

The decline of public space in the digital age?

*A search for a new synergy between the use of digital
devices in and traditional use of urban public space.*

*Lize Oldenkamp
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P5 report



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The decline of public space in the digital age?

A search for a new synergy between the use of digital devices in and traditional use of urban public space

Graduation project

P5 report

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Research studio

Complex cities
'Imagining (European) regions'
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Mentorteam

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Image front page: Indische Buurt Amsterdam (image by author, 2020)

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Abstract

