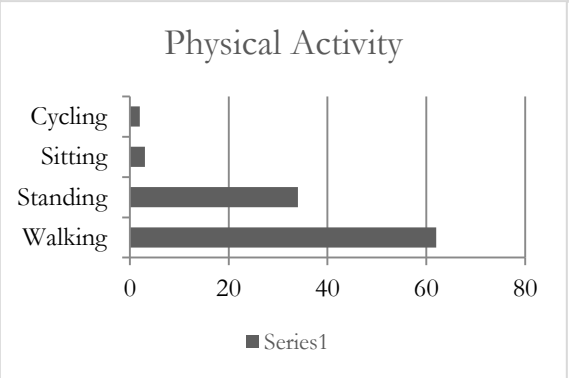


Spaces that see an increase in mobile phone activity (from left to right): the Ookubo Main street pedestrian crossing (left) and Ookubo JR main station.

DATA

			N=65
General	Sex	Female	22 (34%)
		Male	43 (66%)
	Activity	Walking	40
		Standing	22
		Sitting	2
		Cycling	1
Device related	Mobile phone activity	Text/browsing	54
		Phone Call	7
		Voice chat	3
		Taking Pictures	1
	Device orientation	Horizontal	1
		Vertical	64
	Device Use	Typing	19
		Scrolling	25
		Navigating	5
		Tapping	9
	Concentrated use		10 (15%)





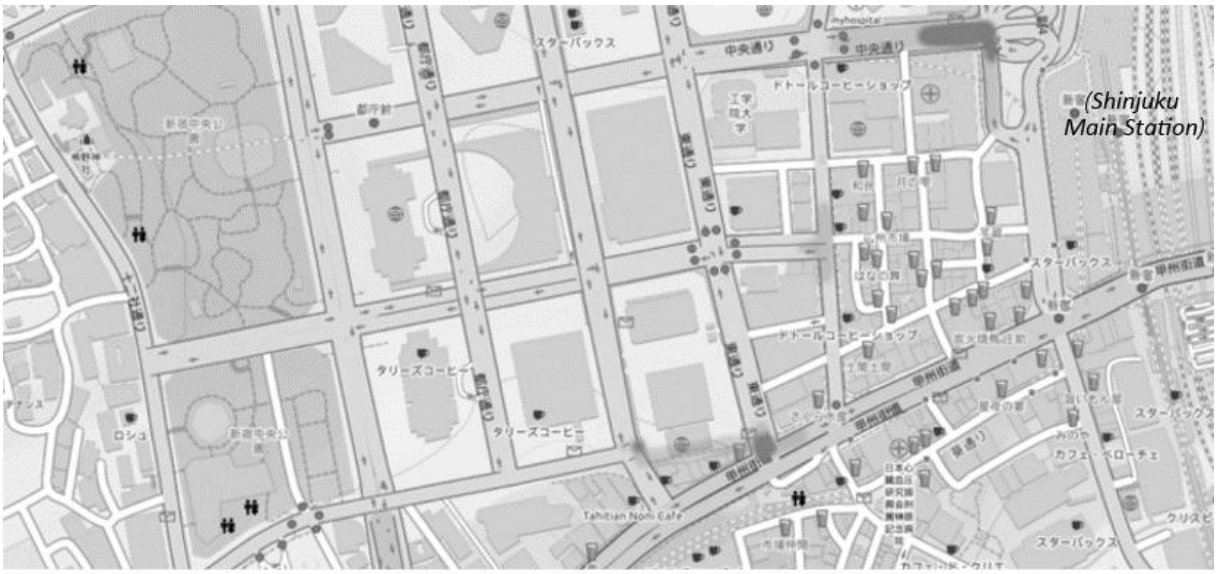
NISHI-SHINJUKU

Pedestrian Information

Gender: ♂ 64% ♀ 36%

Mobile phone use: 13%

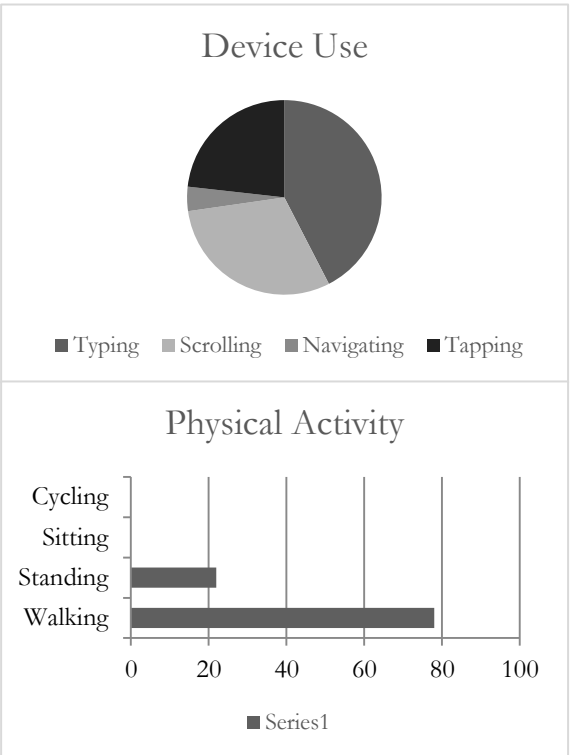
Mobile Phone Activity Density



Spaces that see an increase in mobile phone activity (from left to right): three pedestrian crossings that are along the main road to most office buildings, and the Shinjuku Bus Station where many different bus companies have their main stop.

Data

			N=280
General	Sex	Female	103 (37%)
		Male	167 (63%)
	Activity	Walking	219
		Standing	61
		Sitting	0
		Cycling	0
Device related	Mobile phone activity	Text/browsing	266
		Phone Call	13
		Voice chat	1
		Taking Pictures	0
	Device orientation	Horizontal	11
		Vertical	242
	Device Use	Typing	117
		Scrolling	85
		Navigating	10
		Tapping	65
	Concentrated use		40 (14%)



SHINJUKU SANCHŌME

PEDESTRIAN INFORMATION

Gender: ♂ 57% ♀ 43%

Mobile phone use: 16%

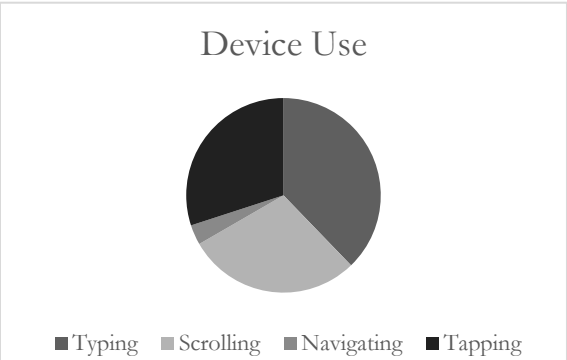
MOBILE PHONE ACTIVITY DENSITY

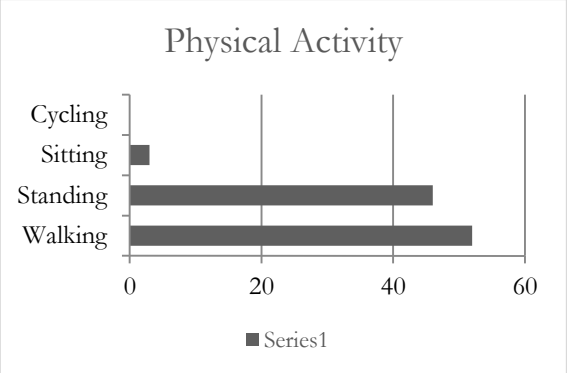
Map © OpenStreetMap

Spaces that see an increase in mobile phone activity (from left to right): Shinjuku main station; the square in front of the main station where also the main metro exit is located; ALTA department store building which doubles as another main exit of the metro; and Shinjuku main street's crossing.

DATA

			N=724
General	Sex	Female	326 (45%)
		Male	398 (55%)
	Activity	Walking	373
		Standing	330
		Sitting	21
		Cycling	0
Device related	Mobile phone activity	Text/browsing	657
		Phone Call	49
		Voice chat	3
		Taking Pictures	15
	Device orientation	Horizontal	9
		Vertical	715
	Device Use	Typing	249
		Scrolling	189
		Navigating	21
		Tapping	196
	Concentrated use		200 (28%)





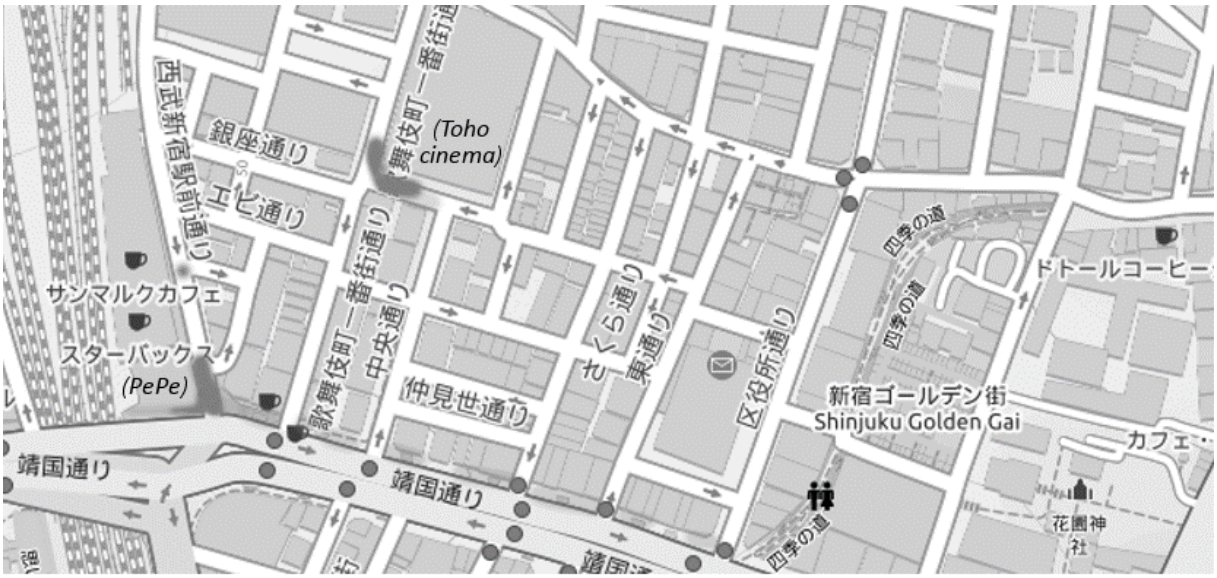
KABUKICHŌ

PEDESTRIAN INFORMATION

Gender: ♂ 60% ♀ 40%

Mobile phone use: 16%

MOBILE PHONE ACTIVITY DENSITY

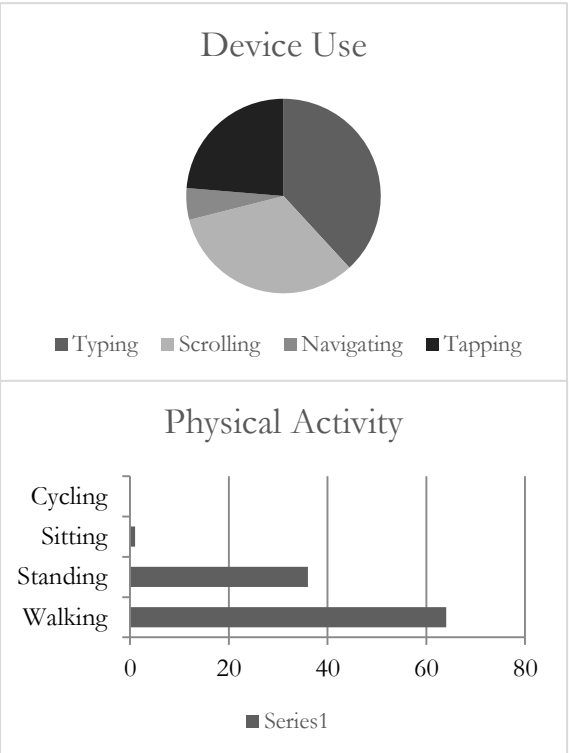


Map © OpenStreetMap

Spaces that see an increase in mobile phone activity: (far left) the PePe department store building which doubles as the Seibu-Shinjuku Station; (up) cluster of several restaurants and cafes; and small square in front of the Shinjuku Toho Cinema building (which includes cinemas, restaurants, and pachinko/gamble halls; (under) a road past several popular stores which has many pedestrian crossings.

DATA

			N=222
General	Sex	Female	89 (40%)
		Male	133 (60%)
	Activity	Walking	141
		Standing	79
		Sitting	2
		Cycling	0
Device related	Mobile phone activity	Text/browsing	168
		Phone Call	46
		Voice chat	0
		Taking Pictures	8
	Device orientation	Horizontal	4
		Vertical	218
	Device Use	Typing	65
		Scrolling	55
		Navigating	9
		Tapping	39
	Concentrated use		32 (14%)



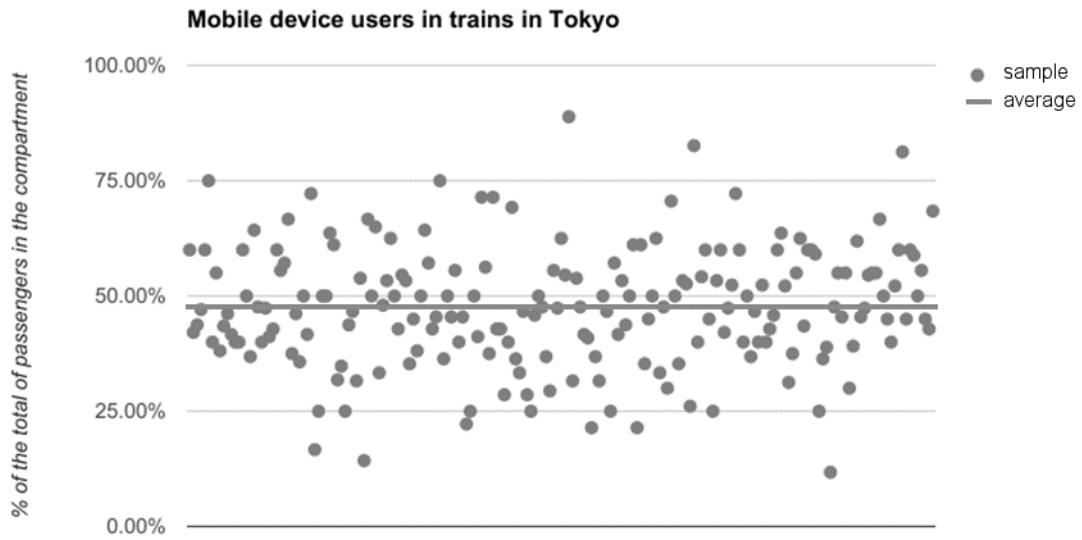
QUANTITATIVE ANALYSIS

LOCATION AND TYPES OF USAGE

From the maps shown in the previous section, we can clearly see that there are places where a lot of mobile phone users were spotted. Most of the times, these spots are correlating with a peak in general pedestrian activity. In all of the above cases, for example, the local station and station exits are places with peaks in mobile phone activity. Besides the fact that it is the city's major transport hub, since the station exits of Shinjuku station are popular places for people to have appointments or meet up, there are also always people standing or waiting in front of the exits. Many of them are in some way interacting with their phones. In the past, people would also smoke in front of the station exits, but since smoking in public areas is nowadays prohibited in Tokyo, the only visible habit (or 'addiction') that is left is that of the mobile phone. In the center of Shinjuku, there are many of these metro- and train exits. As a matter of fact, there is an extensive network of underground streets built around the public transportation exits in Shinjuku, with entire shopping malls all under the surface of the shopping streets of Shinjuku Sanchōme. The main entrances to this underground area and the metro stations are often combined with entrances to high-rise department stores. We can see these spots on the map marked as hotspots for mobile phone use as well – for example the *ALTA* department store in Shinjuku Sanchōme and the *PePe* department store just on the border of Kabukichō. There is another place that combines a metro exit with a department store, which is the *Isetan* in Sanchōme. However, unlike the *ALTA* and *PePe* buildings, there is significantly less space for people to wait in front of *Isetan* as it is located next to Shinjuku Main Street crossing and only has a small stretch of pavement in front of it.

Other places that always see an increase in mobile phone use are the pedestrian crossings. In the above map, some particularly big pedestrian crossings are marked as hotspots for mobile phone activity. Shinjuku Main Street's crossing in particular sees a lot of pedestrians and mobile phone activity. This crossing is roughly 25 by 25 meters and has four points where pedestrians can cross the road. Although it is not as big as the famous Shibuya Scramble Crossing, which is a bit larger in size and has five pedestrian crossing points, the Shinjuku Main Street crossing area comes close in terms of size and pedestrian activity around it, especially on crowded afternoons. Both in Shinjuku Sanchōme and Kabukichō the number of mobile phone users increases around the area of these types of pedestrian crossings. An interesting contrast to this is Nishi-Shinjuku. Although Nishi-Shinjuku has many crossings,

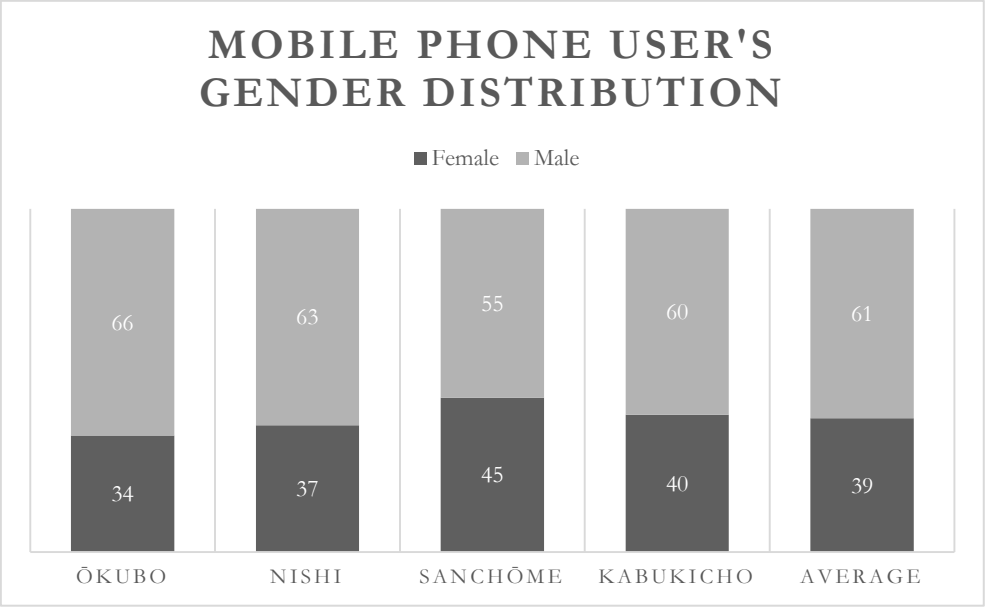
the overall mobile phone activity is much more equally distributed over the block than the other observed neighborhoods. Interestingly enough, there are many crossings that people encounter on their way from the station to their office, and one would expect an increase in mobile phone use at these places. However, the crossings only see a minimal increase in mobile phone activity and are hence not considered to be 'hotspots' of mobile phone use in the sense of, for example, the department stores in Sanchōme and Kabukichō. Among the researched areas, Nishi-Shinjuku was also the area that showed the most mobile phone activity while walking (*aruki-sumaho*). Instead of only resorting to their phone when standing still (for example when waiting for a crossing), people tend to already have their phones out and are already interacting with the device before arriving at the crossing. Most likely their mobile phone behavior is merely a logical continuation from their in-train mobile phone activity and a part of their entire daily routine of going to work. Before coming to their working place, most of the people working in the area of Nishi-Shinjuku will first arrive by train, and walk from the train station to their office. In trains, almost 50 percent of all passengers is seen interacting with their mobile phone (see graph 1). When these office-goers exit the train, they will walk a route that they are very familiar with. Because of these two factors, there are many people walking in the streets in Nishi-Shinjuku while using their mobile phone.



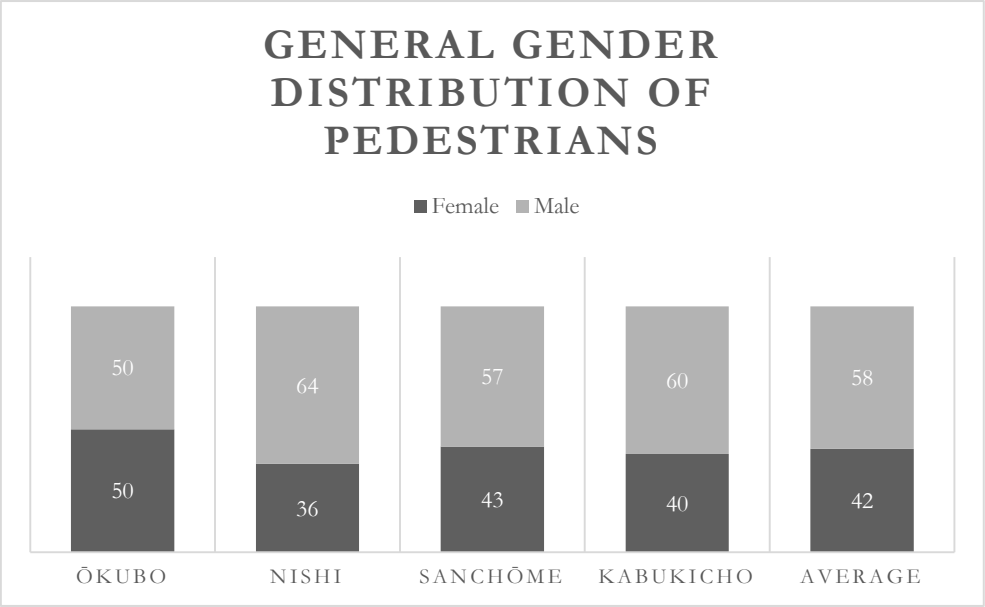
Graph 1: Screen users in train wagons in the area of central Tokyo (around Shinjuku). Data collected from 198 samples of in total 3499 people in train wagons in Tokyo from July to December 2015. Data collected in the Chūo and Yamanote line throughout the day. On average, 47% of passengers are seen using a mobile device.

A point that can be derived when looking at the position of mobile phone users in the recorded areas is that mobile phone users flock around the scarce areas where pedestrians can sit down in the city. In Shinjuku, but in Tokyo in general, there is a general lack of places dedicated as space where pedestrians can sit down. The park-like square in front of Shinjuku's main station is, along with some children's playgrounds in the residential area Ookubo, the only area among the recorded places that is actually designed for people to sit down. In the middle of the city of Shinjuku (as well as Tokyo in general) there are simply no public benches. Even the square in front of Shinjuku's main station does not have actual benches for people to sit on, but instead features a low cement wall that separates green space from the pavement, which can be used as a sitting space by the people waiting in front of the station's exits. There is another reason this square is different from the other places that were recorded: during the weekend the square sometimes becomes the host for attractions and events. These events can for example include special promotions for companies, theater plays, or music performances. Twice during my recordings in Sanchōme I encountered a music performance which was crowded with people tightly packed together behind the temporary fences that ensure the metro exits stay accessible. Whenever an event like this happened at the square, the type of mobile phone activity automatically changed with the function of the place. When the square is used as a meeting place, people usually scroll through their mobile phones while waiting, or are using voice call or voice messages, probably to contact the person(s) they are planning on meeting later. However, when the function of the place changes from a place of waiting to a place of performance, mobile phone behavior changes as well. Instead of a textual function, the mobile phone is then often used as a recording device (sound, film, photographs). This shows that the function of the mobile phone is influenced by the function of the space where the mobile phone user is located in, and thus can change depending on the current meaning or function of that place.

GENDER DISTRIBUTION



Graph 2: Gender Division in percentage per block.



Graph 3: General Gender Distribution of pedestrians in percentage per block. Data from 100 random samples per block.

In all of the four blocks, there were more male mobile phone users than female. On average, the people who use their mobile phones on the streets in Shinjuku are 61 percent male and 39 percent female. This does not per se indicate that men use their mobile phones more than women. A random sample of 400 pedestrians in my videos shows a male to female ratio of 58 to 42, which lies very close to the average of 61 percent male and 39 percent female mobile

phone users.[37] In all of the four cases, the male to female ratio is almost exactly the ratio of the overall gender distribution among the pedestrians. It can therefore be said that overall, as many men as women make use of their mobile phones when in public spaces. The exception is Ookubo, which tilts towards a majority in mobile phone use by men instead of the 50/50 pedestrian gender ratio I observed during random sampling. This is possibly an outlier because of the limited samples of mobile phone use I encountered in this neighborhood. Only in the areas that are generally considered more predominantly 'women's places', the residential neighborhood and shopping district, the number of female pedestrians was slightly higher than in the other places (but still lower than the percentage of male pedestrians). In Sanchōme, this also results in a slightly higher percentage of female mobile phone users compared to the average gender distribution among mobile phone users.

Two of the blocks that I made observations in can be categorized as male-dominated spaces, namely Nishi-Shinjuku and Kabukichō. Especially in Nishi–Shinjuku, Tokyo's famous business district, I encountered significantly more men than women. Japan, which is generally still more of a conservative gender-role confirming country, there is just generally a larger percentage of men who are employed than women: in Tokyo, men make up for about 60 percent of the total working population, and women for 40.[38] Shinjuku reflects the metropolitan average with the same similar ratio (although the sector of finance and insurance, of which Nishi-Shinjuku hosts several large companies, has a slightly bleaker gender division of 67 to 33 percent[39], which closely resembles the gender division among pedestrians found in Nishi-Shinjuku). The other block would be Kabukichō, which is a district with many establishments that cater towards men: gamble halls, hostess bars (note: there are far more clubs that cater towards men than women in Kabukichō), and even places related to prostitution. The idea that both Nishi-Shinjuku and Kabukichō are male spaces is furthermore

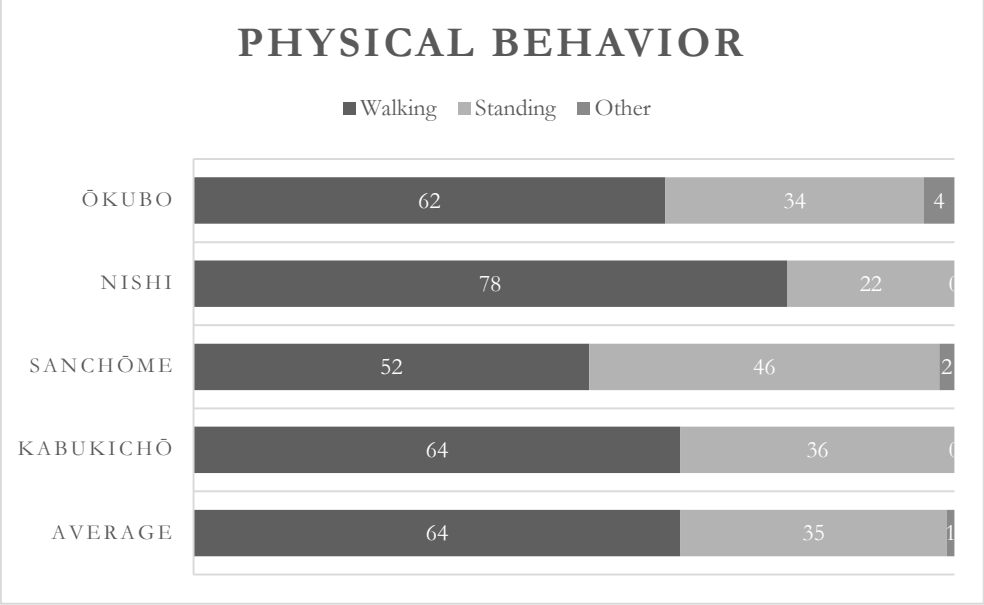
[37] Note: the female/male ratio of Tokyo's inhabitants at the time of the video shooting was 51% female and 49% male. In general, however, I encountered about ten percent more male than female pedestrians. Numbers taken from the Tokyo Statistical Yearbook 2015. "Tokyo Statistical Yearbook." http://www.toukei.metro.tokyo.jp/tnenkan/tn-index.htm (Accessed October 31, 2019)

[38] According to statistics collected in 2012, 4.2 million of the men living in Tokyo are currently employed, compared to 3.1 million of the women (among those of working age), which is a ratio of 6 to 4. In Shinjuku in specific, 2014 statistics show that there are 411,226 men employed and 280.483 women, a similar ratio of 6 to 4. Numbers taken from the Tokyo Statistical Yearbook 2016. "Tokyo Statistical Yearbook." http://www.toukei.metro.tokyo.jp/tnenkan/tn-index.htm (Accessed October 31, 2019)

[39] According to statistics from 2014, 29.545 men and 14.570 women were employed in finance and insurance companies that are located in Shinjuku, or 67 percent men and 33 percent women. Numbers taken from the Tokyo Statistical Yearbook 2016. "Tokyo Statistical Yearbook." http://www.toukei.metro.tokyo.jp/tnenkan/tn-index.htm (Accessed October 31, 2019)

supported by the fact that Shinjuku Sanchōme, which is a space that is not specifically catering towards one specific gender, sees a much more equal division between male and female mobile phone users.

PHYSICAL BEHAVIOR



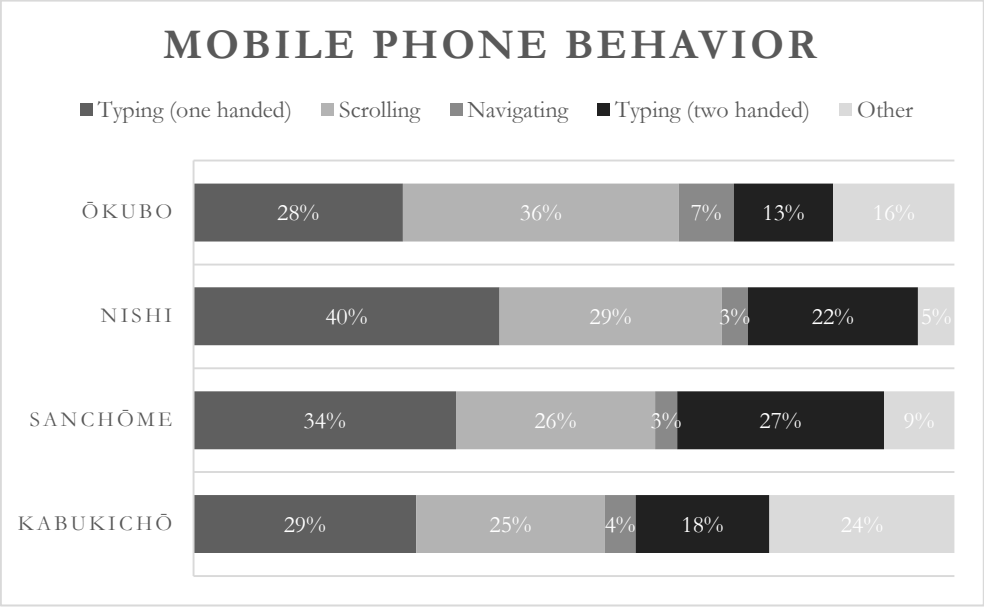
Graph 4: Physical behavior of mobile phone users in percentage per block.

On average, 14 percent of the observed pedestrians were seen using their mobile phone. However, not all of these mobile phone users were walking: in general around one third of the mobile phone users in Shinjuku is standing or sitting. To understand in what kind of situation people use their mobile phones in these blocks, we can see in the above graph what people, on average, are in the process of doing while using their device. All of the observed blocks have a similar set-up in terms of street elements: pavements, pedestrian crossings, and alleyways. The way mobile phone users generally behave on the streets, however, differs per block. On average, 64 percent of the encountered mobile phone users is seen walking while using their phone. From this, we can conclude that in general about 9 percent, or roughly one out of ten of the overall pedestrians, is using their mobile phone while walking.

Two of the above cases are interesting to elaborate on. The first is Nishi-Shinjuku. Since I filmed during rush hours, most of the people recorded are walking from the station to their office. It should also be noted that the pavements are wider in Nishi-Shinjuku, and there is therefore more space for people to walk. There is a relatively larger percentage (78 percent) of

the mobile phone users walking while using their mobile phones, and 13% of all pedestrians can be seen using their phones. The overall number of mobile phone users among pedestrians did not differ much from other areas, however, there are more people using their phones while walking and significantly fewer mobile phone users standing still. They are usually focused on getting to their workplace in a timely manner, while at the same time interacting with their device. Shinjuku Sanchōme, on the contrary, is a place where many people meet up with other people and where a lot of social interaction takes place. People in this shopping district are pursuing a pastime activity and are less bound by time constraints. Although there are also quite a few Shinjuku main station exits in the Nishi-Shinjuku area, people do not use these exits as places for rendezvous in Nishi-Shinjuku as often as they do in Shinjuku Sanchōme. Besides the station exits that are being used as places for waiting for other people, there is also a small square in Shinjuku Sanchōme where there is a low wall that is used by people to sit on. As explained earlier, since this is one of the very few places where there is a chance for pedestrians to sit down, we see a relatively higher percentage of people sitting and using their mobile phone as well.

Mobile Phone Behavior



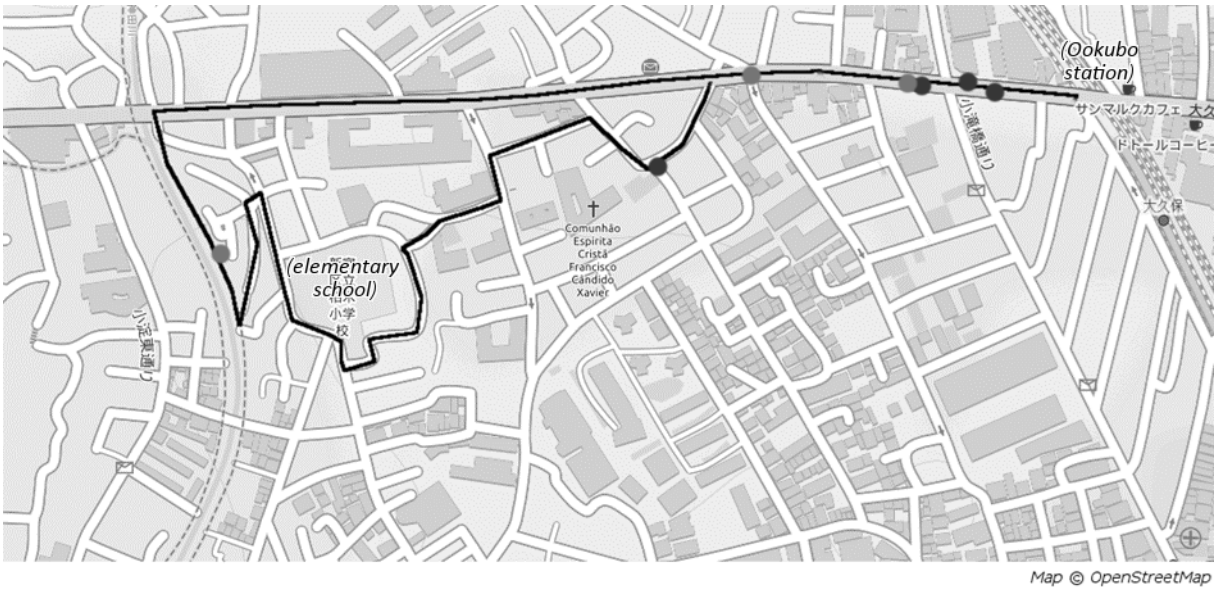
Graph 5: Mobile phone behavior in percentages per block.

This graph shows the types of mobile phone activities that were most spotted during the observations. The type of mobile phone use has a correlation with the type of physical

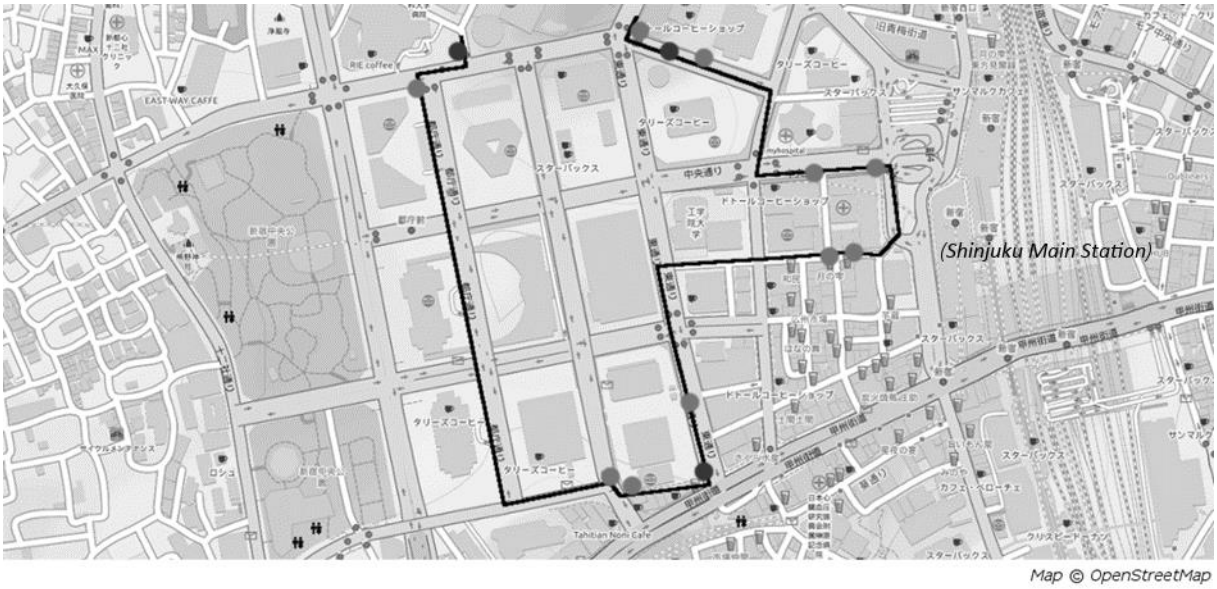
behavior of the mobile phone user: persons who were observed standing or sitting tended to use their mobile phone more intensively than persons who were walking. Therefore, since a lot of users are walking in Nishi-Shinjuku, there is also a higher percentage of people (69 percent) who use their phone with one hand (typing or scrolling), something that was found more typical for mobile phone use while walking, compared to other blocks (54 percent in Kabukichō, for example). In Ookubo, we see a slight increase of navigation use in the residential area. This can be explained because during filming, I encountered several lost tourists and groups of people who I presumed to have taken a wrong turn and were looking for either Shinjuku center or Shin-Ookubo (the popular Korean Town bordering on the Ookubo residential area), but had mistakenly ended up in the residential area instead. There were no cases of people who I presumed to be residents using navigation applications in their own neighborhood. In Shinjuku Sanchōme, on the other hand, since there is a higher percentage of people standing or sitting (48 percent) who are not engaging with any traffic and able to focus more on their screen and also easily can use both hands for operating their device, there is a higher percentage of people using their phone more intensively (30 percent). One of the most interesting points that we can take away from this graph is the high share of people (24 percent) in Shinjuku Kabukichō using their mobile phones for purposes other than typing, scrolling, or navigating. To better understand what mobile phone users are using their device for in Kabukichō, it is important to look at the next section, voice call users, as 90 percent of this group is using their mobile phone for voice calls.

Of course, the type of mobile phone use does not only relate to the physical activity of the user. Just like the user's physical behavior, it is also connected to many influences in the user's environment, such as traffic and general function of space. There are some types of spaces in Shinjuku that see a higher number of people using mobile phones, and also a higher number of people using their phone more intensively (that is, using both hands and focused on the screen). In the blocks that I observed, these were the spaces around station exits, crossings, parks, and squares. The interesting outlier with this pattern of 'clustered' mobile phone use is Nishi-Shinjuku: unlike Ookubo, Shinjuku Sanchōme, and Kabukichō, Nishi-Shinjuku does not see a particular rise in mobile phone behavior around expected peak points such as crossings and squares.

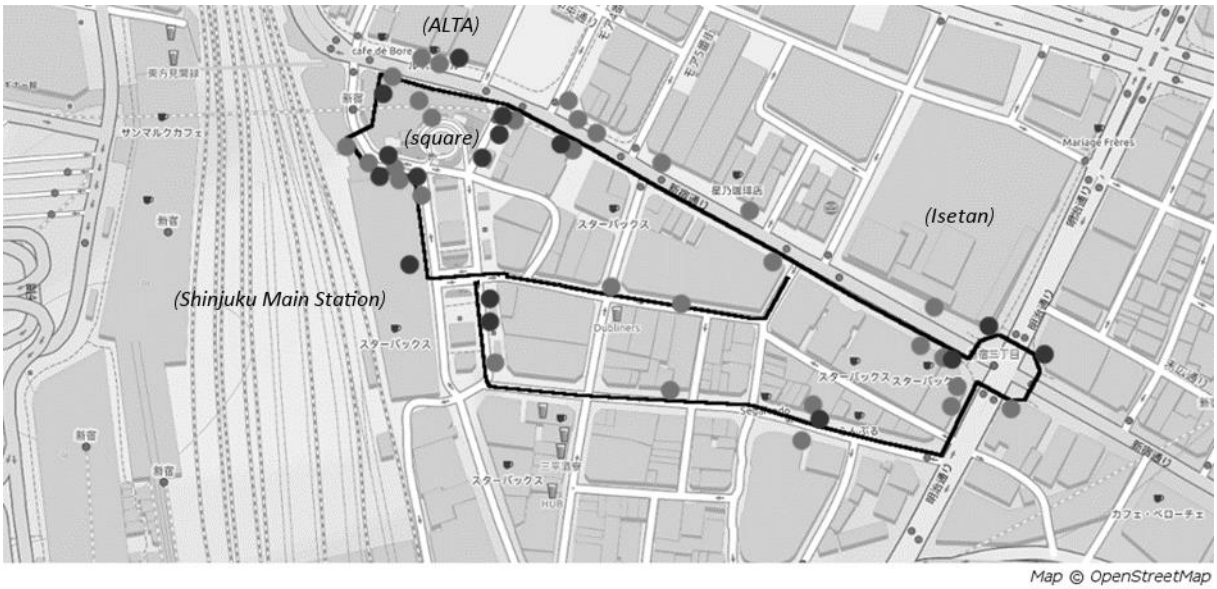
VOICE CALL USERS



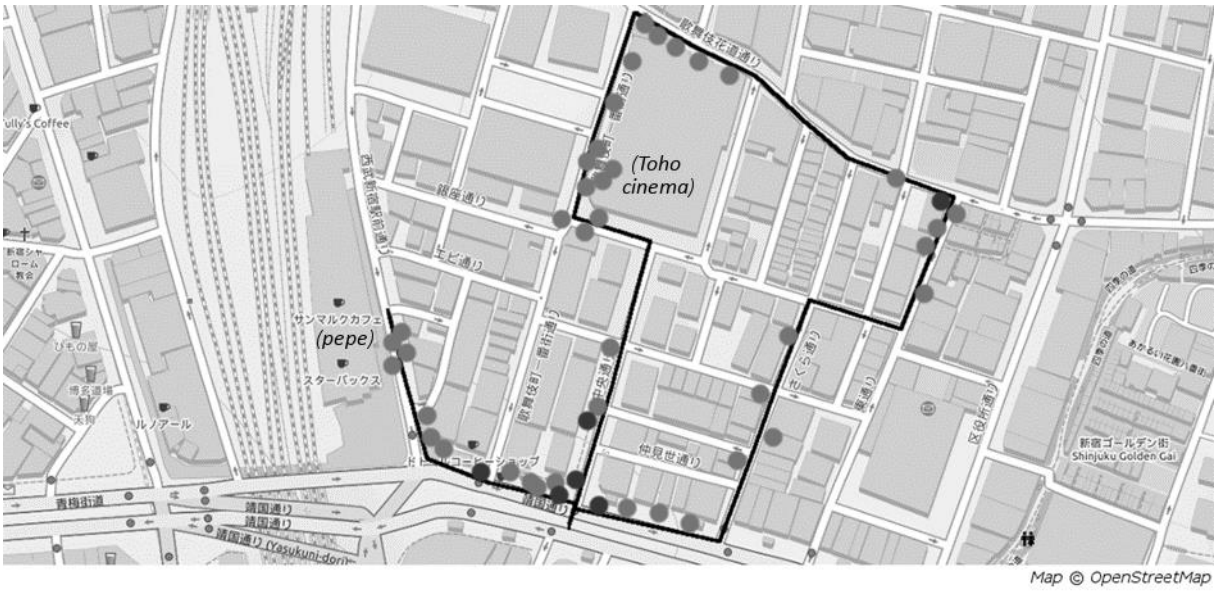
Map 1: Voice call users in Ookubo (total observed voice callers: 7). Light grey marks represent male voice callers (3), dark grey marks female (4).



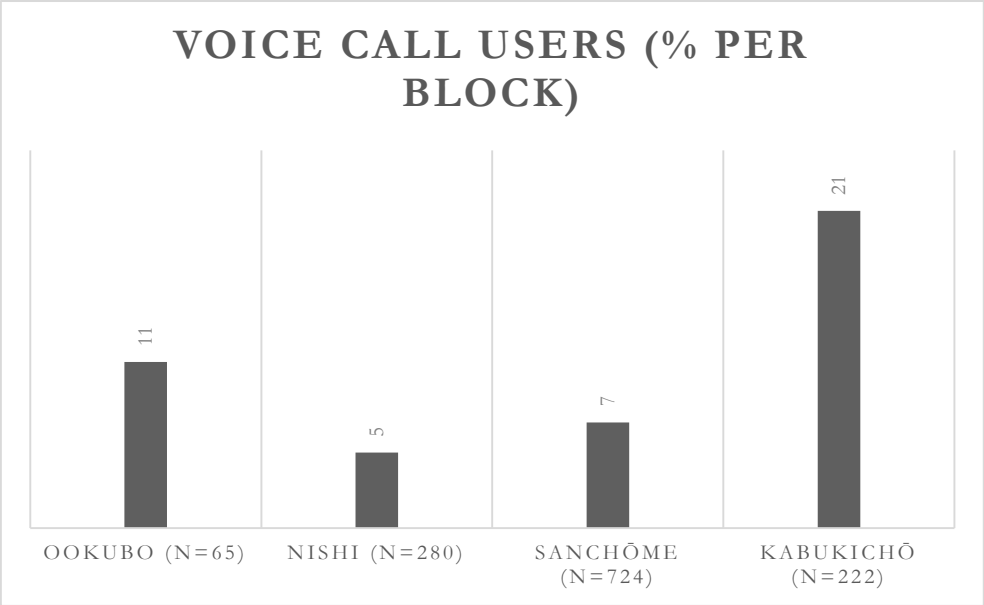
Map 2: Voice call users in Nishi-Shinjuku (total observed voice callers: 13). Light grey marks represent male voice callers (10), dark grey marks female (3).



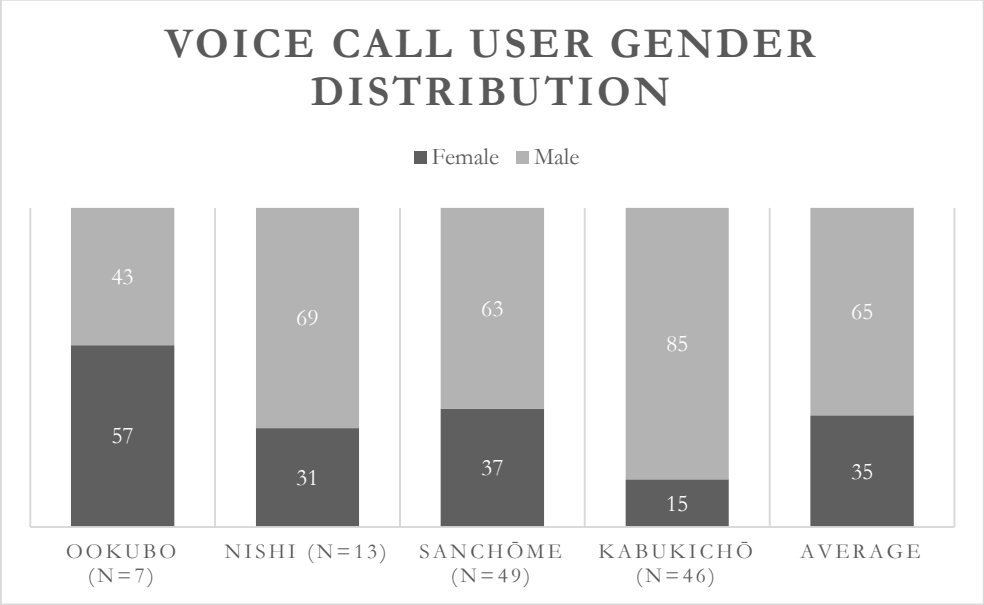
Map 3: Voice call users in Shinjuku Sanchōme (total observed voice callers: 49). Light grey marks represent male voice callers (33), dark grey marks female (16).



Map 4: Voice call users in Kabukichō (total observed voice callers: 46). Light grey marks represent male voice callers (40), dark grey marks female (6).



Graph 6: Voice call users in percentage of all mobile phone users per block.



Graph 7: Voice call users' gender distribution in percentage per block.

As for voice calls, Shinjuku shows large differences between the four different blocks. In Ookubo, as expected, since there are fewer people on the streets and generally less case studies of mobile phone-using pedestrians, only a few people making phone calls were recorded (7 in total). In Shinjuku Sanchōme, the number of people making phone calls is higher, and those who are making phone calls often stand around the station or one of its many exits. These voice call users are likely contacting people they are scheduled to meet, as this area is a popular area for rendezvous. Overall, the people who are making phone calls in

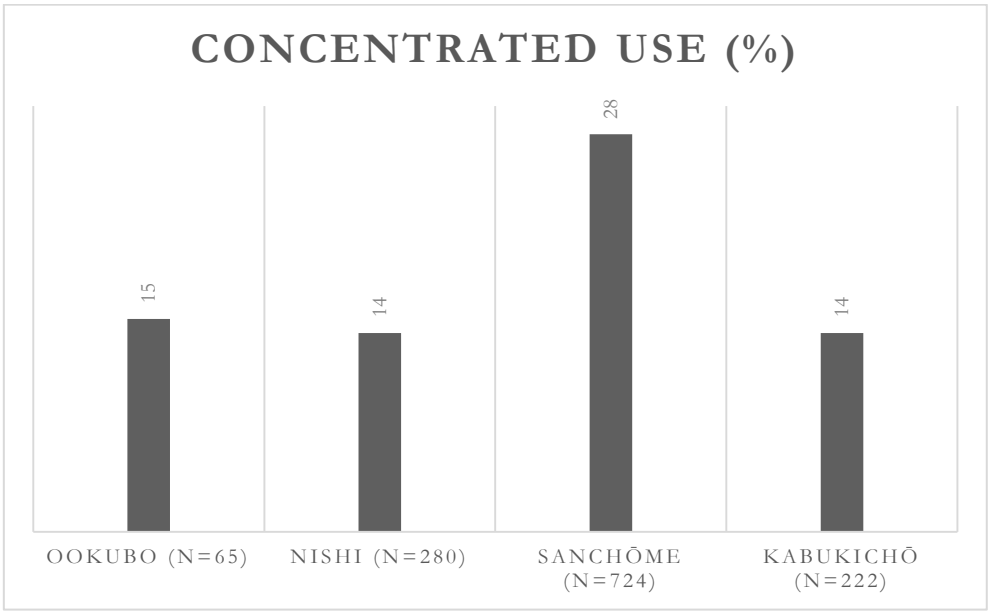
Sanchōme are rather equally divided over the map, except for the peaks in voice call users around the station exits. The two most interesting cases are Nishi-Shinjuku and Kabukichō. In Nishi-Shinjuku, one would perhaps suspect an increase in phone calls as it is an area where people are working office jobs, and the voice call function of the mobile phone is an important part of business life. However, there are remarkably few people in Nishi-Shinjuku who are using their phone for making voice calls. While there are many people using their phones while walking, the device is used mostly for its other, text-related functions. In general, in all of the four blocks, we see that the voice call users tend to cluster around specific places. Around the entrances of department stores and stations there are small clusters of mobile phone users, which also leads to a small increase in mobile phone voice call users. Another interesting aspect of mobile phone voice call users is that there is a general preference for shielded spaces. Most voice callers tend to stand on 'edges' or 'corners' of the streets. Especially places that have one or multiple walls seem to be preferred as places for phone calls.

In Kabukichō we see a surge in voice call activity. While in the other blocks the percentages of voice call users lie between 5 to 10 percent of all mobile phone users, over 20 percent of mobile phone users in Kabukichō use their device to make phone calls with. This is an interesting outlier, since making voice calls in public in Japan is generally considered to be an activity that is a bit 'too private' for public space and causes noisy inconvenience towards other people. Despite this common view, in Kabukichō there are many people making voice calls. Furthermore, they also seem to be quite equally distributed and do not seem to prefer certain places over others, although we do see a small increase in voice callers around the *Toho* cinema building and the department stores in the south of Kabukichō. There are two possible explanations for the high number of voice call users in Kabukichō. The first one is that the alleyways of Kabukichō, where most people make their phone calls (see map), are a relatively quiet environment, with less pedestrian activity than other streets in Shinjuku. Remote from the general public, all of Kabukichō's alleyways are thus considered 'safe' places to make voice calls. In other words, the feeling of privacy is higher in Kabukichō compared to the rest of the city. The other possible explanation could be that it is related to the types of employment in Kabukichō. Unlike Nishi-Shinjuku, many people working in Kabukichō work in bars, restaurants, and clubs. It could be that for these kind of jobs, people tend to make phone calls while standing outside of their work venue, as the inside of these

places tend to get noisy and crowded. However, this explanation is less likely to be true as the time of video recording in Kabukichō was always done at a time prior to the peak business hours of the bars.

Another interesting aspect of the voice call users in Kabukichō is that these voice call users are predominantly male. Almost nine out of ten people making phone calls in this neighborhood is male, which is much higher than the overall 6 to 4 male to female ratio of pedestrians and mobile phone users in Kabukichō. Although the distribution of gender among employees in Kabukichō and the nature of work if the area is outside of the scope of this research, a possible explanation could be that there are more men than women working in the area of Kabukichō around the time of recording, and that these voice calls were work-related.

Concentrated Mobile Phone Use



Graph 8: Percentage of concentrated mobile phone use per block.

When it comes to location, concentrated mobile phone use correlates with mobile phone activity – places that show an increase in mobile phone use, will also be most likely to show an increase in more concentrated use. Examples of places like these are station exits, large crossings, and squares or places where people can sit down. Furthermore, dominant physical behavior of the pedestrians also correlates with the manner of phone use: for example, if there is space for pedestrians to sit down, there will naturally be an increase in more concentrated mobile phone use around that spot. In all blocks except Shinjuku Sanchōme, the percentage of

concentrated mobile phone use lies around 15 percent. The users who are engaged in concentrated mobile phone use outside of Sanchōme are usually standing outside of the flow of people, close to walls, alleyways, or other secluded spaces where they do not interrupt other pedestrians. If they are walking, they usually walk at a significantly slower pace than the people around them. In Sanchōme we see that share of ‘concentrated use’ is almost twice as high as in the other blocks (around 30 percent). These focused users are mostly located around spaces that people use for waiting. In Shinjuku Sanchōme, there is a large station and there are several exits of this station around the route that was used for observations. Around these exits, there are people waiting at almost all times of the day. Unsurprisingly, while waiting and standing still, people are much more likely to use their mobile phones in a more intensive way than while walking. Besides the fact that there are many exits around Shinjuku station, there is also the park-like square in front of the station where people can sit down (see image 1), which also sees a significant increase in concentrated mobile phone use.

Image 1: Park-like Square in front of Shinjuku Station, where there are low walls for people to sit on. Mobile phone users are marked.

QUALITATIVE ANALYSIS

In the following part of this chapter I will present the qualitative ethnographic analysis of the video footage, for a more in-depth view of the spatial behavior of mobile phone users in public spaces. Unlike the previous section, which was limited to a rather strict set of data for the purpose of a statistical overview, for the qualitative analysis I also made use of the observations which were made during the pilots that I collected in places around Shinjuku, such as parts of Shibuya. The qualitative analysis is divided into six parts, each of which explores a theme that emerged while observing the behavior of mobile phone users throughout Shinjuku. Therefore, unlike the above quantitative analysis, which clearly showed the differences in mobile phone use depending on general location and type of environment, this chapter is more focused on the mobile phone user and their direct, small-scale environment such as interaction with traffic, street furniture, buildings and walls, etc. While it is important to keep the general type of environment of the user in mind, as it directly influences the type of mobile phone behavior, this section shows that there are general 'types' of mobile phone behavior towards the spatial environment that can be seen all throughout the observed blocks, regardless of the function of that particular area.

MOBILE PHONE HUBS

One of the more interesting effects of mobile phone use on the streets in Tokyo is the way some spaces have transformed into what I came to call mobile phone 'hubs': places or nodes where we see an increase in mobile phone use and a significant shift towards online behavior among people using their mobile phones. It seems, that when people enter these spaces, they will be more inclined to make active use of their device and to go online, compared to other areas in the city. Here, we should distinguish between absent-minded mobile phone use and concentrated or focused mobile phone use. While the first is a type of mobile activity that can be combined with other actions that require attention, such as walking or talking to other people, concentrated mobile phone use is of the type that needs more attention from the user and is mostly done while standing still or sitting, and usually done by making use of the phone with both hands. Instead of alternating between glancing up and down, which is characteristic for people who are absent-mindedly using their mobile phone, it is characterized by people looking at their screen constantly. In the mobile phone hubs people are more likely to use their phones in this more focused way.

The word ‘hub’ is particularly suitable in this context because of its double meaning. First of all, it refers to the common meaning it has in computer networking technology: a central device that combines multiple devices and links them to a shared network. The word ‘hub’ has a history that dates it back to approximately the 17th century, when it was first used to describe the “solid center of a wheel”[40], i.e. the axle where the spokes of the wheel connect. Later on, the word got the meaning of a place where multiple traffic routes meet. More recently, the word is also being used to describe a place or a city where one can find a particular peak or increase in certain quality (i.e. ‘this neighborhood is a *hub* for coffee lovers’). In this sense, a mobile phone hub is a combination of the above meanings. For the user, the mobile phone is a hub itself: central device that connects to the internet and telecommunication network. The different applications make it into a multi-purpose device, where the user can navigate between multiple actions and tasks. If we look at the flow of information as ‘data traffic’ then the mobile phone is a ‘place’ where multiple forms of information meet. As place in the city, the mobile phone hub is a spot where we can see a peak in mobile phone use, a place where multiple mobile phone users gather to connect to the flow of (online or telecommunication) information. Furthermore, if we look at the city as a combination of both online space and physical space, we see hubs as places where both of these spaces overlap, through the aid of a networking device. The mobile phone hub is thus a particular place in the city where multiple other layers of space meet, in the Lefebvrian sense.

There seem to be several characteristics that are required for a place to be transformed into a mobile phone hub. First of all, the hub must be a space where people are allowed or even made to stand still and thus be fully able to focus on their screens. The middle of a busy pedestrian road cannot become a mobile phone hub, since stopping and standing still without a reason related to the traffic situation around one goes against the code of pedestrian behavior. The second characteristic is that the place should be convenient or ‘flexible’ in nature: the mobile phone user is known to shift between online and offline space often, which in turn affects their pedestrian behavior. The mobile phone hub, like any other transportation hub, thus has to be connected to a network of other options of movement (i.e. pavements, buses, car roads, or connection points for public transportation). It should be easy for the mobile phone user to shift between standing and using their phone intensively on the one hand,

[40] See the entry for hub (n.) in the online Etymology dictionary *Etymonline*. https://www.etymonline.com/word/hub (Accessed October 31, 2019).

and on the other hand to be able to continue walking and using their phone more absent-mindedly. Therefore, the mobile phone hub should not be too remote from the pedestrian paths. It should be a connected space. Furthermore, the size of the hub is of lesser importance than the other required aspects. Based on the mobile phone activity in central Tokyo, I located mobile phone hubs that are small and only have space for few people (for example a nook or a small alley), as well as large areas that can provide space for dozens of people to stand still and connect (for example large areas in front of main stations). The function of the hub as a convenient place for mobile phone activity, rather than its size, is what matters. Lastly, the meaning of a place as being mobile phone hub seems to be constant, that is, time of the day does not seem to influence their essence of being a place for mobile phone activity (at least during daytime). However, its use depends on the flow of pedestrian activity and the places will see peaks when there are generally more pedestrians in the area.

The interesting aspect of mobile phone hubs is that once a space is seen as a mobile phone hub and is accepted as such by the general pedestrian 'mindset' or 'etiquette', this then becomes one of the main meanings of that particular place. This means that in some cases, all other functions this place used to have before it became a mobile phone hub will become secondary to the fact that it is now a spot to access online space and to connect to the information network. In other words, the mobile phone can in a way erase the function of a particular space and give it a new meaning. For example, there is a small nook in Kabukichō, close to a few fast food restaurants. On several occasions while passing by, I spotted mobile phone users using this nook specifically for the uses of a hub (see image 2 and 3). Sometimes only one user would stand still, sometimes two or three, but it had become a popular place to use for focused mobile phone use. Because the nook is close to several fast food restaurants, often people would use the spot after ordering (evident by them carrying bags of food), possibly showing a 'lingering' effect from them waiting in or outside the restaurant for their food to be ready, just as people outside of the train station likely still are under influence of a lingering effect of being inside the train: the queues for the restaurants next to this hub, where people wait to be served or are waiting for their food, always show a peak in mobile phone use as well.

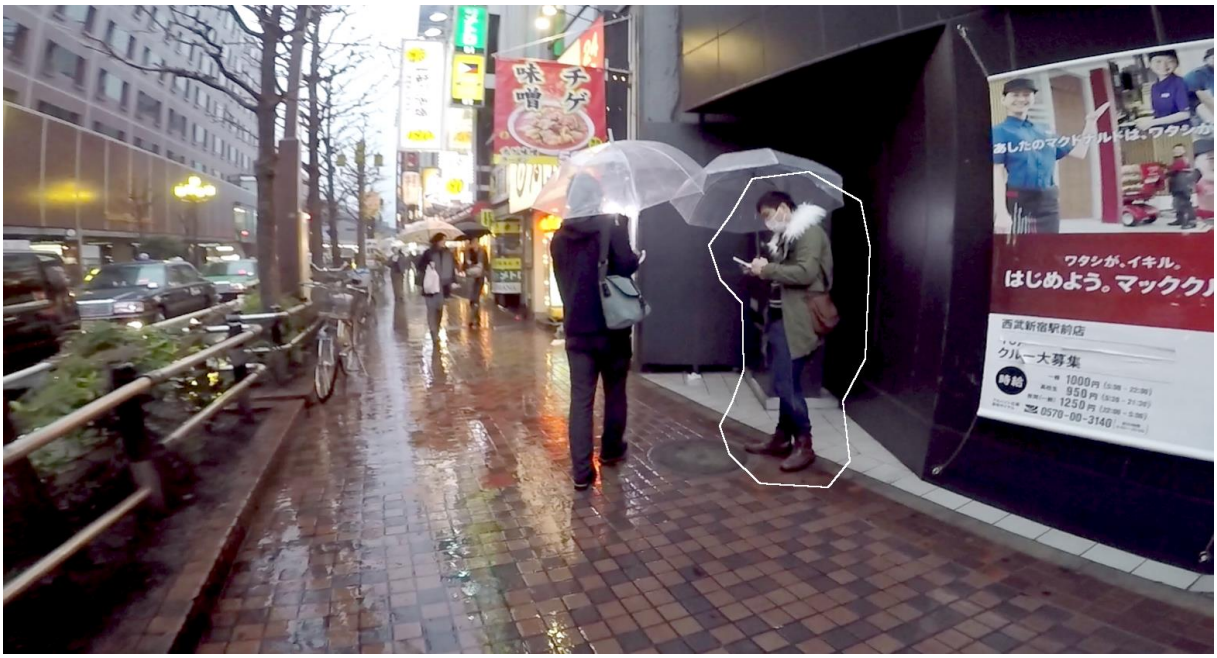


Image 2 and 3: Smartphone users using their device in a small mobile phone hub, a nook outside of the pedestrian path on the border between Kabukichō and Sanchōme.

People will move towards a space once it becomes a hub, not because of its intended function, but because it is a space where they can interact with their mobile phone. Although one can connect to the internet through their mobile phone basically anywhere where there is internet connection, people will be more inclined to go to these places if they wish to shift their attention more towards online space. Not only will people move towards these spaces to engage in online activity, the effect these spaces have on people is likely to 'linger' if they

physically move away from this space. Thus, the mobile phone hub will have a small ripple effect on the pedestrians around the hub, slightly increasing mobile phone activity around it.

There are two specific types of spaces that throughout all of the observed blocks had become mobile phone hubs, and then there are smaller, location-specific spaces that have become mobile phone hubs as well. The two types of spaces that generally tend to become a mobile phone hub are first of all public transportation stations and the areas around public transportation stops (see image 4), and secondly pedestrian crossings, or, to be more specific, the points where pedestrians wait to cross the road. The first one is perhaps obvious, as it is a place that is often meant as place for rendezvous, and on top of that is connected to a network of public transportation. While waiting for other people, mobile phones are commonly used as devices to contact these people, or simply as means to kill time with. Since the time people spend inside public transportation is in almost fifty percent of cases filled with some form of fiddling with one's mobile phone (see graph 1 from the previous section of this chapter), the aftereffect the mobile phone use-associated space inside the train has on the mobile phone user, lingers around the station. In this sense, we can see the train compartment as the ultimate mobile phone hub. And since one of the aspects of a mobile phone hub is that the triggering effect lingers around the space, the station is also under influence of this effect, becoming by extension a hub in itself.[41]

[41] To clarify: although it might be the case in many other countries, the chance that the presence of free Wi-Fi plays a role in the clustering of mobile phone-using pedestrians around train stations is less likely in this scenario for (among others) reasons of fear of net vulnerability (see also Chapter 2).

Image 4: Row of people using their smartphones in front of Shinjuku Main Station.

The second place that is most likely to become a mobile phone hub, the pedestrian crossing, has been much discussed lately as it is seen as one of the more dangerous places to be using one's mobile phone because of all of the other forms of traffic that are involved. Unlike the hubs that are connected to places of public transportation, the pedestrian crossing is interesting because it is only for shorter intervals a place where people stand still. When the light turns green, the space thus far used by pedestrians for waiting 'dissolves' and the pedestrians start walking again. In theory, this would make the pedestrian crossing hub less suitable for longer periods of concentrated mobile phone use. But during my observations, I noticed two interesting aspects of mobile phone use around the area of pedestrian crossings. First of all, the triggering effect of the mobile phone hub lingers when people start walking and move out of the hub. Therefore, people that are in the process of using their phones in a more focused way will often keep doing so, even while walking. They will, however, usually adapt their pace and be more careful while walking. After they get further away from the pedestrian crossing (outside of the area that can be seen as triggering mobile phone use), they will usually put their phone away and resume their usual walking tempo. Second of all, people will move towards pedestrian crossings solely for the purpose of going online, without having the intention of crossing the road. I noticed on several occasions in Shinjuku Sanchōme that people will walk towards a crossing, wait there and start interacting with their phones, and *instead of crossing the road*, they will either stay and not cross (usually they have positioned themselves in such a way not to hinder other pedestrians) or move somewhere else when the

mobile phone hub ‘dissolves’ with the light turning green (see image 5, 6), as their intention was never to actually cross the road, but rather to make use of the temporal ‘waiting space’ of the crossing to interact with their mobile phone. Also, the place in front of the pedestrian crossing, even when it is not in use because the area is temporarily a pedestrian-only zone, people will move to the place in front of the crossing to go online and move away again when they are done. This shows that for these mobile phone users the main function of the place in front of a traffic light is not for waiting, but for interacting with a mobile phone and most likely, using it for a textual, internet-related function (such as messaging, browsing, etc.).

Image 5: Small pedestrian crossing in Shinjuku Sanchōme. Traffic light is on green, signaling for people to cross. Man on the left keeps leaning against the pole without crossing. Man in the gray coat on the right has just taken out his mobile device (even though the light is green and he immediately crosses), due to the ‘triggering’ effect the pedestrian crossing has on mobile phone use.

Image 6: Two men standing and interacting with their mobile phones at Shinjuku Sanchōme's largest pedestrian crossing.

There are several other places in a city that can become mobile phone hubs, but they will usually be linked to (often smaller) places that are meant as spaces for waiting and are very location-specific (see i.e. the example in Kabukichō on image 2 and 3). Some examples of popular places to meet with friends are parks, department store exits, or places in front of restaurants that are used as queueing space (in Tokyo, especially in Shinjuku, it is common to wait in front of restaurants in lines during lunchtime as they tend to get really crowded). For example, in Shinjuku we see a mobile phone hub in front of the *Toho* Cinema in Kabukichō, a cinema that also has several restaurants and cafés attached to it, which is a popular place to go out with friends. Other, smaller mobile phone hubs I encountered were in front of restaurants in Sanchōme, a statue in Nishi-Shinjuku, and in front of the many cafes in Kabukichō.

Concentrated Use and Seclusion

While it is quite normal for people to use their phone during walking (from the conclusions of the first section of this chapter we know roughly one out of ten pedestrians is walking while using their mobile phone) a more concentrated use will usually result in the mobile phone users retracting themselves from the flow of pedestrians. This kind of mobile phone behavior, usually for focusing on textual functions that require internet access, or taking phone calls, will make the mobile phone user look for a space where they can stand still for a longer period of time, outside of the pedestrian flow. Usually, it is a sudden decision sparked by

some action of their mobile phone (an incoming phone call or text, for example). There are three reasons why mobile phone-using pedestrians will conform to this kind of reclusive behavior. First of all, by secluding themselves they make sure that they can focus on their mobile phone as they do not need to pay attention to other forms of traffic; second of all, this behavior creates a more private environment – even if only symbolically – and increases their sense of privacy; and third of all, this way they will not hinder the other pedestrians. The secluded space is usually very close to the flow of pedestrians, so that they can return to walking after they no longer need to concentrate on their device. Secluded spaces can be nooks, alleys, porches in front of buildings and stores, corners, and places close to fences and walls – essentially any space just outside the flow of pedestrians (see image 7).

Image 7: a man in Nishi-Shinjuku responding to a voice call. He has removed himself from the pedestrian path into a nook between a wall and a plant pot. He shelters his phone with his hands and his back is turned towards the street.

When it comes to making voice calls, another aspect of space is important. It is not just location that influences peoples' voice call behavior; it is also the elements directly around them. Earlier in this chapter we stated that for more intense mobile phone use, people tend to move away from the pedestrian zone into more secluded alleys and corners in order to be able to focus on their screens. When someone makes the decision to take or make a voice call, this also happens. However, the degree of seclusion is even higher than with people using their mobile phone for other purposes than making voice calls. The voice caller will also make use

of body language and gesture to add to this seclusion. For example, people will often turn their backs toward the street (see image 7), or press themselves against walls (image 8). The user will seek out elements of street furniture (i.e. benches, flower pots, poles), to position themselves against in order to aid creating a more private environment. Sometimes these street furniture elements are very symbolic. Image 9, for example, shows a woman who 'secludes' herself by standing behind traffic cones. The cones do not provide any real shelter; they merely suggest the pedestrian path is divided from the space behind the cones. If people who are secluded are secluding themselves in order to make phone calls, they will whisper or speak softly, and hold their hand over the phone, a gesture that has two meanings: first of all, it blocks out the noise from their environment and second of all, it prevents their environment from listening to what is deemed private. This confirms earlier studies (Baron and af Segerstad 2010; M. Matsuda 2005a) stating that making voice calls in public in Japan is regarded as slightly 'inappropriate' or a practice that is 'too private' to be done in public.

Image 8: A man taking a phone call in a nook in front of a building in Kabukichō.

Image 9: A woman in Ōkubo moving out of the way in order to focus on her smartphone.

SKILLED MOBILE PHONE WALKERS

While there is a lot of concern at the moment regarding the safety of pedestrians who use their mobile phone while walking, *aruki-sumaho* is something that can be seen everywhere in Tokyo. The quantitative data shows that in Shinjuku 9%, or roughly one out of ten pedestrians, will be using their mobile phone while walking. In general, pedestrians who use their mobile phones will alter their movements. They slow their pace, will only use one hand to control their device, and alternate often between looking at their screen and looking up at the traffic around them. Furthermore, they mostly will seek the 'edges' of the pedestrian paths, instead of walking in the center. When they need to concentrate more and feel that they should be standing still, they will either move to the far end of the pavement (alongside a building) or seek out a space entirely removed from pedestrian traffic (see also the above section on secluded mobile phone use). During all of the observations made in Tokyo during the time of this research, which amount to well over 1000 cases[42] of mobile phone use while walking, I have never once witnessed an accident caused by a mobile phone user. It seems that people have become quite apt at using their phones while walking. Of course, the act of walking while at the same time paying attention to a mobile phone has a negative effect on the person's awareness of their direct environment and traffic, at least to a certain extent. However, mobile phone users spotted walking were generally not in a situation where there

[42] This includes cases found in pilot video footage.

were other forms of traffic involved. Most of the mobile phone users that were walking did so in relatively safe situations and the user often adapted their pace and position to ensure further safety. It should also be noted, that in Shinjuku the pedestrian paths are physically divided from the roads for cars and bicycles by installed fences, flower pots or other greenery, traffic bollards, or walls (see image 10). This prevents pedestrians who do not pay attention to their feet from inadvertently stray away from the pedestrian area, into the automobile area. The only places where there are none of these, however, are places where traffic meets, such as pedestrian crossings. This makes 'smartphone walking' in Tokyo therefore primarily problematic around pedestrian crossings, and only to a lesser extent on the regular pedestrian paths.

Image 10: A fence (behind), and a low wall (front) dividing pedestrian path from automobile traffic.

The most risky form of mobile phone user behavior that I encountered during my observations in the four blocks was during the rush hour recordings in Nishi-Shinjuku, where by far the most mobile phone 'walkers' were spotted. Not only were sightings of pedestrians in the process of using their devices while walking the most numerous – among the cases that were observed there were several individual cases of people taking higher risks. For example, there were several encounters with mobile phone users who were crossing the pedestrian crossings while running and at the same time looking at the screen of their mobile phone (see image 11). On a few occasions, the crossing lights had already turned red, which makes this kind of behavior very dangerous, not only because they are violating traffic regulations but

also because these individuals were not even focused on paying attention to the traffic around them.

Image 11: A woman in Nishi-Shinjuku hastily crosses a pedestrian crossing where the light is about to turn red, while looking at her smartphone.

There are two reasons that could explain why there are relatively more pedestrians in Nishi-Shinjuku using their mobile phones while walking and using their mobile phones while walking in a less careful manner than in the other areas. First of all, the pedestrians that I observed were people on their way to work, and therefore, since they walk the same route every day, the pedestrians are probably very familiar with the environment. Therefore, these mobile phone pedestrians have to pay less attention to their physical surroundings. The mundanity of their surroundings in Nishi-Shinjuku becomes a reason for bored pedestrians to shift their attention to their mobile devices, and their familiarity with the environment also gives them more leeway to focus on their mobile phones instead of the roads. Furthermore, people in Nishi-Shinjuku often move in rush hour 'waves'. This means that the pedestrians often move in groups (see image 12) of people who likely all exited the same public transportation stop simultaneously, and all are walking together in the direction of the offices. People will start walking when other people walk and stop when the rest of the groups stop. For mobile phone walkers, this means that when they encounter a traffic intersection, they do not need to watch the traffic, but simply adapt their movements to the tempo of the rest of the group, without having to look up from their screen much.

Image 12: Rush hour 'wave' of pedestrians in Nishi-Shinjuku.

As for more dangerous mobile phone use among pedestrians, other than the smartphone walkers in Nishi-Shinjuku, several people in were observed who were using their mobile phones absent-mindedly while they were riding a bike (see image 13). While this was by far the most uncommon form of mobile phone behavior that I encountered, it is also by far the most dangerous, as these mobile phone users are part of faster moving traffic. It should be noted, however, that it seems that it is not only the mobile phone that is used while being part of pedestrian traffic. On several occasions I also encountered people reading books or newspapers while walking (see image 14), and even while cycling (see image 15). It seems that focusing on information while walking is thus not something exclusive to digital media, but is an act that people in Tokyo have a habit of doing in general.

Image 13: A girl in Ookubo using her smartphone while cycling.

Image 14: Two pedestrians reading while walking in Shinjuku. The woman (left) reads something on her smartphone and the man (right) is reading a magazine.

Image 15: A cyclist in Shinjuku Sanchōme waiting at a red light while reading a book.

The Navigator

As we have seen from the graphs in the first section of this chapter, about 5-10% of mobile phone users on the streets of Shinjuku are in the act of using some form of GPS navigation application, indicating that many of the pedestrians who use their mobile phone are doing so in order to orientate themselves. The mobile phone is often used to navigate physical space and coordinate face-to-face social interaction. This can be done individually, for example, by making use of the device's GPS navigation application, or in social context, by contacting someone through an instant messaging application to schedule meetings and share locations. When a mobile phone user is in the act of such kind of navigating activity, they will usually seclude themselves from the flow of pedestrians to an extent in order to stand still and focus on their phone for a short time, for example by moving towards the edge of the pedestrian area. The interesting part of navigational use of mobile is that, unlike mobile phone users who secluded themselves for other reasons, this is very often an act that has a special role in socio-spatial situations. During observations of people who presumably used their devices for navigational purposes, often groups of peers, couples, or families were spotted where one of the people present would take the role of what can be called the 'navigator' upon themselves, meaning they would take control of the current spatial situation, retrieving information about their direct environment, and leading the other people towards a particular destination. When navigating face-to-face interaction with people through online messaging, the navigator in this

case is not just connected to the people around them, but also with the people who are not (yet) physically present. After finding the necessary information which will lead the group to their destination, this person would usually walk in front of the others, acting as a temporary leader (see image 16 and 17).

Image 16: Three men interacting with a smartphone in front of Shin-Ookubo station. One of the men has his smartphone out and is showing the others the way.

Image 17: A group of young men discussing a route in Ookubo. One of them has taken on the role of the navigator and has become the central point of social interaction. Note also how they have removed themselves slightly from where most people walk by and stand towards the edge of the pavement.

Multiple Devices

Something that is not directly related to mobile phones and pedestrian traffic, but still interesting to the scope of this research is the fact that a significant number of the people that were observed were juggling multiple mobile phone devices or mobile phone electronical accessories at once (see image 18). In other words, they are the so-called 'dual product users'. It is, for example, not uncommon to see someone carrying 1) a mobile phone for private use; 2) a mobile phone for work-related purposes (usually an older model); and 3) an apparatus that is connected to the mobile phone in a direct way, such as for example a pocket Wi-Fi or a spare battery. Sometimes the person also carries a mobile device that also has functions similar to smartphones, such as an iPod Touch or a tablet of some kind. The main function of the supporting accessories that were seen out on the streets during my observations were spare batteries and pocket Wi-Fi's, to provide the mobile device(s) with a source of electricity and internet access (to keep them running). An interesting aspect of the use of multiple devices and electronical accessories is that the devices are usually from different 'generations' and sometimes differ in production date by ten years or longer. For example, cheaper and much older feature phones are usually being used for work-related purposes (they are often provided by one's job), and more expensive, new smartphones are being used for private purposes.

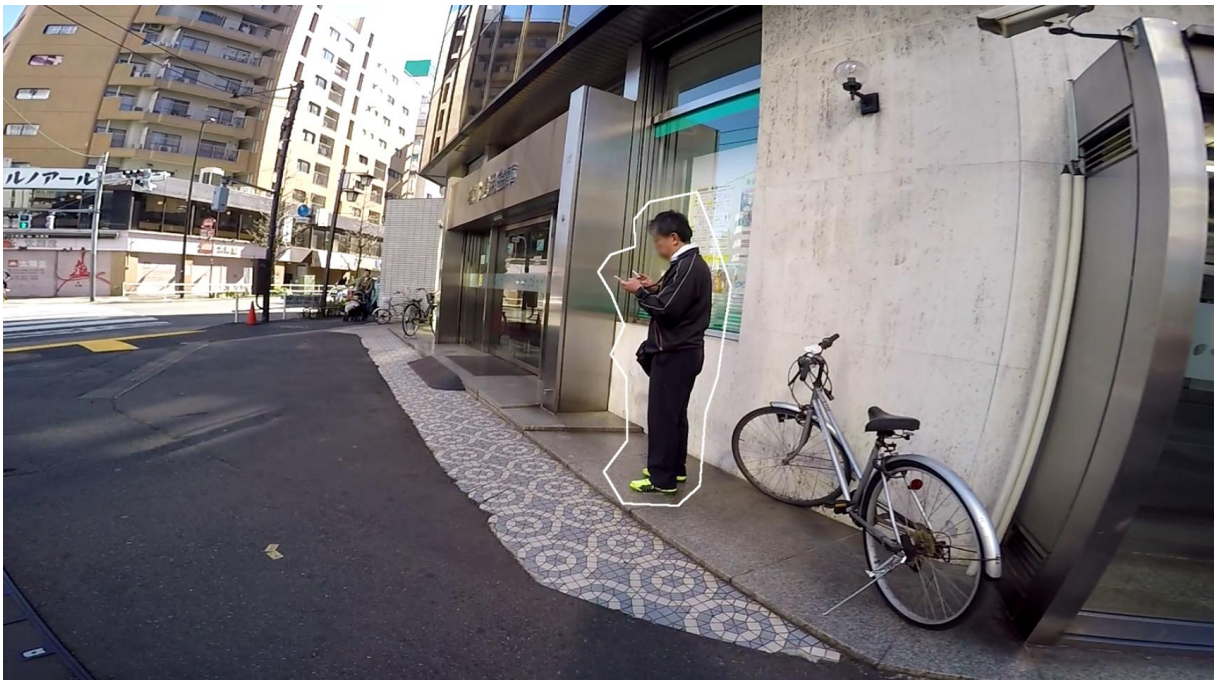


Image 18: A man juggles two mobile phones as he is looking up directions, in Ookubo.

Besides the effect mobile phone use has on the pedestrians in the city, the cityscape also shows many signs of the presence of mobile phones. One of the many ways mobile internet is visually manifesting itself in the city besides the actual personal handhelds, is the presence of Wi-Fi spots. These can be free, such as the Wi-Fi spots in major train stations and department stores, or paid for. Most of the Wi-Fi spots around are run by the three largest mobile phone providers, and provide free Wi-Fi only for those with a contract from the provider (see image 19). Until roughly 2016, public free Wi-Fi, as intended for tourists or for people who do not have a contract with one of the three main provider, was difficult to find in Tokyo (see chapter 2). Lately, however, there has been a significant increase in places providing free Wi-Fi for tourists, not least because of the preparations for the Tokyo 2020 Olympics[43]. The signs for free, open Wi-Fi spots in Tokyo are mostly in English and placed on the most touristic places (see image 20). Another way, in which public free Wi-Fi is visibly present, is around public telephone booths. After a decline in need for these public telephones, telecommunication providers have started to add a Wi-Fi function instead of removing the booths, making them into small Wi-Fi hubs scattered through the city, usually also meant to be used by foreign visitors (see image 21).

Image 19: Signs on a convenience store showing the different types of provider Wi-Fi that this shop offers. Only paying customers of that provider are able to use the Wi-Fi. These are by the big three mobile phone providers in Japan. From left to right: KDDI au; Softbank; NTT DoCoMo

[43] Japan is considering the possibility of constructing and implementing a nation-wide network of free Wi-Fi spots before the Tokyo Olympics. See "2020 nen ni muketa shakai zentai no ICTka action plan." *Ministry of Internal Affairs and Communication*, 27 July 2015, www.soumu.go.jp/main_content/000380687.pdf (Accessed October 31, 2019)

Image 20: A sign in Omotesando (Shibuya), a popular destination for tourists, showing how to connect to the local free Wi-Fi. The sign and the instructions for Wi-Fi are completely in English and target tourists visiting the area.

Image 21: A public telephone in Chiyoda-ku is equipped with a 'Free Wi-Fi' sign. Although this area is not particularly a touristic hotspot like in image 20, this Wi-Fi is provided by the Japan Travel Guide *and is meant for use by foreign visitors.*

Another way mobile internet is present in the cityscape is the various ways stores and enterprises are using social media to promote their businesses. Especially those that are catering towards the younger generation make a lot of use of online platforms to enhance their presence amongst consumers. Next to references to their websites or online shops, they will often collaborate with social media applications such as Facebook and LINE by creating events, actions, and giveaways to make customers more involved with their businesses through the internet. In terms of design of their advertisements and notifications, they will often incorporate elements that resemble the layout of the application that they are using to increase their online presence with. In image 22 and 23, we see how pictograms of smartphone applications and LINE characters are being used to promote local small cafes. In these particular cases, the cafes did not have any specific ongoing collaboration with the social media applications, but merely decided on using the designs of these smartphone applications to promote their own shops and to emphasize the online presence of their business. Moreover, in the examples shown below, the applications that their designs refer to are all applications of a social kind – they emphasize being social and connecting with friends. Because LINE is often used to talk to those from private circle, getting associated with the customer's 'private sphere' through making use of this application is a way to get closer to the customer. Also, these characters and logos immediately create a connotation of being online and stimulate the customer to look up the website of the business or their profile on a specific social network, it is a good way for local businesses to reach a wider audience and ensure a longer interaction with the customer. It shows how online space has become a vital aspect of business promotion – especially for small, local businesses that struggle to promote themselves and only have a very small physical realization of their business in Tokyo.

Image 22: A small cafe close to Ookubo station shows how to search for its name on Facebook. Cafes, stores and restaurants increasingly show their URL or social media page address on the plaques outside of their shop, so customers are able to find them online and look up information about the venue.

Image 23: A local cafe in Ochanomizu (Chiyoda-ku) uses skillful drawings of the bunny Cony, a LINE character (middle) to promote the menu.

Just as offline businesses use social media to promote their online presence, social media businesses also make use of 'offline' space, reflecting with a physical presence in the city what their role is in everyday online life. Image 24, for example, shows how popular social

media and messenger application LINE makes clever use of offline space to promote one of their main incomes – LINE stickers (a set of clip-arts that can be used in their instant messenger application). These sticker sets usually cost around 100 to 400 yen (0,80-3,30 Euro) and can be bought in an online store accessible through the LINE app but can be obtained for free under special circumstances. In this case, smartphone users can scan the special seal stuck to a vending machine in Ookubo and receive a special edition of LINE stickers. The stickers are a limited edition and can *only* be received through this particular vending machine. There are numerous of these posters scattered all over Tokyo, each with their own set of limited edition stickers, and people thus have to look for specific places if they want to receive limited edition clip-arts. It is a playful way of encouraging the LINE user to engage with the environment and the application in search of original gifts.

Image 24: 'Koko de shika moraenai!' *(Only available at this particular spot!) LINE advertisement stuck to a vending machine in Ōkubo. The person depicted on the left is the cartoon artist who created the stickers. There is also a seal for a small (100 yen) LINE gift voucher, which one can, for example, use to buy other stickers.*

Another part of mobile internet that is very visible on the streets of Tokyo is the presence of QR codes. Among the signs of mobile internet, QR codes are some of the oldest and also the most ubiquitous. When walking through the city, one will encounter QR codes everywhere.

They serve many different purposes and while most of them are to promote businesses and companies (see image 25), there are also many informative QR codes that help the mobile phone user navigate their way through the city. For example, there are QR codes to retrieve information about public transportation, and there are also QR codes on maps of the area in order to provide extra information about the area (see image 26). Remarkably, during all of my observations, I have never actually encountered a mobile phone user actually scanning a QR code. Perhaps nowadays the QR code has lost to other ways of searching for a website or application on one's mobile phone: often it is faster to just quickly ask a voice search application like Siri or quickly google a keyword to look up something online than to open one's camera application, focus on the QR code, and wait until the QR scanning application found the corresponding website. On the other hand, QR codes may still be scanned, but not as much in the areas around central Tokyo.

Image 25: A collage of some samples of the many QR codes for advertisement purposes that are scattered all over Tokyo.

Image 26: An informational QR code stuck to a local map in the area north of Kabukichō.

While QR codes are still omnipresent, we see a rise in new forms of images or stickers that can be scanned with the mobile phone. An interesting new development is smartphone touch seals, or NFC (Near Field Communication) tags, such as the special seal that LINE is using in image 24. For this, the user has to hold their smartphone close to the seal and their smartphone will immediately react by opening a website or application. The tags are unpowered and in order to send their information to a device, they need to 'borrow' a small amount of power from the smartphone through wireless charging technology. Originally a technology developed for mobile payment systems, the NFC tags have lately been incorporated in creative forms of marketing as well. This can of course be used like LINE does in their poster advertisements in image 24, but NFC tags are also being used to promote local businesses and local events. In image 27, we see an NFC tag (as well as a QR code next to it for those whose mobile phone is not able to pick up on IC tags) that, when scanned, immediately gives the user an update about the sales of nearby retail stores, and events going on in the direct environment of the user and shows reviews of local businesses by other people who have visited the area. The data is constantly updated to make sure the latest information gets circulated.

Image 27: NFC project sticker stuck to a street post in Shibuya in front of Shibuya Scramble. When this sticker is scanned (by simply bringing the phone close to the tag), the mobile phone will automatically retrieve information about local shops and restaurants in the area.

CONCLUSION

In the above, results of coding the video footage have been discussed from a quantitative and qualitative point of view. In general, we see that the mobile phone is omnipresent throughout all of the areas, and that mobile phone use while being outside one's private home is a vital part of city life. From the quantitative results, we clearly see a connection between the physical environment, the spatial behavior of the user, and mobile phone behavior. Environment and context (specific meaning and function of a place, as well as time of day) has a strong influence on the physical and spatial behavior of the user, which in turn influences their mobile phone behavior. Furthermore, we can conclude that the gender distribution among mobile phone users is more or less the same as the gender distribution of the overall area, indicating that there is no significant gender difference when it comes to mobile phone use in public spaces. The only strong difference in gender distribution is the gender of the mobile phone users who were making phone calls in Kabukichō, which could be explained due to these phone calls being made in a male-dominated environment. Additionally, the quantitative analysis shows that in general 64 percent of mobile phone users are using their phones while walking (so-called *aruki-sumaho*), making for an overall 9 percent of the total number of pedestrians. The number of people walking while using their mobile phone was shown to be the highest in Nishi-Shinjuku at the time of rush hour. Not only are there more people walking while using their mobile phone during that time, but

people also pay less attention to traffic and their environment in general, making the act overall more hazardous. The highest percentage of people being absolutely immersed in their screens is found in Shinjuku Sanchōme, where roughly one in three people in the street is making use of their phone in a more focused way. The environment, which has several areas where one can sit, as well as many areas that are meant for waiting, lends itself for a more concentrated type of mobile phone use.

While the quantitative analysis of the video material shows a clear connection between the type of area and the type of mobile phone use, the qualitative analysis gives us more insight into the exact behavior of the mobile phone user in Tokyo. On the one hand, we see a more secluded use of mobile phones, where people withdraw themselves from the presence of other pedestrians and seek privacy in order to focus on their phones. On the other hand, we see how the mobile phone user can become the center of attention in a social group, because of the device and its ability to retrieve information about the environment, or because of its ability to connect the user with people who are not (yet) physically present. In addition, there are places in a city that have become a place for concentrated, online interaction with the mobile phone: which I came to label 'mobile phone hubs'. The emergence of these places throughout the city (but especially around spaces that are meant for waiting, such as public transportation stops, stations, and pedestrian crossings), seem to have a triggering effect on mobile phone use. People seem to be more inclined to use their mobile phones when they are around these hubs. Especially with the case of the pedestrian crossing, the triggering and lingering effect of the hub induces people to keep using their mobile phone – also while walking. In general, this is not a dangerous practice per se, as the mobile phone user often switches attention rapidly between the screen and their environment and, the pedestrian traffic in Tokyo is generally separated from automobile traffic by some sort of fence. However, it can become dangerous if the user takes risks such as crossing the street when the light is red. On the other hand, it should be noted that during my observations, the mobile phone was not the only form of media that distracted people's attention from their environment: quite often I observed people reading books while walking (even while cycling). From the types of behavior observed for this research, it is clear that the mobile phone has a significant impact on the way the user interacts with and negotiates the space in their direct environment. In particular, it shows how pedestrian mobile phone users are making use of the diversity of spaces in the city and assign a new, 'online' meaning to it.

Finally, I would like to quickly reflect on my method of video ethnography using an action camera. The small camera's main merit, besides being unobtrusive and thus lowering the risk of reactivity, was the wide-angled setting of its lens. In crowded areas, especially such as Nishi-Shinjuku and Shinjuku Sanchōme, the camera successfully captured not only the pedestrians, but also the traffic, the buildings, and other physical set-up of the street environment that might influence the behavior of the smartphone users. This was especially helpful when capturing the spatial behavior of people who walked while operating their mobile phones, as it gave a wide overview of the built environment and many other forms of traffic in relation to the pedestrian.

6. DISCUSSION OF THE RESULTS

The Influence of the Mobile Phone on Spatial Use and the Cityscape

Physical space is increasingly seen from the perspective of making use of the mobile phone, thus online behavior is becoming increasingly more of influence on everyday 'offline' life. In the previous chapter we concluded that of the four areas that were observed featured their own specific dominant type of behavior of mobile phone use. Qualitative interpretation of the data then showed us that there are behavioral patterns that mobile phone users will typically follow when using their device in public. A closer look at the cases of people using their phone in a concentrated, focused way showed how mobile phone users *re-interpret* the space around them. For example by creating zones especially dedicated to focused mobile phone use or by retracting from pedestrian traffic into symbolical 'bubbles' or 'shields' that ensure – at least symbolically – uninterrupted mobile phone use. In this chapter, I connect the results of the previous chapter with the literature on mobile internet and the city as previously discussed in the overview of research. In the results of my fieldwork there are four prominent themes that I find most important and most characteristic of the state of mobile phone use among pedestrians in Tokyo. First of all, the current and actual state of mobile phone use while walking. This is an especially relevant theme seeing the fact that smartphone walking is currently a well-discussed topic, in Japan as well as globally. In my discussion on smartphone walking, I will also touch on the topic of the popularity of the gaming app Pokémon Go which started early to mid-2016 and still continues to be popular as of today, as it is very relevant to the theme. A second important theme is how the mobile phone plays a role in the negotiation of space for social purposes: the ways in which the mobile phone user negotiates and takes control of physical space in order to find a balance between private and public. In contrast to the reclusive forms of behavior that mobile phone users apply when using the mobile phone, I will also discuss the role of the phone when the device is used in group interaction. Thirdly, I will discuss in more detail what I already shortly touched upon in the previous chapter: the emergence of what I call the 'mobile phone hub': places in the city that seem to trigger online behavior and where people gather in order to use their phones intensively. Lastly, as a fourth theme, I explore the presence of references to the 'online space' of mobile phones –

smartphones in particular - within the cityscape, as well as the growing presence of the screen, and the implications this has for the city.

TECHNOPHOBIA AND 'SMARTPHONE WALKING'

As became clear from the literature review, the discourse on mobile phones is still very much influenced by a strong tendency to see the mobile phone in a negative light. One of the most common assumptions is the idea that the device is a highly addictive tool that negatively affects the user's ability to interact with the real world, because of what are perceived to be mind-numbing effects on the brain. The fear that technology has a sedative or stupefying effect on the brain stems from an age-old fear of technology, but recently saw an increase in attention as the mobile phone has become the topic of discussion in the light of traffic safety. Lowering their sense of awareness and involvement, the mobile phone is accused of distracting the pedestrian in potentially dangerous situations and thus overall posing a danger to city life. Recent studies back up these accusations, and point out how mobile phone use while walking significantly affects the user, lowering their reactivity (Masuda and Haga 2015; Stavrinos, Byington, and Schwebel 2011; Nasar and Troyer 2013; Hatfield and Murphy 2007), reducing their situation awareness (Lamberg and Muratori 2012; Nasar, Hecht, and Wener 2008; Bungum, Day, and Henry 2005), and disturbing their perception of depth and space (Sekiguchi and Shun 2016; Lamberg and Muratori 2012). Awareness for this issue emerged after the smartphone became the most widely used tool for mobile telecommunication (which is the end of the 2000s for Europe and the US, and after 2010 for Japan), and the textual functions of the mobile phone generally started to be used more than its voice call function. When the feature phone was still the most widely used type of mobile phone, walking while making use of a mobile phone was incidentally a much less discussed topic – even in Japan, where mobile phones were already used more for their textual function than for their voice-call function anyway, mobile phone use while walking did not really become a widespread point of discussion until after 2010. One of the reasons smartphone use while walking has become such a topic of interest is also because the problem is a very visible one: it is a common activity among pedestrians: after all, approximately one in ten pedestrians a so-called 'smartphone walker'.

As became clear from the discussed literature in the previous chapters, smartphone walking, or *aruki-sumaho,* has become quite a public concern in Japan. Not only have there been numerous campaigns to raise awareness for the phenomenon and calling for people to stop

using their phone while walking, there has also been an abundance of published researches on it. In Japan, on top of being generally seen as a dangerous activity, *aruki-sumaho* is also seen as morally wrong since the mobile phone user imposes danger on people around them. Moreover, by slowing down and blocking others, it is increasingly seen as a habit that is bothersome. Smartphone use while walking has been called a 'social issue' (Sasao, Zhang, and Sugamura 2016) and a 'dangerous side-effect of smartphone addiction' (Fuseya 2015). In Nishidate et al's (2016) study among high school students, rather than emphasizing that it is a dangerous practice, the most important keyword for smartphone walking (and cycling) was that it was seen as a '*meiwaku*': an inconvenience or a bother towards other people. There have even been motions to make *aruki-sumaho* a fineable traffic violation.[44] Nevertheless, most people have a habit of using their phone while walking, if not daily then at least from time to time. The number people using their phones while walking is especially high among younger people: Nishidate et al's study pointed out that 98 percent of the high school students who participated in their survey about *aruki-sumaho* admitted they had done so themselves (Nishidate, Tokuda, and Mizuno 2016). The students responded that even though they were acknowledged that using your mobile phone while walking was a dangerous practice, almost all of them indicated they would still use their phone while walking. A 2014 survey conducted by the Ministry of Internal Affairs and Communications among more than 15.000 Japanese high school students also showed that over 40 percent of the youths regularly used their smartphone for purposes of social media while walking.[45] Similarly, another study showed that although almost everyone answered that they think using their smartphone while walking is dangerous, half of them admitted to doing so, at least from time to time.[46] The same study did, however, show a decline in respondents who admitted to regularly use their phone while walking between 2013 and 2014.

The theme of *aruki-sumaho* unexpectedly became an even more discussed topic in the summer of 2016. The reason for this was the release and sudden popularity of the smartphone game Pokémon Go, an augmented reality smartphone gaming app where the objective is to

[44] "Arukisumaho wo shite iru toki, donna kinou wo tsukatte imasu ka." *IT Business Online*. May 28, 2014. http://bizmakoto.jp/makoto/articles/1405/28/news083.html (Accessed October 31, 2019)
[45] "Koukousei no sumaatofon/apuri tiyou to netto izon keikou ni kansuru chousa houkokusho." July 2014. http://www.soumu.go.jp/main_content/000302914.pdf (Accessed October 31, 2019)
[46] ""Aruki-sumaho", 'kiken' to wakatte ite mo 7 wari ijyou ga keiken ari." *Mynavi News*. December 3, 2014. Accessed May 16, 2017. http://news.mynavi.jp/news/2014/12/03/157/ and Kobayashi, Akira. "Meiwaku 'aruki sumaho' no jitai, donna kiken ga aru no ka?" *Nikkei Style*. 13 Nov. 2015. http://style.nikkei.com/article/DGXMZO93746520X01C15A1000000 (Accessed October 31, 2019)

walk around outside to catch and train in-game monsters (Pokémon) when the user brings their smartphone to specific places in real-world public locations, such as parks and streets. Pokémon Go uses the device's GPS and renders the virtual world for the game character on the phone's GPS data of the physical environment. The in-game monsters, treasures, and other points of interests are then projected on the smartphone screen by making use of the phone's camera function. By walking around with their smartphone while playing the game, the player's virtual avatar will be walking around within the game's virtual world as well, and in-game objects and events will be projected on the screen on top of the camera screen's representation of the real world, creating a mix between reality and the virtual. For several months after its release on July 22nd 2016, Pokémon Go was very popular, but the hype gradually slowed down over the months after the summer. It is worth noting that there is still a significant number of players playing the smartphone game as of now, but the initial hype only lasted a few months. Besides the fact that summer holidays ended and there was a drop in temperature, many assume the decline in interest was because of the game's repetitive game play and a lack of innovative updates to keep the players interested in playing. However, the many reactions the game received in Japan, from its players, the media, government officials, and researchers, show an interesting stance towards mobile phone applications and the use of the mobile phone in public spaces. Before the game launched in Japan (which was two weeks after its initial launch in the U.S.), the National Center of Incident Readiness and Strategy for Cybersecurity (NISC) issued a nine-point pamphlet through online platforms Twitter and LINE, with warnings against the risks of playing Pokémon Go. The pamphlet included a warning not to go to places that are dangerous, and a reminder not to use a smartphone while walking (see image 1).

Image 1: "Requests for all Pokémon Trainers" NISC warning pamphlet issued before the launch of Pokémon Go in Japan. In particular, points 7 and 9 are relevant to the topic of aruki-sumaho. *Point 7 emphasizes not to go to places that are dangerous and point 9 emphasizes never to use a smartphone while walking. Translation (gist) Point 7: "In other countries, people have already been run over by cars, have fallen into water, been bitten by snakes, and robbed by thieves all while playing Pokémon Go while walking. Please stay out of places that look dangerous." Point 9: "A lot of accidents are happening because people use their phones while walking. People have been injured both on station platforms due to trains and on the street by cars. Smartphone (use while) walking is extremely dangerous. When your phone buzzes because of the game, stop walking and look around you. Of course it goes without saying that playing on a bike is also not acceptable."*

About a month after the release of the game, Japanese newspapers started to report on accidents and incidents the game had caused all throughout Japan. The *Sankei Shinbun* reported 727 cases of traffic violations related to the game, of which 15 resulted in personal injury.[47] The Tokyo Metropolitan Police Department reported to have taken 553 minors into protective custody who played the game in dangerous places, in the middle of the night, or who were littering in public areas while playing the game.[48] Numerous similar incidents were also reported by the Japanese police. Among the incidents were a few quite serious traffic offenses: several people caused accidents due to playing the game while driving motorized vehicles. Most of the incidents, however, were much less dangerous and included people getting lightly injured by falling and things like bumping into bicycles. Some of the accidents that were reported had little to do with the game at all, let alone with mobile phones in general. *The Japan Times* reported, for example, how a 22-year-old woman was robbed when she was playing the game and was not paying attention to her belongings. They also reported how a 24-year-old Brazilian tourist was found lost wandering because he was looking for special Pokémon in the game.[49] While the media focused on the incidents and traffic accidents, the game was reported by its players on the other hand as very enjoyable and was even thought to have some health benefits. Players stated that one of the things that changed most after they started playing the game was starting to walk more (Nigg, Mateo, and An 2017).[50] The aspect of health is crucial, as many of the Pokémon Go players would typically fall into a category of people that usually do not walk around in the city much but live a sedentary lifestyle (A. M. Clark and Clark 2016).

The Japanese reaction towards the game is particularly interesting for two reasons. First of all, as previously discussed in chapter 2, smartphone game applications are a big part of what can be considered Japan's mobile phone culture. The game was so popular in Japan that even before its official release, people played illegally downloaded versions of it. When it was

[47] "Geemu ni muchuu, mumenkyo bare taiho mo koutsuu ihan tekihatsu 727 ken." *Sankei Shinbun*. August 3, 2016. http://www.sankei.com/affairs/news/160803/afr1608030024-n1.html (Accessed October 31, 2019)
[48] "Keishichou, Pokemon GO de kei 553 jin hodou shinya haikai nado zokushutsu." *Tokyo Shinbun*. August 31, 2016. http://www.tokyo-np.co.jp/article/national/list/201608/CK2016083102000109.html (Accessed October 31, 2019)
[49] "'Pokemon Go' craze leads to spate of accidents, traffic offenses across Japan." *The Japan Times.* July 25, 2016. https://www.japantimes.co.jp/news/2016/07/25/national/pokemon-go-craze-leads-spate-accidents-traffic-offenses-across-japan/ (Accessed October 31, 2019)
[50] See also "Pokemon GO no play ritsu ha yaku 4 wari, play shit mita kansou/okita koto 'batterii no shoukou ga hageshii' 'totemo tanoshii' ga jyoui." *MMD Lab*. July 26, 2016. https://mmdlabo.jp/investigation/detail_1589.html (Accessed October 31, 2019)

finally released in Japan, a study among 1949 smartphone users showed that more than one in three smartphone users had downloaded and played the game within four days after its release, which beats the U.S. number of players by a factor of six (5.6% of smartphone users after four days).[51] The reason as for why Pokémon Go enjoyed so much more popularity in Japan than in the U.S. could be explained first of all by the fact that the Pokémon franchise, which originated in Japan, is tailored to the Japanese gaming audience, and second of all, the fact that smartphone games are generally much more popular in Japan. But the game is particularly interesting to the scope of this research because of its combination of offline and virtual space, merging it in an augmented version of the real world, and (by making use of the phone's camera and GPS function) creating a 'real' projected version of the virtual world. As Japan is one of the countries with the longest history not just in mobile phone use, but also mobile gaming device use (Hjorth 2016), the reception of Pokémon Go in Japan also tells us something about Japan's attitude towards using the mobile phone to interact with the environment. It is important to note, however, that Pokémon Go is not the first augmented reality game that uses a combination of the phone's camera and GPS to emulate the user's environment. There had been several other games that worked with a similar combination of real-world and virtual world interaction. In 2011, for example, Sony created a game called 'Monster Radar' for their mobile game device PlayStation Vita, which had the same game mechanics (also making use of the device's camera to portray a virtual world on top of the screen's projection of the real world) and even a similar storyline. There have also been plenty of Japanese mobile phone games that make use of the mobile phone's GPS. In the early 2000's the Japanese game 'Mogi', which worked with a mobile phone's GPS and had similar characteristics to Pokémon Go, was also very popular for a brief period (Licoppe 2017; Licoppe and Inada 2012; 2006). Pokémon Go, in essence, is merely a re-invention of elements of older virtual reality games, and contrary to what one perhaps might expect of a high-tech smartphone software application, relies heavily on the feeling of nostalgia of the user to make the game appealing (Keogh 2017). Nevertheless, Pokémon Go was the first game to not only

[51] "Pokemon GO no play ritsu ha yaku 4 wari, play shit mita kansou/okita koto 'batterii no shoukou ga hageshii' 'totemo tanoshii' ga jyoui." *MMD Lab*. July 26, 2016. https://mmdlabo.jp/investigation/detail_1589.html (Accessed October 31, 2019). See also Evangelho, Jason. "'Pokémon GO' Is About To Surpass Twitter In Daily Active Users On Android." *Forbes*. Accessed July 10, 2016. https://www.forbes.com/sites/jasonevangelho/2016/07/10/pokemon-go-about-to-surpass-twitter-in-daily-active-users/#7544d8af5d3e (Accessed October 31, 2019). Keep in mind that the smartphone diffusion in Japan is lower than in the US, and the demographic that owns a smartphone in Japan is generally in their 20s and 30s.

reach this level of popularity, but also to be extremely *visible*: the Pokémon Go players who played the game in summer and autumn 2016 actively went to public spaces, resulting in large crowds of mobile phone users at places where there were rare Pokémon to be caught or were there were other kind of in-game spots of interest.

There are two themes that emerged in the phenomenon of Pokémon Go that are closely linked to the observations of mobile phone use while walking that were conducted for this research. The first overlapping theme is the 'virtualization' of the city through the use of a mobile phone screen. Through the augmented reality that is projected on top of the actual environment as presented on the screen, the player is stimulated to experience the city in a virtual sense. The observations made for this research already showed that mobile internet influences the experience of the spatial environment of the user, leading them to parts of their surroundings that they would normally not resort to and interpreting space in a way that deviates from what it was intended of built for. With Pokémon Go, this digital interpretation of space, or 'digitalization' of the physical environment, goes a step further. The popularity of the game resulted in crowds of people all over the world interacting with their environments in a completely different way than was common before. Adriana de Souza e Silva, who analyzed the game according to her notion of 'hybrid places', finds that Pokémon Go makes people actively experience the city in a virtual way, hereby adding to a growing feeling of the city as 'digital' (de Souza e Silva 2017). De Souza's finding echoes Christian Licoppe's (2016) finding of how the Japanese players of the popular augmented reality mobile game 'Mogi' a few years earlier reported, because of the game, to experience spatio-temporal reality in two ways: through their phone as well as directly. The manner in which Pokémon Go makes the player interact with their direct physical environment furthermore stimulates a ludic mindset and playful practices (Mäyrä 2017), which echo the observations of this study considering the resourceful ways that people resort to when interacting both with the city and their mobile phone screens, as well as some of the inventive commercial aspects of mobile phone use (think of, for example, the LINE sticker set promotions discussed in the previous chapter).

In a way, Pokémon Go could also be seen as a form of game-induced psychogeography, as it encourages the mobile phone user to walk through the city in a different way than they normally would. That there is a link between the aimlessness of psychogeography and mobile

internet use has been noted before elsewhere (Elias 2010; Luke 2005), but the use of in-game maps which are based on the real environment of the user mirrors the way some psychogeographers developed a practice to use historical city maps to 're-explore' the environment. Much like the purposes behind the (semi-) ludic practice of psychogeographers using historical maps, players of augmented reality games have reported that they would, for example, take detours for the purpose of the game, discover new places, and would stay out in the city for a longer period of time (Licoppe 2017). This way, GPS-based games that make use of the map of the area can actually strengthen the relation of the user with the city, by introducing the player to a new way of looking at the city (see also de Souza e Silva 2006, 270). The fact that so many players went out and discovered their city in a new way could actually lead to a significant number of people (adults as well as children) becoming more familiar with their environment, have the player (re)discover places, and be an impetus for players to bond socially with other players as well, face-to-face as well as online.[52] While general mobile phone use in the city might not directly transform the user's spatio-temporal reality to the extent the augmented reality-type of games do, mobile phone use does add another layer of information about the city to the user, which changes the user's current and/or long-term perspective depending on the type of information that is accessed. Thus, the 'hybridization' of urban space is relative: some of the information received through the screens makes the user change their perspective more than others. The act of using messaging applications to strengthen social ties while being in the city can be seen as space hybridization, as it gives urban space a new social 'function'. Looking up information about traffic around one is also hybridizing urban space, as it changes one's personal understanding of a part of the city through information retrieved online. However, we see a much more intense form of space hybridization with cases such as Pokémon Go, where the city is visually 'virtualized' through the smartphone camera's projection of reality.

The second theme that became eminent in the discussion of Pokémon Go and that overlaps with my findings is the general public reaction on the use of the smartphone while walking: both smartphone use while walking and playing Pokémon Go while walking are seen as potentially dangerous (Colley et al. 2017; Lee Humphreys 2017). In general it seems that there is a strong moral objection against mobile phone use while walking, as well as with

[52] Note: since the game does not show other players directly in-game, most of the social interaction about Pokémon Go takes place online through SNS such as Facebook Groups and discussion boards such as Reddit.

Pokémon Go players that walk around playing the game. It is feared that these users will end up 'forgetting' about the city and becoming completely absorbed in their screens, which will then, in turn, have negative impact on their surroundings. It seems that these notions have their roots in the fear of the device/application taking control over the smartphone user and transforming them from responsible humans into 'smartphone zombies'. When it comes to mobile phone use – or any other activity an individual is engaged in when walking – the degree of risk depends on the user's responsibility, knowledge of their own reactivity, and ability to adapt their physical behavior to their mobile behavior. In general, as the observations of this research have shown, mobile phone users who are using their device while walking adapt their speed to their mobile phone use, walking slower and seeking the safer 'edges' of pedestrian routes rather than the centers in order not to hinder other pedestrian traffic. For more intensive use of their device, the mobile phone user generally seeks a spot outside of the pedestrian flow to stand still and focus on their screen for a short while. The observations showed how smartphone users who use the device while walking will use it in a lightly to moderately focused manner, alternating their gaze between screen and environment. These findings echo Julie Hatfield and Susanne Murphy's (2007) earlier study in Sydney, where they also showed how important quickly alternating between their phones and their environment was evident among pedestrians. Even though the mobile phone users seemed "cognitively distracted" they also noted that "despite the observed behavioural differences of pedestrians who crossed while talking on a mobile phone from those who crossed without using a mobile phone, no significant difference in averted conflict was observed" (Hatfield and Murphy 2007, 204). Similarly, overall, the observed smartphone walkers for this research seemed to be very aware of how to move to be able to avoid conflict. As for Pokémon Go, one could even argue that, since it is a game during which the user is looking at a map and interface of the physical environment through their phone, the users are perhaps even more aware of points in space that could be potentially risky, than the mobile phone users who are using non-GPS related applications while walking. On top of that, for most of the game's more intensive gameplay the user should go to specific spots and keep in one place for a prolonged time.[53] As a result, all over the city points where something interesting would

[53] There were a few cases reported where Pokémon Go was used by people who were simultaneously driving, a serious traffic violation. Pokémon Go, however, is designed in such a way that most of the game's functions are not working if the mobile phone user moves faster than walking speed. In order to use

happen in the game would see a group of Pokémon Go 'campers' who would all simultaneously be engaged in their smartphones.

Despite this, a clear sense of public caution towards playing Pokémon Go rose to the surface, very much connected to the discourse of *aruki-sumaho*. When we look at the actual cases of people getting injured in situations where smartphone use was the cause of the accident, we see that from 2012 to 2016 there were 193 people who got injured recorded by the Tokyo Fire Department.[54] Out of these, five people were seriously injured. The majority of the incidents related to smartphone use in some way involved minor injuries. To compare, the year 2016 saw 58 people who had to attend medical help after getting into an accident due to careless mobile phone use, of a total of 131.925 people who needed to get medical help after getting into traffic accidents – a percentage close to zero. Nevertheless, the sense of risk that is present surrounding mobile phone use while walking remains so high, that we could talk about an exaggeration that might actually imply a so-called moral panic (S. Cohen 1972). Moral panics often relate to technologies, stemming from a deeper fear of the destructive aspect of technology – in previous times, the television, for example has been the central axis of a moral panic as well. Fear for technologies destroying humanity is, as we also discussed in chapter 3, a prominent theme in our current society (U. Beck 1992). As we have concluded earlier, technophobia has a long history and experiences episodes of revival whenever a new device or medium is introduced and becomes wide-spread (Briggs and Burke 2014). Already in the 19th century, people criticized technology for making life too 'mechanical' instead of what it should be: "heroic" or "devotional" – according to the then dominant ideas about what it meant to live a valuable life (Briggs and Burke 2014, 53). New technologies, especially those that are so complex one needs an expert to understand them, are always accompanied by a certain sense of risk that then spreads throughout society, accompanying the device. Often, this sense of risk specifically expresses the fear for technology infiltrating our body (Lupton 1995), resulting in the idea that technology is consuming *us* instead of the other way around (Silverstone and Hirsch 1992, 2). In the case of the mobile phone, this technophobia tends to focus on the fear of the device 'high-jacking' the nervous system. It portrays the smartphone

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the game from a moving vehicle, the user would first have to go out of their way to adapt the game's hardcoded settings.

[54] "Aruki sumaho nado ni kakawaru jiko ni chuui!" *Tokyo Fire Department*. http://www.tfd.metro.tokyo.jp/lfe/topics/201602/mobile.html. See also the overview of traffic accidents in the same year, to be found here: http://www.tfd.metro.tokyo.jp/lfe/topics/201810/nichijoujiko/data/00_1.pdf (Accessed October 31, 2019).

as numbing our senses and stupefying our brains, and evokes a narrative that poses mobile phone use as highly addictive and pathological.[55] In its darkest ways, smartphone technophobia expresses itself as the fear for devices infiltrating the body or the brain and 'taking over'.

In the anxieties that accompany the smartphone, the intimate connection of the user and the device is always emphasized. This is because the mobile phone, as a device that is constantly close to the body and has a particularly close relation to our senses of seeing, touching, and hearing, can be seen as some sort of 'extension' of ourselves (Fortunati 2003b; 2003a; Grosz 1994; Turkle 2005; Fortunati, Katz, and Riccini 2003). As it is constantly being interacted with, the body eventually experiences the device as a part of itself. This is not something that is only true for the mobile phone: neurological research revealed that tools that are used constantly and are worn close to or on the body, such as for example glasses and watches, remap the brain to 'incorporate' these into a person's body schema (Andy Clark 2007, 272; 2008; Hanna and Maise 2009). On top of that, the relation between a person and their mobile phone is also emotionally very intimate, as it is a tool that is being used to connect with others socially, which in turn might influence the way people hold the device, often trying to keep it closer to their body (Vincent, Haddon, and Hamill 2005, 71–72). In this sense, the mobile phone user can be seen as a 'cyborg', a human who has technology incorporated (Haraway 1991). Only unlike the image of the transcendent cyborg, the smartphone user – especially in the case of those using the device while walking – is portrayed as an unhealthy addict. Deborah Lupton previously argued that the bodies of those who are branded by society as internet or computer addicts tend to be portrayed in deformed ways (Lupton 1995). Although the smartphone user is not usually portrayed as deformed, there are most definitely public concerns on how smartphone use leads to health issues such as neck and eye problems, and back pain (M.-S. Kim 2015; Xie et al. 2016; Y.-G. Kim et al. 2013; Maniwa et al. 2013). In 2015, there even was a short online 'panic' that went viral on how excessive smartphone use would lead to finger deformations that went viral on various social media (see image 2).

[55] As is common with moral panics, these fears are most strongly projected on young adolescents, teens, and children (S. Cohen 1972).

Image 2: In March 2015 mobile phone provide DoCoMo's public support Twitter posted this image to raise awareness for the so-called 'smartphone pinky': a deformation of the finger that is allegedly the result of inflammation due to overuse of the smartphone. In order to prevent the 'smartphone pinky' in this tweet the provider advises users to take breaks and switch hands when using a phone. The image DoCoMo posted went viral (the initial tweet was retweeted almost 7000 times, and the image was quickly circulated through other social networking sites as well) but a hand surgeon later diagnosed this person's hand with a condition unrelated to smartphone use.[56]

The blurring of boundaries between the body and the machine is almost always seen as negative. As the boundaries between machine and mind are portrayed to be diminishing, the user is stripped of their agency in the process, and more of the user's behavior is attributed to the machine than to the human mind. This is visible in the recent discussion of *aruki-sumaho*, and especially in the case of Pokémon Go. The user, in this case often a person under the age of 30, is seen as completely driven by the demands of the game and the smartphone. So much, that the smartphone is depicted as having 'taken over' the nervous system of the user, and along with their nervous system, their brain and abilities to function in a socially acceptable way. The effect that the smartphone has on the body is regarded as negative – even if users

[56] Ossola, Alexandra. "You Probably Don't Have Smartphone Pinky." *Popular Science*. January 22, 2016. http://www.popsci.com/you-probably-dont-have-smartphone-pinky (Accessed October 31, 2019)

themselves report beneficial effects, such as was the case with Pokémon Go. This actually is reminiscent of my earlier analysis of the case of Kamibeppu Kiyoko and Sugiura Hitomi's (2005) study on the anti-socializing effect of the device on teens: there is a tendency to emphasize the negative impacts of the mobile phone and to diminish or even deny its positive outcomes in a moral panic-driven process that ignores the voice of the user. Therefore, in the process of arguing that the user has lost control of their body and/or mind because of the smartphone, the smartphone user is, ironically, only then actually stripped of their agency. In many of these cases, as also with the case of Pokémon Go, young mobile phone users function as the main objects of study.

THE TERRITORY MACHINE: RECLUSIVE AND SOCIAL BEHAVIOR

The mobile phone is essentially a social tool, both digitally as well as non-digitally. As a device to make phone calls with, to engage in textual communication with, and as the main tool to use for applications for social networking, the mobile phone mediates the user's online social behavior. However, as an object, it can also negotiate the space around the user in a social way. Therefore, the mobile phone should be regarded as a socio-spatial tool, as Tali Hatuka and Eran Toch (2016) argue: a tool to create a "socio-spatial condition that releases the individual from normative constraints associated with place [hereby] modif[ying] the role of public space" (2016, 2194). The most obvious way a mobile phone influences the way the user negotiates their direct environment is in a manner that is prominently visible in the observations from my research. The users, when in need of a more 'private' environment, will withdraw from the pedestrian flow and seek an out-of-the-way spot where they can use their mobile phones while enjoying a higher level of privacy than in the middle of the road. The spot will have to be distant enough in order not to hinder other forms of traffic and provide a sense of privacy, but at the same time has to be close enough to the road in order to be able to pick up where they left off once they finish their mobile phone use. According to the observations made for this research, the kind of spots that seem to be preferred for this type of reclusive behavior tends to be those that are close to at least one wall, preferably a corner, alcove, or a niche. While actual, large objects were preferred to stand next to or to be used to shield off their personal space, it could also be an object that more symbolically serves that function, such as a flowerpot or a low wall. Sometimes, the user would stand with their back to the road, symbolically 'shielding' off their space from other people.

This kind of reclusive behavior is one of the ways people separate and guard their online actions from the social interaction in their direct physical environment. It is the most clearly applied way in which the mobile phone being used as what Fujimoto Kenichi called a 'territory machine' (K. Fujimoto 2006; 2005; 2016): a tool to negotiate space and establish boundaries between private and public. The idea that the mobile phone can create a 'cocoon' of private space in urban public places has been pointed out previously by other researchers as well (Hampton and Gupta 2008; Ito, Okabe, and Anderson 2008), but Fujimoto's theory is more detailed and emphasizes the mobile phone user's interaction with space in the process of securing privacy. Fujimoto bases his idea of the territory machine on Erving Goffman's (1963) idea of involvement shields: tools or means individuals use when they are communicating that alter their position in a social way and allow the individual to distance themselves from their direct environment. These means can, for example be in the form of: secluded spaces, items that are worn on the body, consumable items, and making use of particular body language (Goffman, 2008 [1963]). According to Fujimoto, the mobile phone is a combination of all of these types of means and therefore becomes the 'ultimate' involvement shield. While Fujimoto primarily adapted his theory to the use of *keitai* among young adolescent women, the observations in our case show that it is more widely applicable as a concept. As a territory machine, the mobile phone negotiates privacy, social interaction, and position within a social context. The mobile phone becomes an important tool to manipulate the space and the location of the user, and is hence, as Fujimoto stresses, essentially bound by location, environment, and context (K. Fujimoto 2016, 105) – indeed, a socio-spatial tool. He states that the user is able to not only switch between 'online and offline' but is also able to use both or neither at the same time, hereby going against the argument that the user can only focus on one of these at the same time, an argument that undermines the user's agency and supports the idea that the mobile phone 'controls' the user.

Fujimoto's idea of the territory machine proves to be particularly instructive for the analysis of mobile phone users' behavior within this research, for three reasons: first and foremost, it does not deny the agency of the user but rather shows the inventiveness of the individual. As became clear from the observations made for this research, users actively search for locations when they use their mobile phones on the street. Using their mobile phone while walking, they would carefully position themselves, often outside of the pedestrian flow, on the edges of the roads rather than in the center. When they choose to make intensive use of their phones,

they would withdraw from the (middle of) the road and position themselves in a deliberately chosen spot, mediating the degree of privacy with the help of their body language. The use of mobile phones when in public is most often a carefully negotiated action that shows consideration for other people in the direct environment of the user and an understanding of the social meaning of this space. On top of that, defining the mobile phone as a territory machine shows how the user is in control not just of their environment and social actions, but also over the 'machine', in this case the mobile phone. Second of all, the notion of the territory machine shows how the mobile phone is always a social tool, used for mediating connections selectively.[57] As Fujimoto describes it, the territory machine mainly differs from Goffman's idea of involvement shields because of the ability of the machine to connect with the internet and interact with others electronically as well as physically (K. Fujimoto 2016, 109). Unlike the involvement shield, which is used only in the context of face-to-face communication, the mobile phone is more complex and also mediates electronic social actions, adding a digital layer to it. This can result in a situation where the user temporarily 'disconnects' from social interaction directly around them in order to focus on online social interaction. A good example of this is Kunikazu Amagasa's (2016) study on mobile phone use among mothers during social interactions at the day-care. She argues that while their mobile phone behavior might look anti-social sometimes, the person can actually at that same moment be involved in social interaction online. The same is true for the mobile phone users who withdraw from the roads in Shinjuku: while their reclusive behavior might look as if the person rejects or ignores human interaction, it is in fact a very social act. Not only are they likely to be involved with communication with other people through their mobile phones, their act of withdrawing can be seen as a social one as well: it is a sign for others not to disturb them and at the same time a way of not disturbing others – and is as such a form of communication. Thirdly, the theory of the 'territory machine' shows the importance of location in the process of mediating social connectivity. The 'territory' here is the essential aspect of Fujimoto's notion of the territory machine: the idea that the mobile phone is a tool that fences off the space around the user. The user, by means of the mobile phone, manipulates and defines their direct physical environment. It is a tool that lets the user take control of their physical environment and re-defines the meaning of small spaces in a city.

[57] Also called 'selective sociality'. See also *Mobile Communication and Selective Sociality*, by Matsuda Misa (2005b).

The way the mobile phone is being used as a territory machine also again emphasizes the intimacy of the device. The device is being used to 'shield' the body and protect it from undesired social interaction, while at the same time it is often also used to facilitate direct communication through electronic ways. This somewhat paradoxical phenomenon is related to what Hjorth et al. (2012) call the 'ambient intimacy' of the mobile phone: an intimacy that is "the ontological coincidence of distance and closeness, presence and telepresence, actual and virtual" (Hjorth, Wilken, and Gu 2012, 56). It shows how the mobile phone plays a main role in how people negotiate between closeness and distance in social terms, and the 'shielding' that happens when we observe people seeking privacy shows how users control the space around them in order to help with this negotiation. While many other mundane objects can be used for a similar socio-spatial effect (think of for example bags, pieces of clothing, books or newspapers) and all can play a role in the negotiation of social space around the individual, the mobile phone possesses the unique aspect that it also facilitates direct voice or electronic communication with *a selection of people*. It is hence a 'selective' shield in the sense that it allows the user to choose a very selective form of communication.

The use of the mobile phone as a territory machine, as Fujimoto argued, is not only of social importance in the use of the device for online interaction. As a matter of fact, one very important aspect of the mobile phone as territory machine is the role of the mobile phone within a face-to-face social setting. While Fujimoto elaborates on this aspect only in relation to young adolescent women, the observations that were made for this research show how the territory machine also negotiates social status within a group, regardless of age or gender. As became clear from the observations in Tokyo, one of the mobile phone's main functions is that of an information retrieving tool used within a group of people. Since one of the important spatial functions of the mobile phone is that of a map, when the mobile phone is being used as a tool for information retrieval about the environment for a social purpose, the mobile phone user becomes the center of all social interaction in the group. When this happens, the mobile phone user becomes a so-called 'navigator' of the group, and will, until there is no longer a need for further information retrieval, also take on the role of a kind of group leader. The kind of information the navigator retrieves can be of diverse sorts: GPS, landmark information, information from other peers (i.e. through SNS or instant messaging), public transportation time schedules, etc. However, it is central to this role that the navigator leads the group and elevates (at least temporarily) their social position due to the mobile

phone. When a group relies on the navigator for information, the ties with the rest of the group members are strengthened and their voice has more weight in group decisions as they control information the others do not have access to at that time. This goes very much against the idea that the mobile phone is a tool that disconnects the user from most forms of social interaction in their direct environment (see i.e. Pearson and Hussain 2015), and having the user 'withdraw' from group interactions (L. Humphreys 2005), or the notion that it is only able to strengthen social ties over the use of online connection at the expense of the interaction with people in the user's direct environment (Ling 2008). The mobile phone is seen as a tool that only facilitates online social interaction, and this online interaction is seen as something less meaningful than face-to-face interaction (Jones 1998; Bird 2003). "We'd rather text than talk," laments cyber-psychologist Turkle (2011, xxi), arguing that digital communication cannot fulfill a human's natural need for more emotional contact. Steve Jones (1998) points out that this is the persistent idea that

> [digitally mediated communication] will, to borrow from Marshall McLuhan, 'retribalize' us by providing for us a technologized, but nevertheless ideal, form of communication we have found lacking and belief that our interaction will become mechanized and hollow without the "richness" of face-to-face conversation.
>
> (Jones 1998, 25)

The problem with this line of thought is how it poses communication as something that first of all is essentially emotional (hereby generalizing all forms of communication), and second of all, presumes, without providing any evidence, that this essential emotional aspect of communication is not transmittable through any form of communication that is not direct and face-to-face.

The idea that the mobile phone can actually *contribute* to social interaction with others who are physically present is a very recent development. Some studies have found that mobile devices *do not* always have to stimulate individualistic behavior in groups (Hampton, Goulet, and Albanesius 2015) and actually can have a positive impact on social situations. Smartphone gaming and SNS for example, have proven to lead people to form new social ties or strengthen existing ones, which in turn have shown to be of beneficial influence to face-to-face interaction. The mobile phone was also found to have the potential to become an important tool while being used when the user is already interacting with people in their

physical vicinity. Ley et al. (2014), for example, concluded from their observations of smartphone use in household settings that "the smartphone as a new ultra-mobile device affords the possibility of following individual interests [of other people] without breaking up the physical proximity [between household members]" (2014, 826), hereby prolonging the time people physically spend with each other. However, the finding that the smartphone user can become the center of social interaction in a face-to-face social setting has not been previously discussed. In the observations made in public spaces in Shinjuku, the mobile phone was neither used as a distraction, as discussed by Ley et al., nor as a medium for 'electronic' social interaction: in this case, the mobile phone has the role of an information-retrieval source that directly influences the user's social position towards peers who are also physically present. While it is true that the mobile phone can be used to 'shield off' social interaction in groups as well, in the sense of the aforementioned territory machines, the mobile phone can also do the opposite: augmenting the social interaction of the user with others in their close physical proximity, stimulating and/or enhancing the conversation between people. When a group needs to find directions or locate themselves, the navigator not only strengthens ties with the other group members, but also actively engages with the city, by reading the environment and retrieving directions through mobile internet. Hence, the mobile phone becomes a facilitator in strengthening social ties as well as establishing a better understanding of the direct environment. This process is the exact opposite of the individualistic, disconnected image of the smartphone user in many of the stereotypical discussions on the device.

Besides focusing on the physical environment, the role of navigator can also be interpreted more symbolically as navigating 'online space', in cases where the mobile phone user retrieves information online that is unrelated to the direct physical environment. Although this form of use does not deepen the group's understanding of the direct physical space, its social function stays the same as the mobile phone and its user temporarily become the center of attention of the group. One of the cases that that was observed in Shinjuku Sanchōme is particularly illustrative for this (see image 3): in a group of male students, one of the students was seen playing a game on his smartphone. The one playing the game became the center of the group and appeared to show the others details of how to play the game. In this sense, the student became a navigator for digital space. One of the others started interacting with the screen as well at a certain point, showing an increased interest in the navigator's actions. The

enhanced social interaction (both online as offline) through mobile phone gaming has also been the topic of interest in the case of smartphone apps like Pokémon Go, as discussed previously this chapter, and has been mentioned by researchers as well (Tajima 2006; Hjorth 2016; de Souza e Silva 2006; 2017). But gaming is not the only aspect of smartphone use in social situations where the mobile phone enhances social activity. During observations, I encountered many of such examples in Shinjuku's public spaces, as well as in public transportation in and around Shinjuku, where one person in a group would show someone who was also physically present something on their mobile phone screen which would make the mobile phone user the center of conversation. The point of interest could be a smartphone game (as tended to be the case with young men) but, besides that, could be anything else such as various applications, plain information retrieved online, or images/photographs. In these situations, the use of a smartphone was more common than a *keitai*, since there are simply more ways to interact with a smartphone than with a *keitai*, and a smartphone is able to show visual information on a conveniently large screen. This process, where interaction with the mobile phone influences a group of people who are physically present, is an important aspect of smartphone behavior that is easily overlooked as the device is often branded as a tool for individual use. Even studies that do advocate the idea that the mobile phone strengthens social ties often forget the impact that interaction with the device can have within a group of people who are already physically present.

Image 3: A group of male students in Shinjuku Sanchōme chatting and walking while showing interest in one of their peer's smartphone game and how he plays it.

The mobile phone navigator is related to the use of the mobile phone as a territory machine in the sense that both processes are connected to the relation the user has with the people in their direct (physical) environment. In the case of the territory machine, the mobile phone becomes a tool to (temporarily) disconnect from other people in the environment and to create a feeling of privacy by controlling the space around the user. While it is not an antisocial act, as the user needs to have an understanding of the social space around them and feels the need to be considerate towards other pedestrians; it is in essence a very selective way of limiting social interactions, as it creates a barrier to shield the user from direct interactions, but at the same time indicates that the user is most likely part of socialization in a digital way. In the case of the mobile phone user being the navigator, the interpretation of social space is very different. Already in a social setting, the user here utilizes their device as a medium to retrieve information and uses this information to elevate their social position within the group's setting, temporarily becoming the center of attention of their peers and augmenting the group's social interaction. When the mobile phone is used to retrieve information on the direct space around them, it not only (temporarily) strengthens social interactions, but also the connection with the city. In both cases, the mobile phone has a profound link to urban space and allows the user to take more control of their environment. In this sense, the mobile phone is an empowering tool that plays a central role in the user's relation with city space.

FRAGMENTED AND CLUSTERED: HYBRID SPACE REVISITED

In the above I discussed how the mobile phone, as a 'territory machine', becomes a tool to manipulate space and social contact with people around the user. When the mobile phone is used in this way, the user will position themselves and their phone in such a way that it creates a 'bubble' of privacy. This is not the only way mobile phone use has an influence on the usage of space in the city. One of the most prominent themes that emerged from my qualitative analysis is how mobile phone users assign specific places in a city to become hotspots for mobile phone use. This re-interpretation of places in the city has led to the creation of what I came to call mobile phone hubs: places where a relatively large number of people gather and use their mobile phones in an intensive manner, and where the use of a mobile phone seems to be triggered. As shown in the previous chapter, several places in Shinjuku have become hubs for mobile phone use, among which the most common ones are station exits, bus stops, parks, and pedestrian crossings. While these are the most common ones, other places, depending on their characteristics, can become mobile phone hubs as well. Location, connection, surroundings, pedestrian activity, and availability all contribute to what creates a successful mobile phone hub, resulting in multiple mobile phone hubs scattered around the city. For example, besides the mobile phone hubs next to the train station and other public transportation exits, Shinjuku Sanchōme also has a few smaller mobile phone hubs located next to department stores. The largest one encountered in the observed areas of this research was the mobile phone hub that was located just outside the East exit of Shinjuku's main station, where there were always dozens of pedestrians in a row, actively using their mobile phones. Since both mobile phone 'shielding' and the concept of the mobile phone hub deal with the aspect of space in relation to the mobile phone, it is important to differentiate between the types of spatial use in both concepts, as they are inherently different. On one hand, both concepts show how mobile phone use has led to a re-interpretation of urban spaces, on a level of the pedestrian. However, while the mobile phone as a device is a territory machine, and it is being used to control social space around the user (in the sense that it allows the user to take control of and negotiate their direct physical space in order to establish a sense of privacy), the mobile phone hub is a *physical location* that has received a new meaning because of an increase in intensive mobile phone use compared to the space around it. Additionally, the concept of the mobile phone as a territory device is often related (although certainly not limited) to using the mobile phone for its voice call function, while the

mobile phone hub, on the other hand, sees a majority of the users interacting with their phones in other ways which (usually) do not involve using one's voice (i.e. web browsing, sending messages, playing games, or interacting with social media). It is also a matter of scale: the territory machine concept shows how the mobile phone user as an individual interacts in new ways with the urban space around them; while the mobile phone hub is a fixed, common place that invites and facilitates multiple uses of many individuals.

A mobile phone hub, to put it simply, is a spot where there are usually several persons, either standing or sitting, who make use of their mobile phones, and is a place where people feel naturally more inclined to use their mobile phones. From the observations in Shinjuku, we concluded that a place has to have at least the following two characteristics before it can be considered a mobile phone hub: first of all, it should be a place where it is considered normal or where it is accepted that people stand still for a longer period of time. It should facilitate this by providing some kind of wall, fence, or other kind of street furniture that can be seen as 'edging off' the place and at the same time provide a place for the mobile phone user to lean on, sit on, or to stand next to. Second of all, the place should not be remote from the pedestrian traffic. Mobile phone users are known for their quick shifts of attention between the screen (online space) and the street (offline space). Even if a user decides to linger for a longer period of time to make more intensive use of their mobile phones, they should be able to continue on their way when they wish to. There are multiple other factors that decide what makes a mobile phone hub successful, such as location, availability, pedestrian activity, environmental aspects such as noise and air quality, etc. Besides the many small, location-specific mobile phone hubs that are scattered through the city, the major mobile phone hubs are the spaces around train stations, areas in front of or around public transportation stops, and large pedestrian crossings. The latter is a special kind of mobile phone hub, as it involves pedestrian activity by interval and often sees mobile phone users use the hub for a shorter time and in regular intervals. However, pedestrian crossings are also a very interesting variety of mobile phone hubs as they show the persistence of the new, digital meaning that is being assigned to these places: even when the pedestrian crossing already has a green light, people will often still linger, or take out their mobile devices and start interacting with their phones regardless of the status of the traffic light. During observations in Shinjuku Sanchōme on Saturdays, when the area is a so-called 'pedestrian heaven' and free of any automobile traffic, I noticed how some people will actively seek out the crossings and seemed to be more

inclined to make intensive use of their mobile phones in the limited space around the pedestrian crossing. They would find a place to stand still, for example next to a wall or street sign in the vicinity of the crossing, to make use of their phone, as they associate the area of a pedestrian crossing with mobile phone use. Thus, places in the city are re-interpreted according to the suitability of using them for intensive mobile phone use, and continue to carry this new meaning regardless of their other, previous meanings. It furthermore seems as if the mobile phone hubs in their near vicinity trigger mobile phone use. This is in line with Oulasvirta et al.'s (2012) and also Marsha Berry and Margaret Hamilton's (2010) conclusions that smartphone use habits are tightly associated with a particular, triggering context. Although Oulasvirta et al. did not elaborate on the specific details of the contexts that they associated with an increase of mobile phone use; they do note that the context is always linked to specific places. Therefore, pedestrian crossings, places where mobile phone use is 'natural', become a trigger place for mobile phone use – regardless of the user's intention to actually cross the street. For example, one of the places Oulasvirta et al. particularly found to be a trigger in their observations of smartphone use in a neighborhood, was a bus stop, where people had to stand still and wait for a while for the bus to arrive. In order to kill time, they would use their mobile phones, making the bus stop a 'triggering context' for mobile phone use (Oulasvirta et al. 2012). Berry and Hamilton, on the other hand, identified train wagons as spots that triggered mobile phone use, as people would often try to be productive or kill time by engaging with their devices while travelling (Berry and Hamilton 2010). Like these studies, I found that places related to public transportation see a significant rise in mobile phone use as well. In general, within public transportation there is a surge in use of mobile devices (see also chapter 5). In turn, places that are connected to public transportation in Shinjuku all show a large surge in mobile phone use as well, as all of these places, and pedestrian crossings as well, are places where people feel the need to kill time – resorting to mobile devices as the 21st century's primary 'entertainment' device. After a while and with the increase of mobile phone use, places in the city that are used to kill time have become associated primarily with mobile phone use, leading to the so-called mobile phone hubs to emerge that actively trigger mobile phone use. The triggering effect of these places lingers around the areas connected to stops for public transportations, having a ripple effect on the space around it which leads to the existence of mobile phone hubs around places that are close to access points for public transportation.

Seeing the prevalence of hubs in the city, which are in essence spaces that 'invite' online behavior, it is clear that new technologies challenge traditional meanings of space. While previously, technologies such as faster transportation methods were shown to have influenced our perception of space, some have argued that in our current age the internet is the technology that now dictates it (Castells 2001b; 1996; Moss and Townsend 2000; Townsend 2000; Ling and Campbell 2008). The idea that the mobile phone changes the way we interact with space on an individual level has been a topic of discussion since the first generation of mobile phones: "new mobile communication systems are fundamentally rewriting the spatial and temporal constraints of all manner of human communications," writes Anthony Townsend at a time where mobile phone users started to become a common sight in cities all over the world (2000, 89). The use of the mobile phone soon came to be understood as a way of taking control of space for the benefit of the user. In Richard Ling and Scott Campbell's collection of essays *The Reconstruction of Space and Time: Mobile Communication Practices* (2008), one of their main conclusions is that location becomes more *flexible*. Instant communication enables the user to have a better understanding of their direction and location. However, Ling and Campbell in their discussion focus only on the case of the individual, and do not discuss how mobile phone use has an influence on the use of urban space in general. While my own observations confirm Ling and Campbell's conclusion how space becomes more flexible, on the other hand, the concept of the mobile phone hub also shows how specific places for mobile phone use have emerged. In a way, this goes against Ling and Campbell's conclusion of mobile phone use to make space more flexible: mobile phone hubs are static places in a city, that don't change in location and show a pattern rather than being completely random.

But more than this, the mobile phone hub shows a certain historical continuity in use of urban space by pedestrians. A significant part of the places that we see transformed into hubs are places that have historically been used for similar activities. The space around public transportation, department stores, and pedestrian crossings has historically been space used for 'waiting'. They were already discussed by early researchers of pedestrian behavior such as William Whyte (1980) and Jane Jacobs (1961). One of the most important aspects of these 'waiting areas' was that people tended to occupy themselves with something in order to kill time. This could be a book, a newspaper, listening to music, consuming food or tobacco, or chatting with people in their vicinity – which Whyte called 'schmoozing'. The 'schmoozing'

that Whyte talks about might very well has partially shifted from face-to-face interaction to texting and other social functions of the device. Instant messaging through mobile phone applications, in this regard, is the 'schmoozing' of the 21st century. It is not difficult to see the continuities in the use of the mobile phone if we compare it to these earlier habits. Fujimoto even compared the *keitai* to a consumable 'refreshment' like gum or tobacco because of its habitual aspect (2005, 89), which incidentally are some of the activities people were previously observed to indulge in in these 'waiting' places that Whyte described decades before the mobile phone (1980). In this sense, the mobile phone use within these places is simply the modern version of a tool for killing time, just as the book or newspaper was in the past. However, the mobile phone adds an important digital layer to these waiting spaces. While these places might always have been places where people kill time by engaging in reading, chatting, or fiddling with something, the mobile phone has assimilated many of these functions and re-invented them digitally by making use of the mobile network and mobile internet, and thus 'digitalizing' the city's places for waiting.

By being transformed into a mobile phone hub, the location acquires an additional, digital meaning. This is not a surprising turn of events: since the earliest days of widespread internet, the city has been speculated to (at least partially) have acquired an online layer (cf. Christine Boyer 1996; Castells 1989; Mitchell 1995; Bukatman 1989; S. Graham and Marvin 1996). Connecting people all over the world and shifting many of our daily activities that were previously predominantly place-bound towards online space, made people reconsider the meaning of the city. Among the internet-related technologies and devices, mobile internet is said to have had the strongest impact on the 'digitalization' of the city, as it made it possible to go online regardless of the location of the user (de Souza e Silva 2006; de Souza e Silva and Frith 2012; Ling and Campbell 2008). Looking at the emergence of mobile phone hubs around the city, this supports the argument that urban space has become a hybrid of online/offline. As I previously discussed in chapter 4, Adriana de Souza e Silva's theory on the hybridization of urban space has been the most recent development in the discussion on space digitalization. Unlike many of the previous accounts, de Souza e Silva's in her theory on hybrid cities argues how urban space becomes enhanced with 'online space' resulting in lived space and spatial practices that are simultaneously online as well as offline. To be more precise, she defines the term hybrid space as follows:

> [h]ybrid spaces are mobile spaces, created by the constant movement of users who carry portable devices continuously connected to the Internet and to other users. A hybrid space is conceptually different from what has been termed mixed reality, augmented reality, augmented virtuality, or virtual reality […]. The possibility of an "always-on" connection when one moves through a city transforms our experience of space by enfolding remote contexts inside the present context. This connection is related both to social interactions and to connections to the information space, that is, the Internet.
>
> (de Souza e Silva 2006, 262)

One of de Souza's main arguments is that while previously people would feel like they would have to actively connect and 'enter' online space (by establishing a connection through a device), the user now feels continuously connected, experiencing both spaces simultaneously, thus resulting in a hybrid of online as well as offline. While it is crucial that a device constantly connected to the internet is necessary for space 'hybridization', there are many forms of mobile phone use that contribute to this feeling. It also depends on the strength of said connection to which extent space hybridization is experienced. The 3G connection, as de Souza e Silva argues, transformed the mobile phone into a 'microcomputer' and increased its function as hybridization agent significantly (de Souza e Silva 2006, 262). In her work on hybrid spaces, however, de Souza e Silva – like other researchers of cyberspace theory did previously as well – focuses on the shift from communication *from the digital realm into the physical realm*, focusing on the types of internet use and online communication as main pillars for her theoretical framework about the term. Her main point is not as much to explain the physical aspect of this shift, but rather focus on how it affects the experience of being online.

The concept of the mobile phone hub can, in this regard, add some important information regarding the physical aspects of space hybridization. First and foremost, it is important to note that the hubs are not equally spread throughout the city. So far, most researchers of mobile media studies have treated urban space as homogenous in the discussion of mobile phone use in the city. Instead of the assumption that the city in its entirety is becoming a hybrid of offline activities and online activities, what we can call the online part of urban life is *fragmented* since apparently, there are specific places where people are more inclined to go online. Space hybridization, thus seems to a large extent to cluster in specific areas. On one hand, people definitely also use their mobile phones while walking, showing that mobile

phone use (or mobile internet use) is available throughout the city regardless of location. However, most people will not use their mobile phone while walking, and will rather seek out specific places for most of their online activity. A large part of this online activity takes place in mobile phone hubs, making the so-called 'digital layer' very inhomogeneous and 'scattered' over the city. Furthermore, the large majority of these clusters of mobile phone activity are located according to a pattern, that is, the standard type of locations that mobile phone hubs follow.

Secondly, mobile phone use in the mobile phone hubs, and mobile phone use in general, cannot be easily categorized. The smartphone in particular has many functions and applications, and users switch between many different applications and functions of mobile internet throughout the day. The fact that the mobile phone hubs are usually places that were previously used for waiting and killing time with other sorts of media shows that this 'fiddling' function among many functions of the mobile phone is important. Therefore, we should be careful when discussing the use of mobile phones in light of calling it general usage of 'online space' because it actually undermines the diversity of the device's function. This means that people using their device could be using it for many different functions, not all of which are strictly related to the internet. While all of these functions are connected to mobile phone use, not all of them can be regarded as 'going online'.

Thirdly, the notable historical consistency of mobile phone hubs as modern interpretations of the 'waiting' areas shows that even though the mobile phone gives these spaces a new function, there is definitely a continuity in the type of space and the kinds of behavior that people engage in these spaces. If mobile phone use is scattered around the city in clusters that repeat and are similar to older patterns of pedestrian use of public spaces, this indicates that the meaning of urban space is quite stable and, furthermore, additionally challenges the idea that the mobile phone has an essential revolutionary aspect. Therefore, although de Souza e Silva's theory on hybrid spaces specifically targets mobile phone internet use and shows how the lived space of the city has become a hybrid of online and offline actions, it is important to note that these online actions were preceded by functions of other, older media. Since books and newspapers too, for example, are very much able to influence someone's perception or experience of the direct environment, this would indicate that there might very well have been (and still can be) a type of hybrid space through the use of other media as well.

MOBILE CITYSCAPE: MOBILE INTERNET AND THE CITY

The final theme that emerged during my observations is less focused on the mobile phone user and more on the urban environment: the visual presence of mobile internet on the streets. The mobile phone is present not only in terms of the actual device that people carry with them, but traces of its ubiquity can also be found on the built environment in forms of advertisement images (both dynamic as projected on screens, as well as analog in the form of posters and plaques), QR codes, cartoon characters representing specific smartphone applications, logos for social networking applications, and many more references to mobile phone use, as also discussed in the findings. As the mobile phone has taken a very prominent place in urban life, so did the presence of the mobile phone in the visual landscape of the city, as Katz and Aakhus also argue (2002, 302). First of all, there is the actual, physical presence of mobile phone carriers in the form of shops. In Shinjuku, this presence is extremely high (see image 4). Tokyo's mobile phone carriers will usually have multiple venues in the same street and these shops will have their staff organize special events regularly, by sending them to scout for customers on the street and attract extra attention with the use of microphones, balloons, flyers, or other forms of promotional means, which makes their presence even more visible.

Image 4: All three of the big mobile phone carriers (KDDI au, Softbank, and NTT DoCoMo), as well as a rising new player in the mobile phone market (Y! mobile) are represented alongside each other in a street leading to Ookubo Station.

Secondly, the visual presence of mobile phone use becomes clear from advertisements, QR-codes, and use of references to smartphone applications such as LINE. Businesses, local as well as large chains, are skillfully making use of online space in order to reach out to more customers. This results in a constant reference to 'the online', a phenomenon Tomita Hidenori (2016) calls 'second offline' and which he describes to be one of the characteristics of the 21st century. Second offline refers to the situation that we currently see in societies where (mobile) internet is part of everyone's daily life people constantly refer to information that they can retrieve online, resulting in a "context in which virtual information is superimposed onto real space" (Tomita 2016, 1). Tomita furthermore stresses that the shift from using older generation mobile phones to smartphones was crucial for the context of second online to come into existence:

> [w]ith smartphones, we have converted the urban desert into a virtual oasis. Smartphones allow us to access media anytime, anywhere, and provide an entrance into cyberspace, of which the physical world is gradually becoming a part. Smartphones are slowly leading us into a realm that does not strictly consist of the dichotomy between 'real' space and cyberspace.
>
> (Tomita 2016, 2)

While Tomita's notion is reminiscent of de Souza e Silva's concept of hybrid space, Tomita, more than de Souza e Silva, emphasizes the presence of online life in a physical matter that, with the spread of smartphone use, is becoming more apparent in the city. In short, the user is not only constantly connected; their everyday life situations and surroundings are now also increasingly referring to the online.

The reason behind the many references to online information is often one that can be explained by consumerism. Tokyo is a very densely built city and in Shinjuku local shops and cafes have a very limited amount of space to make use of. Extending their business online gives them more chances to reach out to customers. As became clear from the examples in the previous chapter, stores, cafes, and restaurants often incorporate references to smartphone culture and applications in their physical locations and advertisements. They skillfully make use of social network sites and applications to have consumers interact more with their products while also increasing the time the consumer has to interact with their mobile phone. Usually, these applications are depending on the location of the business: in Japan, one of the

most ubiquitous of these applications is the social networking application LINE (see image 5), whose business strategies to work together with stores and businesses might have contributed to the fact that it until recently used to be the most profitable non-game application in the world (as of 2017, Netflix and Tinder caught up with the messaging application, making it now the third most profitable non-game app in the world).[58] However, in neighborhoods that house a lot of foreigners, we see that the applications that are visible in the cityscape are actually targeted towards the mobile 'landscape' that these foreigners are most familiar with. In Shin-Ookubo (the neighborhood bordering Ookubo), which houses many foreigners of the Korean and Chinese diaspora, the applications that are visible on advertisements, stickers in store windows, and as represented by its logos and cartoons on posters and boards in front of stores show the messenger applications KakaoTalk (Korean) and Weibo and/or Wechat (Chinese). Different countries see different user patterns in smartphone applications. KakaoTalk, for example, is the most widely used instant messenger app in South Korea, and Weibo is the most used social media app in China. Through the presence of these applications, the mobile phone culture of a particular group of people (in this case a group based on ethnicity) is being used as a tool to establish a connection with those who are familiar with the same set of applications. Chinese supermarkets in Shin-Ookubo, for example, not only use Chinese language to promote their shops, but also write the address of their Weibo profile page on the boards that they put outside their shops in order to make it easier for Chinese customers to connect with them. On the other hand, international franchises are all over the city and the mobile phone 'landscape' as well. International chains have a large presence in the mobile phone landscape, and they often collaborate with the local applications of a region. A good example is that of the chain Starbucks, which has been collaborating with local application LINE as well as international social networking sites in order to establish a large online presence. This started from a very early stage: Helena Grinshpun (2012) explains how the chain, already in the early 2000s, made use of the first forms of internet in Japan that mobile phone users accessed on a daily basis in order to ensure not only a physical, but also an online presence for their customers. Recently, the chain even produced special smartphone

[58] See Bischoff, Paul. "Line makes more money than any other non-game app in the world." *Tech in Asia*. January 30, 2014. https://www.techinasia.com/line-money-nongame-app-world and Cawley, Conor. "10 Most lucrative non-game apps in the world, ranked" *Tech.co*. July 27, 2017. https://tech.co/10-lucrative-non-game-apps-world-ranked-2017-07 (Accessed October 31, 2019)

cases for their Japanese customers that have a built-in chip, allowing the customer to pay by merely swiping their phone over the Starbucks counter.

*Image 5: '*LINE@ yatte masu*' (we're on LINE@) - A collaboration between LINE and Shinjuku Sanchōme's ALTA department store encourages people to add the LINE page of ALTA to their LINE contact list, in order to receive information about sales and special updates.*

The successful collaborations with physical stores and smartphone applications in Japan show how the mobile phone is a powerful tool for the accumulation of capital. Japan is a highly consumerist society, and luxury goods expenditures in Japan are among the highest in the world, creating a thriving market.[59] Seen from a consumerist perspective, the smartphone is a tool for businesses to infiltrate the personal space of the individual in order to exert influence on their purchasing behavior. Seeing the fact that the mobile phone is one of the most intimate devices that we use on a daily basis, the presence businesses are able to achieve through the use of this tool can be regarded as quite invasive: it provides access for new forms of advertising that some have argued are bordering on the unethical in the way they gather consumer data and target consumers (Katz and Aakhus 2002). Although the mobile phone

[59] According to the 2016 annual Bain & Company report. D'Arpizio, Claude, Federica Levato, Daniele Zito, Marc-André Kamel, and Joëlle De Montgolfier. "Luxury Goods Worldwide Market Study, Fall-Winter 2016." *Bain Report*. December 28, 2016. http://www.bain.com/publications/articles/luxury-goods-worldwide-market-study-fall-winter-2016.aspx (Accessed October 31, 2019)

user is ultimately still in control of whether or not they decide to act on the many impulses that target smartphone use for consumerist purposes, the mobile phone (and in particular the smartphone, as its visual aspect and the use of applications is much higher) has opened up a new powerful platform for stores and businesses to target consumers with. The presence of these advertisements is extremely prominent in Tokyo. All throughout the city there are references to applications and the online spaces of stores and brands – and vice versa: through advertisements within applications and websites, there is also a constant referring to offline shops and businesses. Furthermore, the nature of these advertisements (offline, but also online) very much reflects the local mobile phone 'culture', as it naturally emphasizes those aspects of mobile phone use that are most popular. In Japan, for example, one of the most visible parts of mobile phone applications is the number of advertisements for mobile gaming. These advertisements for mobile gaming are on display around and in the areas of metro and train stations in particular (see image 6), this way targeting mobile phone users at the time they are most likely to engage in mobile gaming: while traveling distances with public transportation.

Image 6: Large advertisements for the mobile game Dragon Quest: Builders *(a spin-off of* Dragon Quest*, one of the most popular smartphone games in Japan, as well as worldwide) in a subway station of Shinjuku.*

Lastly, it should be noted how the presence of mobile phones is connected to the 'omnipresence' of the screen. While the mobile phone as a personal image-screen has become an essential, everyday part of one's life, there has also been an increase in the number of electronic screens in the city, as well as a distinct growth in surface size of these screens (Papastergiadis et al. 2013; McQuire 2008). Tokyo, in particular the area of Shinjuku, is known for the many (and large) screens that are installed on the buildings in the areas meant for shopping and other forms of leisure. Walking through the city, one is constantly confronted with some form of screen, be it personal, on a building, in public transportation, or inside buildings. Lev Manovich (2001) discussed this phenomenon of constantly being involved in some form of screen activity while engaging with the city and how this resulted in an experience of the city that is simultaneously analog as well as digital. He called this 'augmented space': "the physical space overlaid with dynamically changing information, multimedia in form and localized for each user" (Manovich 2006, 219). If we look at it historically, the city has always been a medium for processing, recording, and transmitting information (Kittler 1996), but with the implementation of digital screens the amount of information increased tremendously, as Manovich argues. In other words, life in the city is increasingly dominated by information that is presented through the electronic screen. Ingrid Hoelzl and Rémi Marie further develop Manovich's argument:

> as a result, we are moving from the city as an ensemble of static architecture/infrastructure to a screen-mediated form of mobile relationality. […] Through our networked mobile devices, we inhabit the network as well as the physical city […]. It is this coming together of the digital and the built environment in our experience of urbanity that we will call, in a preliminary move, the augmented city.
>
> (Hoelzl and Marie 2015b, 120)

Space itself, they further argue, has more and more digital information layers and refers to online space to further increase access to online information. As we have seen from the examples in Shinjuku, the increase in digital information both on screens as well as information that refers to digital, online information is extremely visible, saturating the city with references to online space. While some of the content of these screens may be for other purposes, such as broadcasts of concerts or sport events (see image 7), most of the content that is aired on the large screens in Shinjuku Sanchōme are direct advertisements for products

and services. Manovich's as well as Hoelzl and Marie's arguments on the integration of an online 'dimension' into the visual image of the city and how it has come to define the city of the 21st century is interesting, but their work falls somewhat short because they do not address a consumer culture perspective. This is important considering the nature of the images that are the core of this phenomenon, which are inherently mostly forms of advertisements targeting consumers. The information that is projected on the screens, billboards, and walls – whether dynamic or analog, is far from neutral. The ubiquity of the screen is for a large part meant to target individuals and stimulate consumer behavior. This is furthermore confirmed as the number of large electronic screens and advertisements is especially high in Shinjuku Sanchōme, because it is one of Tokyo's main shopping districts. In short, both through personal and public screens, the mobile phone user is constantly exposed to electronic images that stimulate consumption.

Image 7: Pedestrians filming and taking photographs with their mobile phones of the broadcasting of a Korean pop music concert on a large electronic screen on one of the buildings in Shinjuku Sanchōme. Here we see a great example of the 'augmented city', as the content that is broadcast on a large screen is being captured by people on personal screens and most likely then shared online.

Large LED screens have of course been visible in cities all over the world for a longer period of time, but during the observations for this research an interesting trend in the screens displayed throughout Tokyo became apparent which shows the influence of the design of the

smartphone interface has on other screens in the city. Screens that are present in the city lately show remarkable similarities with the interfaces of popular mobile device operating systems iOS and the latest Android operating systems. Image 8 for example, shows how the interfaces of a vending machine for drinks and an interactive advertisement for local restaurants show interfaces similar to respectively the home screen and the internet browser or a standard GPS-based searching application of a smartphone. The vending machine even shows a 'weather app' and a clock, attributes that one usually sees upon unlocking the home screen of most smartphones. In this case, the weather application can also be seen as a reference for the customer when deciding between buying a cold or a hot drink, and could even be seen as stimulating the consumption of a beverage because the customer is reminded of the temperature of the weather, therefore perhaps becoming more aware of their desire for a particular hot or cold drink. The other screen, which is an interactive advertisement placed in Shibuya's main station, functions as a search engine for local restaurants and is sponsored by website and popular smartphone app 'Gurunavi' (an abbreviation of the words 'Gourmet Navigator'). Because most people are accustomed to the operating system of a smartphone, these screens with their similar interface design require little explanation and are easy to use. This trend is leading to a 'smartification' of the screens in the city. It also possibly indicates a shift in the preferred shape of information: instead of plain text, or video, the 21st century urban dweller is most accustomed to information that is presented on a screen in 'app-like' form similar to that of the mobile device.

Image 8: Left: A vending machine in Ueno station that has a screen display featuring, besides the drinks, a weather 'app', similar to a smartphone interface. Right: an interactive advertisement placed on a pillar that allows the user to search for restaurants and hotels in the area (Shibuya). It was created by popular restaurant-finding application/website Gurunavi (Gourmet Navigator), and the interface is almost identical to that of the smartphone application itself.

DISCUSSION: INTERACTING WITH THE CITY IN NEW WAYS

Looking at the behavior of mobile phone users by taking the spatial surroundings as the starting point, several patterns that are characteristic of mobile phone use in public in Japan have been pointed out in this chapter. As *aruki-sumaho* is currently one of the most discussed topics in the research on mobile phone behavior, the chapter started out with an analysis of how the mobile phone user uses their phone while walking, also connecting it to the discussion on the summer 2016 hype of Pokémon Go. Looking at the findings of my own research and comparing them to previous research that focuses on reactivity and the influence of the use of the mobile phone on traffic, I have to conclude that there are several points that are being overlooked in the usual laboratory studies that test reaction abilities of smartphone-

using pedestrians. While it is true that the attention of the pedestrian towards the physical environment decreases when making use of a mobile phone, the mobile phone user will almost always resort to slow-walking and seeking the 'edges' of the pedestrian areas to ensure safety. Furthermore, the mobile phone user will usually stand still and seek a spot away from any traffic in order to use their phone more intensively. Comparing my own observations with the general discussion on mobile phones, I argued that the smartphone seems to be the target of a technophobia-induced moral panic which is not only expressed through the general discussion on smartphone walking and, more recently, the commotion that emerged surrounding the popularity of the smartphone game Pokémon Go, but goes further and, in more extreme cases, can even imply deformations of the body due to smartphone use. Despite the fact that smartphone penetration is high and the device has taken a central and essential role in everyday urban life, this 'mobile panic' is still eminent and is especially prominent in discussions on smartphone use by young adolescents and children (as is common with moral panics). Additionally, observations of cases where the mobile phone was used not just by one but multiple individuals at the same time contradicts the common technophobic idea that the mobile phone is a device that only induces forms of social reclusion. This idea is already paradoxical in nature as the mobile phone is intrinsically a tool that is used for online, electronic communication with others, but findings from my own research additionally show that the use of the mobile phone in groups, for example when looking up directions for a common destination, can very much contribute to face-to-face social interaction as well.

An important theme that emerged from the discussion is that the use of the mobile phone in public has the user interact with urban space in new ways, depending on the type of mobile phone use. When a user needs privacy to concentrate on their mobile phone, for example when they make a voice call, the way they manipulate the space around them in order to create a shield supports Fujimoto's notion that the device is a 'territory machine': a socio-spatial tool used to negotiate and interpret space. Making use of their direct physical environment, the mobile phone user constantly negotiates distance, literally as well as symbolically, in order to find a balance between a more private and non-private space. This is an act which is always directly connected to people, not only in their physical surroundings, but also in electronic presence through the phone. Related to this is the re-interpretation of particular spots or places in the city in terms of mobile phone use. However, instead of the mobile phone as a territory machine, which is usually linked to its voice call function, the re-

interpretation of these particular spots is usually linked to its non-voice call, mostly internet-related functions. The use of mobile phones in cities has given certain places within the city a new purpose and 'online layer' very much in the sense that de Souza e Silva discussed in her concept of hybrid places. These places, which I have called mobile phone hubs, show an increase in intensive mobile phone use. However, unlike de Souza e Silva's idea on hybrid space, my observations point out that this space is not spread evenly throughout the city, but that hybrid space comes in clustered and fragmented form. Particular places in the city have transformed into areas where many people focus on their screen simultaneously, sharply increasing the online activity in that particular place. While many of the people who are using their phone in these hubs are waiting and killing time by 'fiddling' with their phone, the mobile phone hubs also trigger mobile phone use by people in its vicinity. This trigger-effect is closely linked to mobile phone use as a habit. The emergence of these mobile phone hubs shows that the mobile phone changed the meaning or purpose of particular places in the city, leading the mobile phone user to re-interpret urban space. On the other hand, these places are typically places for waiting, which have historically been used as places to kill time and hence show that places have changed into areas for mobile phone use, there is certain continuity in the type of use of urban space. The effect of mobile phone use is thus apparent, but seems to be bound by the traditional or established purposes of urban space. In addition, the type of space always influences the type of mobile phone use, which shows that the effect is a two-way street: the mobile phone user is directly influenced by their environment, and, in turn, the way that the environment is given its meaning is influenced by the mobile phone user.

In terms of 'physical' visibility, the mobile phone, in particular the smartphone, is seen throughout the city not only in terms of the actual device and its supporting facilities (i.e. mobile phone shops and their advertisements), but also in terms of references to the mobile phone 'landscape': the applications and interfaces people interact with on a daily basis, which are different according to region and mobile phone culture. Increasingly, businesses expand their territory to mobile phone-accessible information and make creative use of applications and online references to get attention from customers through their mobile phones. Similarly, online businesses and applications are 'seeping' into the physical world by cooperating with 'offline' businesses and find ways to manifest in the city, resulting in a constant mutual evocation of offline and online space. In addition, we see a growing importance of the presence of the screen as such – not just the personal, mobile phone screen but LED screens

and other screens that are scattered throughout the city as well. Tokyo is a city that is often characterized by the presence of electronics in the urban landscape, because of the large screens that are installed on its buildings, producing moving images and sounds 24/7. The combination of these large screens with the mobile phone, in particular the smartphone with its larger screen surface, really embodies what Manovich called an 'augmented city' and emphasizes the importance of the city as medium for information – but at the same time opens up new power platforms for businesses to reach out to consumers, as the vast majority of the images on these screens are advertisements. Some of the screens in Shinjuku furthermore indicate how there seems to be an early stage of a shift in the form of visual information displayed in the city. The interface and layout of the screens scattered throughout the city, at least those that are interactive, show remarkable similarities with the interface of smartphone operating systems and smartphone applications. Therefore, not only is the city becoming more of a place where there is an abundance of electronically mediated information, these findings also show how this information is becoming increasingly formed like the information we interact with from our most frequently used type of screen: the personal, smartphone interface.

Mobile phone use has therefore added a new, important factor of influence to the use and meaning of urban space. We know that location and behavior are related, but from the findings discussed in this chapter we can conclude that mobile phone behavior is related to both. Therefore, the meaning of space (or representational space in Lefebvre's sense) and the daily routine or physical spatial behavior of the individual (spatial practice in Lefebvre's sense) both have an influence on an individual's mobile phone behavior. As both the meaning of space and physical behavior also change through mobile phone use, the interaction between the three is thus reciprocal. Thus, we can sum up the relations between physical behavior, location, and mobile phone behavior as follows:

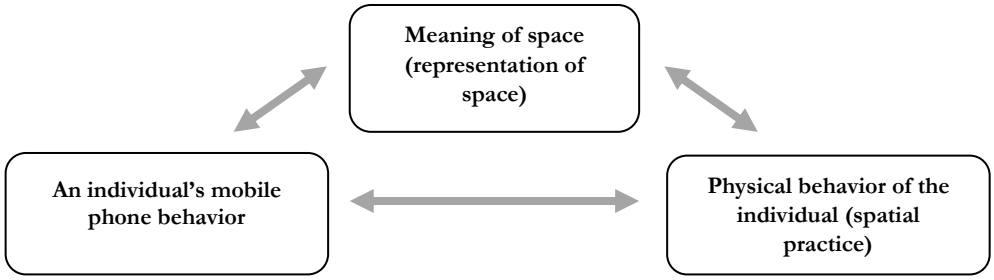


Image 9: Relation between location and (mobile phone) behavior.

While the mobile phone is not the first technology to have an influence both on spatial practice and the representation of space, it is the latest tool with such an effect that sees such a widespread diffusion. In addition, because of its extended functions due to its technologically advanced interface and the connection to the internet, it is the most multifaceted tool that is mobile and easily accessible. Furthermore, as the majority of the population in cities worldwide makes use of a mobile phone that is connected to (increasingly faster) internet, its effects on spatial use in urban settings are of a global scale. As the importance of the screen is increasing globally, we can expect more of these changes in behavior towards urban space to happen worldwide, as well as expect an increase in effect as the number of these screens in the city increases.

7. CONCLUSION

The city is a computer, the streetscape is the interface, you are the cursor, and your smartphone is the input device.

(McFedries 2014, 36)

Our current paradigm, the city as computer, appeals because it frames the messiness of urban life as programmable and subject to rational order.

(Mattern 2017, n.p.)

When, during the Industrial Age, cities started to increase in size, early sociologists of urban life criticized the way city life influenced people, as they thought living in a city induced an overly individualistic, self-centered lifestyle. They lamented the loss of 'real' human connection and regarded the city as a place where people, although physically close, have fewer 'meaningful' and fewer face-to-face interactions with each other. People who lived in a city were considered rude, obsessed with their own lives, and were thought to have lost the ability to emotionally connect to others. "The greater the number of people that are packed into a tiny space, the more repulsive and offensive becomes the brutal indifference, the unfeeling concentration of each person on his private affairs," Friedrich Engels argued in *The Condition of the Working Class in England* (1845) (as quoted by Walter Benjamin (2011, 163)). In a like manner, Louis Wirth, one of the first urban sociologists, defined urban life as the "substitution of secondary for primary contacts, the weakening of bonds of kinship, and the declining social significance of the family, the disappearance of the neighborhood, and the undermining of the traditional basis of social solidarity" (1938, 20–21). More than a century later, a similar kind of critique can be heard, this time with regard to the mobile phone. Like the concept of the city during the urbanization period that accompanied the Industrial Age, the mobile phone is now likewise thought to make us more individualistic, self-centered, and indifferent. After all, the device is perceived to have a dissociative effect on people, and is seen by many as the catalyst for the substitution of face-to-face conversations with something less meaningful: digital, non-direct communication. Mobile phone use, it is claimed, induces a lifestyle that has little 'emotional' contacts, relying on 'cold' technology. "People are lonely,"

writes Sherry Turkle, "we expect more from technology than from each other" (2011, xx, xxiii), hereby referring to the perceived harmful effect on the human psyche that this change in communication is causing. Besides not fulfilling the human need for face-to-face and meaningful interactions, the mobile phone is also often portrayed as the source of extreme self-absorption: in a special on smartphones, writer Tomas Chamorro-Premuzic notes that "social media and the internet are making us more narcissistic."[60] "I Phone, therefore I am" writes Thomas Elsaesser (2003), explaining how the mobile phone allegedly stimulates a self-centered lifestyle. It is remarkable how the mobile phone, similar to the city in the 19th and early 20th centuries is accused of making us turn away from an ideal, community-centered society.

In a world that is increasingly urban and in which the smartphone has become a central part of our everyday lives, this kind of individualism is perceived as something dangerous for the well-being of society. It is seen as an almost pathological trend that, in the worst case scenario, strips us of our humanity. However, when we look at the origin of these fears, there are other, more complex issues at hand that may play a bigger role. In his 1903 essay on the metropolitan lifestyle, Georg Simmel already argues that it is not 'the city' as such that induces this mentality, which many perceive to be apathetic or narcissist, but rather the set-up of capitalism that creates an environment where people increasingly value monetary value over anything else:

> [m]oney is concerned only with what is common to all: it asks for the exchange value, it reduces all quality and individuality to the question: How much? All intimate emotional relations between persons are founded in their individuality, whereas in rational relations man is reckoned with like a number.
>
> (Simmel 1950, 411)

In the technologically determinist way of thinking that often accompanies the discussion on the mobile phone, the device is seen as the catalyst for a mentality that is evasive of real-world interactions and seen as inducing individualist thinking. However, this view might overstate the influence of a piece of technology that is in essence no more than a re-invention of many older forms of media. As Merrit Roe Smith and Leo Marx (1994) argued, it is

[60] Chamorro-Premuzic, Tomas. "Sharing the (self) love: the rise of the selfie and digital narcissism." *The Guardian Media network blog.* March 13, 2014. https://www.theguardian.com/media-network/media-network-blog/2014/mar/13/selfie-social-media-love-digital-narcassism (Accessed October 31, 2019)

effortless to point at a tangible object and see it as the source of social issues, but in doing so we ignore larger, socio-economic, political, cultural, and ideological formations, and give up a profound analysis of a situation in order to create an easy sense of causal efficacy. The pessimist view on the mobile phone, with its accounts on the many variations of pathological individualism that it would supposedly cause, diverts the discussion towards a simplistic, reductionist view that portrays a piece of technology as the source of broader social issues. This is not to say that the mobile phone has absolutely no influence on the behavior of people – if anything, the results of my research, which is based on the effect mobile phone use has on the behavior of pedestrians, should prove the opposite. But the reaction towards the changes in behavior that the device leads to tends to be exaggerated in ways that make it more difficult to conduct objective research, as much of it is overly negative and pessimistic. This reductionist tendency has led not only to neglecting more complex issues created by unequal power dynamics, but also undermined a more objective view on the mobile phone and its many forms of usage. It seems, then, that the mobile phone and the city have in common how they have been received by cultural critics in their respective time period in history: both are initially seen as problematic and accused of inducing a dissociative mentality, but have been misidentified out of a myopic fear as the source for growing social issues that have their roots in other, more complex socio-economic causes.

But besides the similarities in the initial reception, there is another strong link that ties the city and the mobile phone. The mobile phone is inherently an 'urban' tool. Not only is it designed for urban life, it has also increasingly incorporated more functions that allow it to interact with the city, such as the ability to use GPS and the many applications that make use of this and combine it with information retrieved through mobile internet. At the same time, due to mobile internet, the city itself is gradually becoming more interactive as there are QR codes, NFC tags, and URLs scattered around urban space that can be scanned or looked up by making use of a mobile device. Furthermore, we see a growing importance of the presence of screens in urban space, that, as I have found from my case study in Tokyo, seem to have more and more similarities with the interface of mobile devices. All of this strongly implies that the mobile phone and the city are becoming increasingly interactive and interdependent on each other. Among scholars, this relation between the city and the mobile phone has been discussed from an early stage and was largely a continuation of the discussion that focused on the effects of internet, and IT in general, on the city. The effect of internet on the city and

society as a whole has been one of the most discussed issues of the late 20th century, but lately the literature has been under critique, as it shows signs of technological determinist thinking that may have overstated the effects of the technology as being too revolutionary. Several of the late 20th and early 21st century's main sociological thinkers called out the internet as the technology that would indicate large socio-economic changes leading to a distinct change in structure of the city as we know it. "Technology has its own dynamics. The kind of technology that develops and diffuses in a given society decisively shapes its material structure," Manuel Castells (2001a, 155) argues, for example. However, in his quest for identifying a Weberian 'zeitgeist', Castells, as do many other advocates of the Information Technology Revolution theory, isolates the development of the internet from a long history of information processing media and technologies, which all have a profound link to urban life. Castell's description of Tokyo as an 'Informational City' is late by several centuries, as Japanese historians already labeled Edo-Tokyo an 'Informational City' because of its thriving writing culture and abundance of book shops which made Edo Tokyo a city where the circulation and diffusion of information was central to the socio-economic structure. Furthermore, even though the advocates of the Information Technology Revolution theory argue that ICT changed the structure and set-up of the city, the structure of Tokyo as a city has been proven to have a certain remarkable consistency. The relation between the internet and the city, in this case Tokyo, should therefore not be seen as 'revolutionary' but rather as a reinvention and continuation of older traditions of information and communication media. It is important to note that this does not deny the role information media play in shaping and interacting with the city – instead, I argue that there have been more continuities concerning the role of ICT and the city than there have been revolutionary changes. Rather than portraying Tokyo as a city where ICT has had no influence on urban life at all, I want to point out how it has been structured by the practices of information handling for centuries. Tokyo was, and still is, an 'Informational City' – now more than ever.

THE RESEARCH QUESTION REVISITED

Although I press for a moderate stance on the impact of ICT on the city, I want to emphasize that my research shows that the mobile phone has, as a matter of fact, changed many aspects of everyday urban life and the cityscape. As I have stated in the introductory chapter of this thesis, urban space is increasingly interacted with through the use of mobile internet. This has added a 'digital' layer to urban space. For several decades, researchers have studied this

‘digital layer’, a difficult topic as the shape of the internet has changed drastically since its implementation, and mobile internet is different from static internet as accessed through desktop computers. Initially, researchers of the internet named this latter ‘cyberspace’. Many thought this new digital space would eventually more or less come to ‘replace’ physical space, as it was thought to drastically reduce the importance of physical space. After the 2000s, with the spread of mobile internet, researchers such as Adriana de Souza e Silva and Lev Manovich developed a more nuanced understanding of this ‘digital’ layer: the idea that online ‘space’ enhances and augments the city, rather than replacing it. The city, being a hybrid digital and physical entity, is lived partly physically, but also partly online in a complementary, reciprocal manner. In other words, de Souza e Silva argues that being online has become an essential part of what Lefebvre calls ‘everyday lived space’ as well as ‘spatial practice,’ creating a so-called ‘hybrid’ online/offline city. With faster internet and technologically more advanced mobile devices, the concept of the ‘hybrid city’ seems to be increasingly relevant and applicable to our ‘Smartphone Era’. However, the notion of the hybrid city has not been updated much since its initial development in the early 2000s, despite the shape of mobile internet and the mobile phone having changed drastically. Moreover, there is a clear lack of case studies to further develop and deepen the theory. Through my observations in Tokyo, I revisited the theory of hybrid cities and have shown in detail how this ‘hybrid’ online/offline space manifests itself in everyday life.

The main objective of this research was to unravel the relationship between mobile internet and physical space, using a combination of quantitative and qualitative research methods, and taking Tokyo, the cradle of mobile internet, as a case study. The results show a variety of ways in which the mobile phone user combines physical and online ‘space’, creating a hybrid form of city life. First of all, the results show how mobile phone use is omnipresent, as on average 14 percent of the pedestrians in the observed neighborhoods are using their mobile phone for a non-voice call function. Moreover, the ‘mobile’ aspect from the mobile phone is often taken quite literally, as two-thirds of the users in Tokyo’s public spaces use the device while actually walking. This means that, at any given time, almost one out of ten pedestrians is walking while using their mobile phone. While walking, the mobile phone user is usually rapidly shifting their attention between their screen and their physical environment. In order not to bother other pedestrian traffic and also partly to enhance their own safety in traffic they will also walk slower than other pedestrians, and often walk near the ‘edges’ of the pavement.

Smartphone walking, or *aruki-sumaho* as it is called in Japanese, has received much attention lately and has become one of the main public concerns when it comes to mobile phone use, in Japan as well as globally. While the actual numbers of accidents related to *aruki-sumaho* in Tokyo are relatively low, the issue is much discussed, and its discussion is even visible in public space in forms of posters and other forms of campaigns. These are especially prevalent around train stations. However, although nine percent of people will walk when using their phones, pedestrians will rarely use their mobile phones intensively while walking. When there is a need to focus on the screen to such a degree that the user is not able to pay enough attention to their other actions, the mobile phone user will usually halt or withdraw themselves from the pedestrian flow. In the discussion that surrounds the issue of *aruki-sumaho* there is also a strong underlying tendency to think of the mobile phone from the technophobic perspective and to see the device as a mind-numbing piece of technology. Comparing the discussion of *aruki-sumaho* with my own findings, while understanding that traffic safety should be treated as a serious issue, I find that in reality, the average mobile phone using pedestrian shows a relatively high level of awareness of their physical environment (at least to the extent that they need for safety reasons) and takes their own forms of 'safety precautions'. In conclusion with regard to this topic, my findings concerning mobile phone walking suggest that using one's mobile phone while on the move seems to be such an everyday life practice for many people that they developed their own ways of combining mobile phone use while walking in a relatively safe way. Thus, the mobile phone-using pedestrian, merging the physical and the online in their urban spatial practice, becomes the central axis of space hybridization in the city.

While the omnipresence of the mobile phone and its patterns of usage among pedestrians in the city are a valuable asset to the theorization of hybrid space, I would argue that the most important finding that came out of my research is that the relation between mobile phone users and space is reciprocal, yet not homogenous but fragmented. What I mean by this is the following. First of all, the quantitative findings indicate a strong connection (reciprocity) between the type of environment and the type of mobile phone behavior, showing for example a tendency for people to use their mobile phone while walking during rush hours in a business district, and a tendency for people to use their mobile phone more intensively while standing or sitting in a shopping district during the weekend. Furthermore, the type of interaction with the device fluctuates (and thus is non-homogenous): the likeliness of people to interact with

more information or internet-related content increases with the attention they are able to give their device, given the circumstances. Finally, places where a lot of people concentrate on their screens therefore also seem to be more 'digitalized' than others, showing how there is a gradient (fragmented) scale of digital use throughout the city, which also has a strong relation to the type of environment. Contrary to the initial idea that mobile internet would free us from 'restraints' of space and time, we see a strong connection between forms of mobile phone use and the time of the day and type of environment. However, even though the forms of mobile phone use are dependent on the user's physical environment and their movement actions, mobile phone users can be seen using their direct physical space in innovative ways. By making use of the construction, set-up, and street furniture of the area around them, mobile phone users will re-interpret the meaning of their environment in order, for example, to create 'private' areas for mobile phone voice call use. The mobile phone user, in order to negotiate the boundaries between private and public space, will also use their mobile phone as a 'territory machine', as Fujimoto Kenichi (2005) called it. When they do, they position themselves using the mobile phone as well as the space around them in such a way that they are able to create (merely symbolically) an area of 'privacy' even while out in public space. Furthermore, in the phenomenon of mobile phone users clustering around specific spots, we see how some spaces in the city are more 'digitalized' than others, showing how the aspect of going online and playing with one's phone has actually become the most prominent characteristic of that particular place. These 'mobile phone hubs', as I have called them, where people indulge in their screen *en masse* – a collective act in the sense that all of them are doing the same, but at the same time an individual act as it 'shields' them from face-to-face interaction with those around them – show how mobile phone use is not homogenously spread throughout the city, but is fragmented and sees concentrations around several types of specific spaces, which are often public transportation access points and pedestrian crossings. The observations of this research around these 'hubs' also show how mobile phone use is triggered by these spaces, implying that some urban spaces trigger mobile phone use while other places can discourage it. This, again, stresses the important role of the physical environment when it comes to mobile phone use.

The mobile phone, especially its latest and most used form, the smartphone, is a complex piece of technology that combines the functions of several other media and has changed many aspects of our daily life. First and foremost, it changed the way we communicate with each

other on an individual level. On a larger scale, it has also slowly been influencing urban life and the cityscape. Places in the city are transforming in meaning, becoming increasingly important in the light of mobile phone activities that are conducted online. Urban space is re-interpreted from the perspective of mobile phone users, and people change their interaction with space depending on their mobile phone use. On top of that, looking at the visual landscape of the city, there is a growing presence of screens in the city, and the designs of these screens seem to resemble and simulate the smartphone's interface. Being influenced by the pervasive use of the smartphone, screens all over the city are homogenizing and compounding into a single, smartphone-based form of the 'digital realm' – or all that is part of our digital everyday life. Furthermore, scattered around the city are a variety of visual references to mobile phone applications, as well as places where mobile phone use is stimulated in some way through use of signs or images. This further shows how the city itself, not just its inhabitants, is becoming a hybrid of the online/offline. This implies that not only are the city and online space increasingly referring to each other, the online part of the hybrid city is increasingly homogenizing in form, showing a clear smartphone-based shape.

Less related to the topic of transformation of spatial use of the city but nevertheless an important other objective of this study was to show how there are many forms of mobile phone usage and how some of them are culturally specific. In the first part of this study I defined what can be called Japan's current mobile phone 'culture' by showcasing the most widely used forms of mobile device usage, and connecting these forms to older forms of mobile phone use that were previously characterized as being part of Japan's mobile phone culture of the 2000s. This objective is especially important given the fact that, while studies on mobile phone culture that focused on Japan saw a surge in the early to mid-2000s due to Japan's early advances in the field of mobile phone technology, research on the topic decreased significantly after the diffusion of the smartphone – which is unfortunate since time has made the topic perhaps even more interesting than before, as it shows the transformation of Japan's mobile phone culture. Throughout the discussion, I emphasized the important role Japan has played globally in the development of not only mobile phone internet, but also other forms of wireless communication before that; a context and prehistory that are often not mentioned in English-speaking research on the history of the mobile phone. Even though Japan has been a major player in the development of mobile wireless communication media and the mobile phone has been a central part of everyday life for a longer time than in many

other countries, and should as such be addressed in research. However, on the other hand, there is also the narrative that Japan has an affinity with mobile media that is obsessive or unhealthy, as is sometimes implied in accounts that are influenced by an idea of Japan as the technological 'other'. Rather than portraying Japan as a unique or 'weird' case, it is important to acknowledge the country's long history of (mobile) electronic communication and how parts of previous communication media 'cultures' or common practices of use with the feature phone (*keitai*), the pager, or even letter writing, can be seen repeated in some form in the common practices of current smartphone use.

Prominent aspects that define current mobile phone use in Japan, as described in the first chapters, are the prevalence of the so-called 'dual product user', the mobile phone user who uses multiple mobile devices; the focus on fast and private mobile internet; and the popularity of smartphone gaming. Of course, there are many other functions the mobile phone has in daily life in Japan, and this research only elaborated on some of the most visible aspects which are generally regarded as the most prevalent in mobile phone use in the Japanese setting. Of the aspects that define Japan's mobile phone culture, one of the cultural-specific aspects that is also connected to a culturally-specific way of interacting with the use of space, is the level of consideration Japanese mobile phone users give to the negotiation between public and private space when making voice calls. The voice calling in public has for a long time been discouraged in Japan as it was regarded as noisy and inappropriate, and therefore the making of voice calls in public requires a relatively high level of discretion from the mobile phone user. More than is the case with textual or other forms of mobile phone use, the voice call user – if often symbolically – constructs a private 'bubble' by making use of body gestures and the physical environment around them. By doing so, the mobile phone is used as an advanced form of the 'territory machine', carefully negotiating the space around the user in order to shut out face-to-face communication and focus on communication through their device. In a way, this is the most reclusive form of behavior a mobile phone user who is out in public can put into use: they utilize all kinds of options that are at hand at that moment to construct the most private space. While Tokyo is just one part of Japan and should not be seen as representative of the whole of Japan per se, this does seem to indicate that the border between private and public space is strict, which was earlier also pointed out by researchers of Japan's *keitai* culture (i.e. Baron and af Segerstad 2010). It furthermore shows how, even though the mobile phone's voice call function is inherently contradictory to their cultural idea

of what is public and private, the Japanese mobile phone user has found a way to still be able to conduct voice calls in public, by manipulating the space around them.

Although mobile phone use has generally been considered a form of reclusive behavior, despite the fact that the mobile phone is inherently meant for communication and is thus at least potentially a social tool, this research has shown that mobile phone use does not always mean that the users withdraw themselves from people in their direct environment by engaging with the device. Even though the voice call function shows a high level of withdrawal among users, and intensive mobile phone use in the city usually leads to the user withdrawing from pedestrian traffic and 'shielding' oneself from others, these are merely two types of mobile phone behavior that are part of a much larger spectrum of mobile phone use in social situations. The analysis of the observations made for this research show that within this spectrum there is also a place for the mobile phone being used as a tool to enhance face-to-face interaction and provide the user with information and topics to augment and complement face-to-face conversations. For example, when it is used as a tool for navigation in a group of people, the mobile phone plays an important role in a group's social interaction and social hierarchy. Moreover, the observations have shown many examples of people engaged in face-to-face conversations while showing each other something on their mobile phones. The mobile phone can be used in this way in a conversation between only two people, but in larger groups as well. Therefore, while it is true the mobile phone can lead to a withdrawal from social interaction, I want to emphasize that mobile phone use has a broad variety of usage patterns, many of which are definitely also part of more face-to-face, social, and inclusive interaction.

The research findings, although I believe they are especially relevant considering the latest increase in the amount of discussions on mobile phone use while walking, have several limitations to them. First and foremost, the observations were made in the center of Tokyo, and represent only a small part of the large metropolitan area. In Japan alone there are many local cultural differences in communication practices between regions that I expect to have an influence on the behavior of mobile phone users, which could make for different kinds of mobile phone-using pedestrian behavior depending on region. The types of mobile phone behavior that were observed are all influenced to some extent by a cultural context of communicative practices. This is particularly the case with the way Japanese mobile phone

users seem to ‘shield’ mobile phone use to such a large extent. As there is a relatively sharp division between private and public in terms of conversational behavior in Japan, as well as a high sense of responsibility that prevents people from bothering others in their direct environment, this part of the research shows a high cultural factor when it comes to mobile phone use in urban environments. However, there is no doubt that similar forms of ‘shielding’ and mobile phone ‘bubbling’ can be found in other places as well, depending on the cultural relation of public and private use of space, as well as the common local or cultural codes that dictate practices of communication. On the other hand, the heterogeneous distribution of mobile phone use in the city, the fact that different types of physical environments lead to different ways of mobile phone use, as well as the clustering of mobile phone use in ‘mobile phone hubs’ might be less bound by local or cultural factors of influence and it could be expected that these transformations of spatial use in cities are actually also visible in many other cultures that have a high diffusion of mobile phones.

CLOSING REMARKS

For the final part of this study, I would like to urge researchers to look for the continuities in media use and the consequences of global smartphone use rather than contributing to the dominant ideas about the Information Technology ‘revolution’ that have been rooted in the academic literature on mobile phones and other forms of IT. The idea that IT are ‘revolutionary’ is not only an exaggeration, but also a narrative that is being upheld and exploited by those who produce this ‘revolution’, especially in the case of the mobile phone. The idea that the mobile phone is in constant need of replacement has greatly benefited the mobile phone sector, a sector that has some of the wealthiest businesses in the world. Despite the fact that all wealthy countries have a smartphone saturation rate of nearly 100 percent, new mobile phone models are being released every month. By relying on the narrative that mobile phones are constantly ‘revolutionized’ and insisting that mobile phone models are outdated within a year, IT-producing companies are able to keep a demand for their products. In some cases, this rapidly renewing market has grown out of control. One need only to look at Japan’s ‘big three’ mobile phone carrier companies and how these succeeded in gaining nation-wide control of the mobile phone market. Their grip on the mobile phone market in Japan did not only result in large profits and skyrocketing prices for the Japanese consumer, but has also possibly led to an economic setback as Japan became less competitive in the global IT market because of the Japan-specific models these mobile phone providers have

been producing throughout the early 2000s. Only recently have legal steps been taken to weaken the iron grip these companies have had on Japan's mobile phone market for decades.

It is not just the Japanese consumer who suffered from this oligopoly of the mobile market with its skyrocketing contract prices: the manufacturing and distribution of mobile phones is known to be problematic on a global scale. The manufacturing process of IT products, such as the smartphone, rests on severely exploiting the periphery in order to produce a growing number of electronic devices, which furthermore negatively affects the environment with its production and waste. Manufacturers and mobile phone carrier companies have, in the past decades, established a consumer market where mobile phones are constantly in need of being renewed – on average a consumer will use their mobile phone for less than three years before buying a newer model.[61] The minerals that are used for the billions of smartphones that have been produced in the last decade alone mostly stem from the Democratic Republic of Congo and the mining process is related to brutal civil conflicts, which mobile phone producing companies are (at least partly) responsible for. The circumstances under which the people (among which there are many children) mining for these minerals are working are often life-threatening, and have recently attracted attention from human rights organizations such as Amnesty International. Besides the fact that the minerals are mined under unethical circumstances and have contributed to a state of civil war, the short lifecycle of the mobile phone is also creating tremendous amounts of toxic 'e-waste': in 2014, this e-waste, coming from small IT products like the smartphone, was estimated to be 3 million metric tons, of which less than 16 percent are recycled.[62] On top of that, the production of the devices requires a lot of energy, most of which is produced by non-sustainable energy plants that run on fossil-fuel.

The reification of electronic information as an abstract 'digital realm' and the idea that the IT Revolution produces itself, have contributed to neglecting or ignoring the vast quantity of electronics, energy, and human resources it takes to produce and uphold it. Paradoxically, while mobile internet is regarded as a dematerialized world, the amount of energy and actual

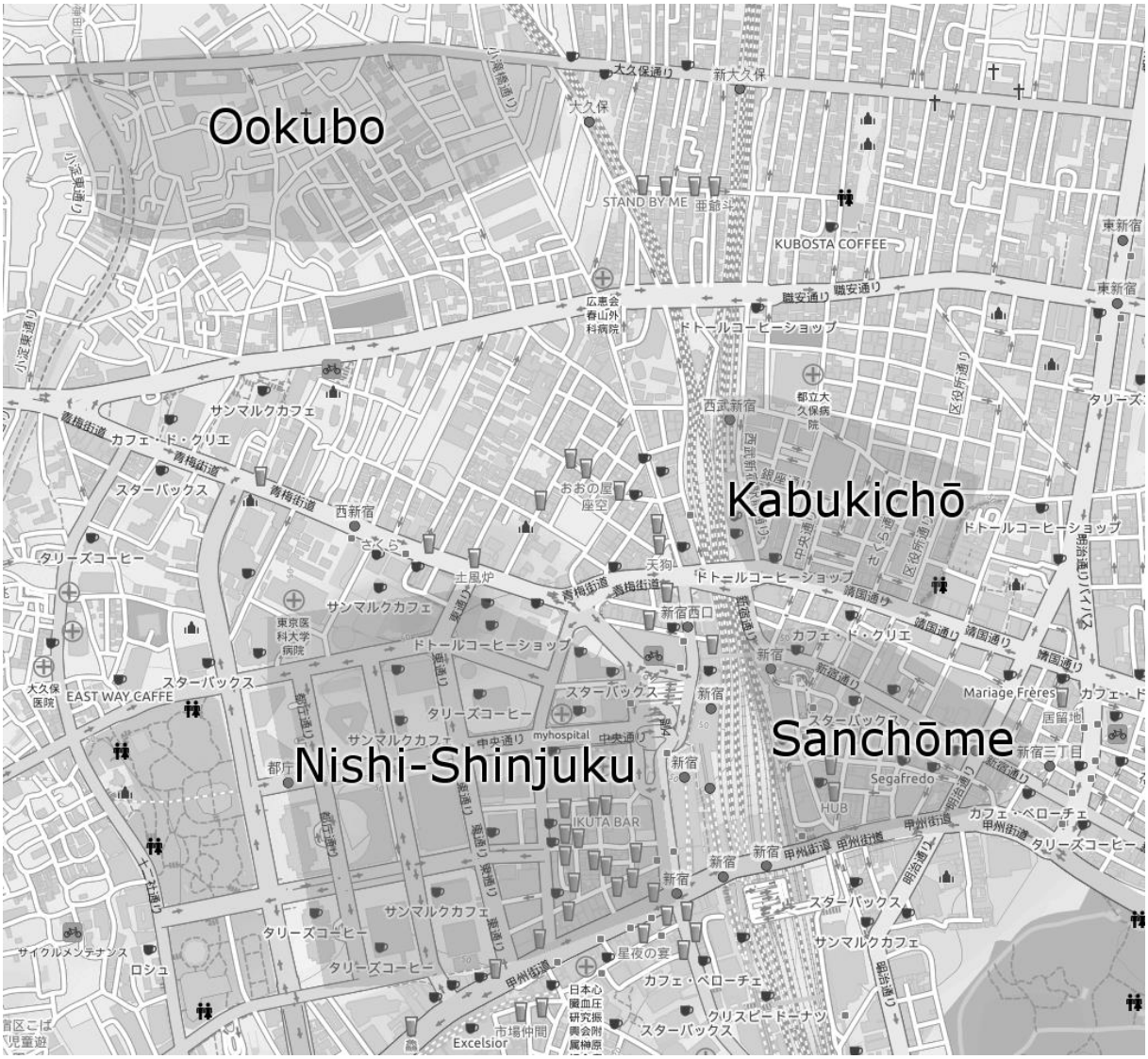
[61] Entner, Roger. "2014 US Mobile Phone sales fall by 15% and handset replacement cycle lengthens to historic high." *Recon Analytics*. February 10, 2015. http://reconanalytics.com/2015/02/2014-us-mobile-phone-sales-fall-by-15-and-handset-replacement-cycle-lengthens-to-historic-high/ (Accessed October 31, 2019)

[62] "From Smart to Senseless: The Global Impact of Ten Years of Smartphones." *Greenpeace*. February 2017. http://www.greenpeace.org/usa/wp-content/uploads/2017/03/FINAL-10YearsSmartphones-Report-Design-230217-Digital.pdf (Accessed October 31, 2019)

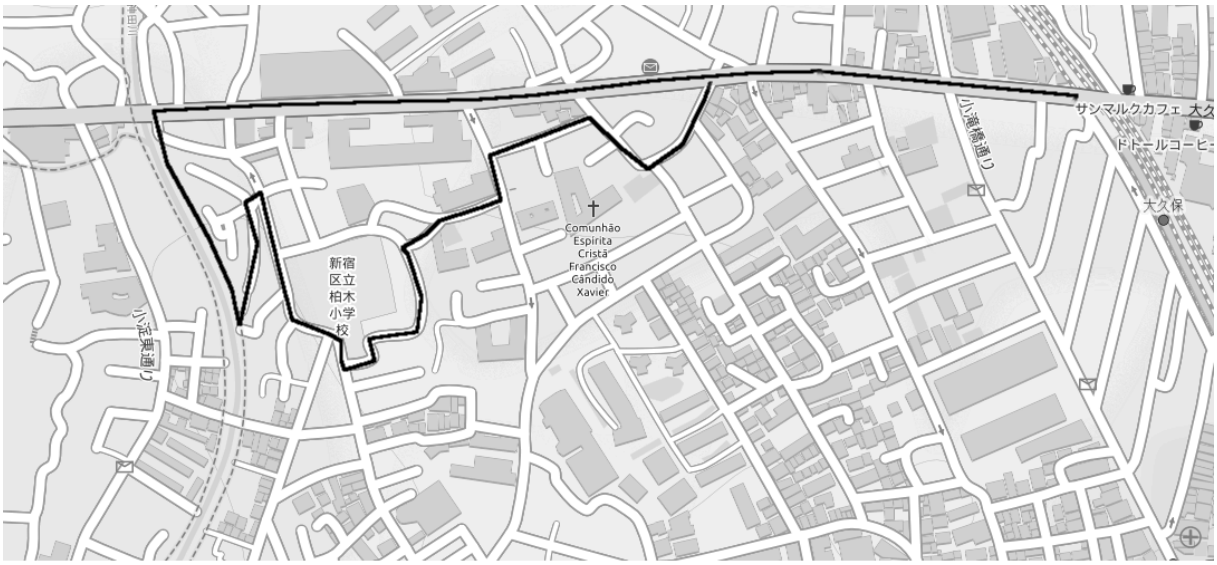
material it takes to create it is frequently forgotten. Therefore, rather than justifying the ICT 'revolution' and overlooking the material aspect of the mobile phone, I would like to invite a more critical view on the device from the perspective of its production. In any case when it comes to the mobile phone, whatever the scope of the research may be, it is important to keep in mind its concrete and direct effects on the material world. First of all, because the concept of the 'digital realm' is often looked at from a highly abstract perspective, and the metaphors for electronic communication – while relevant from a philosophical perspective – have interfered with the verifiability of a part of the research that has been published on the device. After all, the themes that are most prominent in research on mobile phone use often are influenced by utopian or dystopian mindsets – with a strong emphasis on the latter. Most of the existing research (globally as well as specifically on the Japanese case) that deals with the impact of mobile phone use on the use and perception of urban space, for example, is based on research with unrealistic of questionable methodology, and largely driven by a risk-focused discourse that actively seeks to portray the mobile phone as a danger towards the individual, and by extension, society. But moreover, the concept of 'the digital realm' now started to overshadow important aspects of the production of the device that are much more dangerous for society. Therefore, rather than pursuing research that focuses on the 'virtual' aspect of the device, such as the quest for identifying the Weberian 'zeitgeist' of the 'smartphone era' or speculating about the future of the role of physical space, the concrete effects of the production and use of the mobile phone on everyday life should be thoroughly analyzed first. Furthermore, researchers should be wary that the mobile phone, as one of the flagship technologies of the 'Information Technology Revolution' plays a central role in some of the world's current most pressing issues. Neither from a technological point of view nor from a user point of view is the mobile phone really as revolutionary as it is often though or portrayed to be. The narrative of mobile phones (especially smartphones) being constantly 'revolutionized' is being maintained by those who capitalize on the manufacturing of the device, consecutively leading to exploitation of the periphery and generating large amounts of so-called 'e-waste'. In the future, I would therefore like to urge researchers to look at the social effects the production of the mobile phone is causing as well as the use of it, in order to further deepen our understanding of the role mobile phones play globally.

APPENDIX I

Map of the areas used for observation in Shinjuku and the routes used for the quantitative analysis.

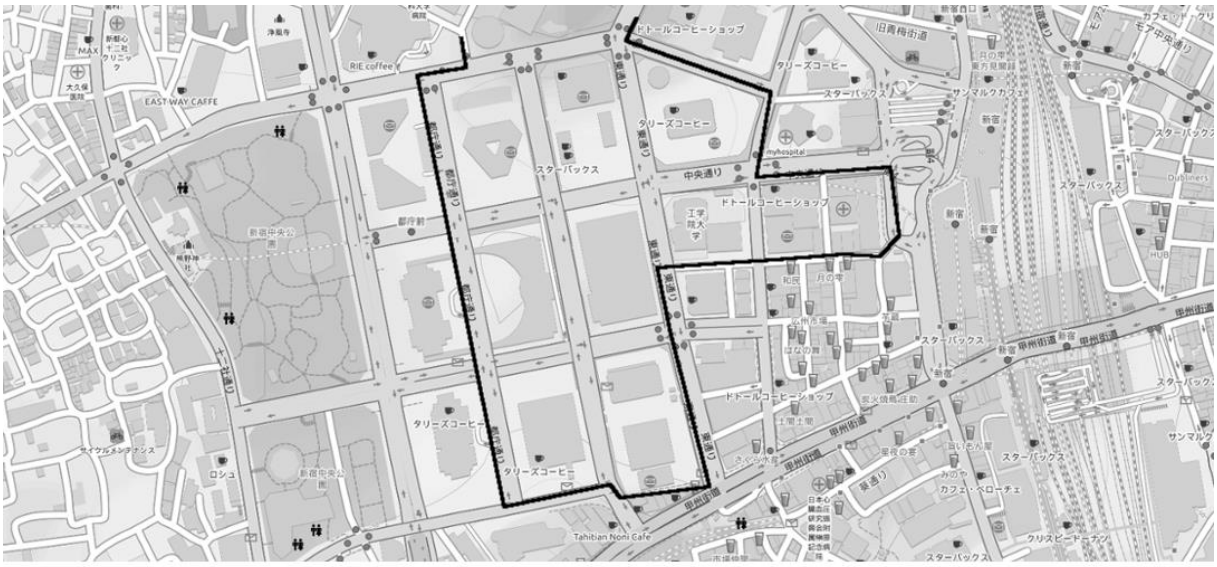


Map 1: Areas used for observation in Shinjuku



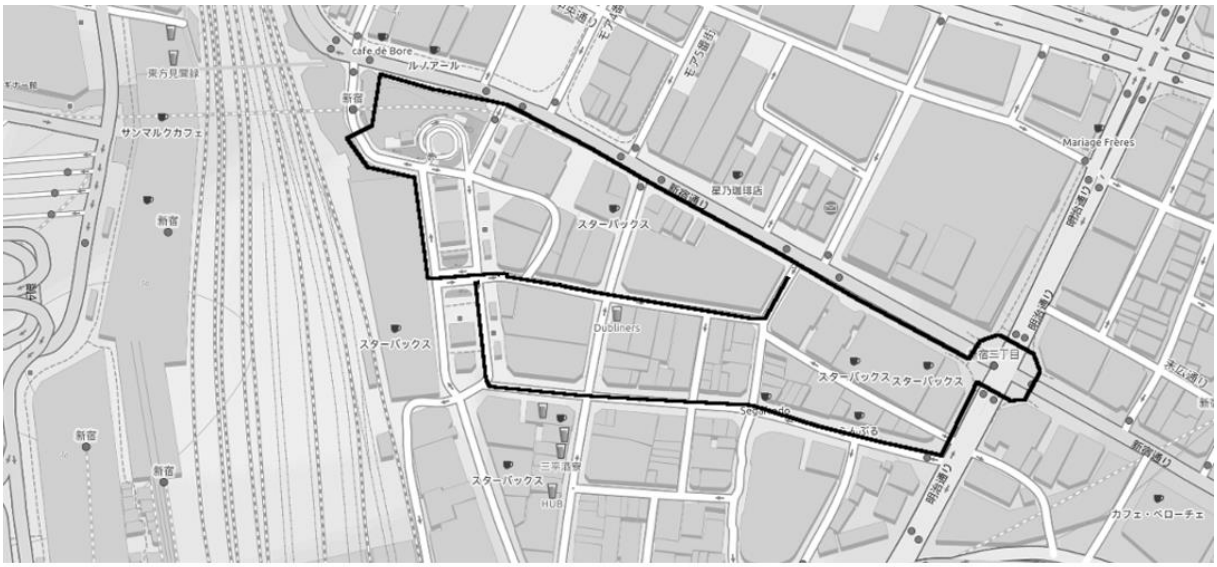
Map © OpenStreetMap

Map 2: Route for quantitative analysis, Ookubo



Map © OpenStreetMap

Map 3: Route for quantitative analysis, Nishi-Shinjuku



Map 4: Route for quantitative analysis, Shinjuku Sanchōme

Map 5: Route for quantitative analysis, Kabukichō

APPENDIX II

Data collection form used for behavioral mapping

	Sex		Activity				Smartphone action – non textual			Horizontal or vertical		Action (one handed)				Screen activity		
	F	M	Walking 0.5	Standing 1	Sitting 2	Cycling 0.25	Calling	Voice chat	Taking pictures	V – 0.5	H – 2	Typing 0.5	Scrolling 0	Navigating 2	Tapping 3	Absent-mindedly	Focused	Notes
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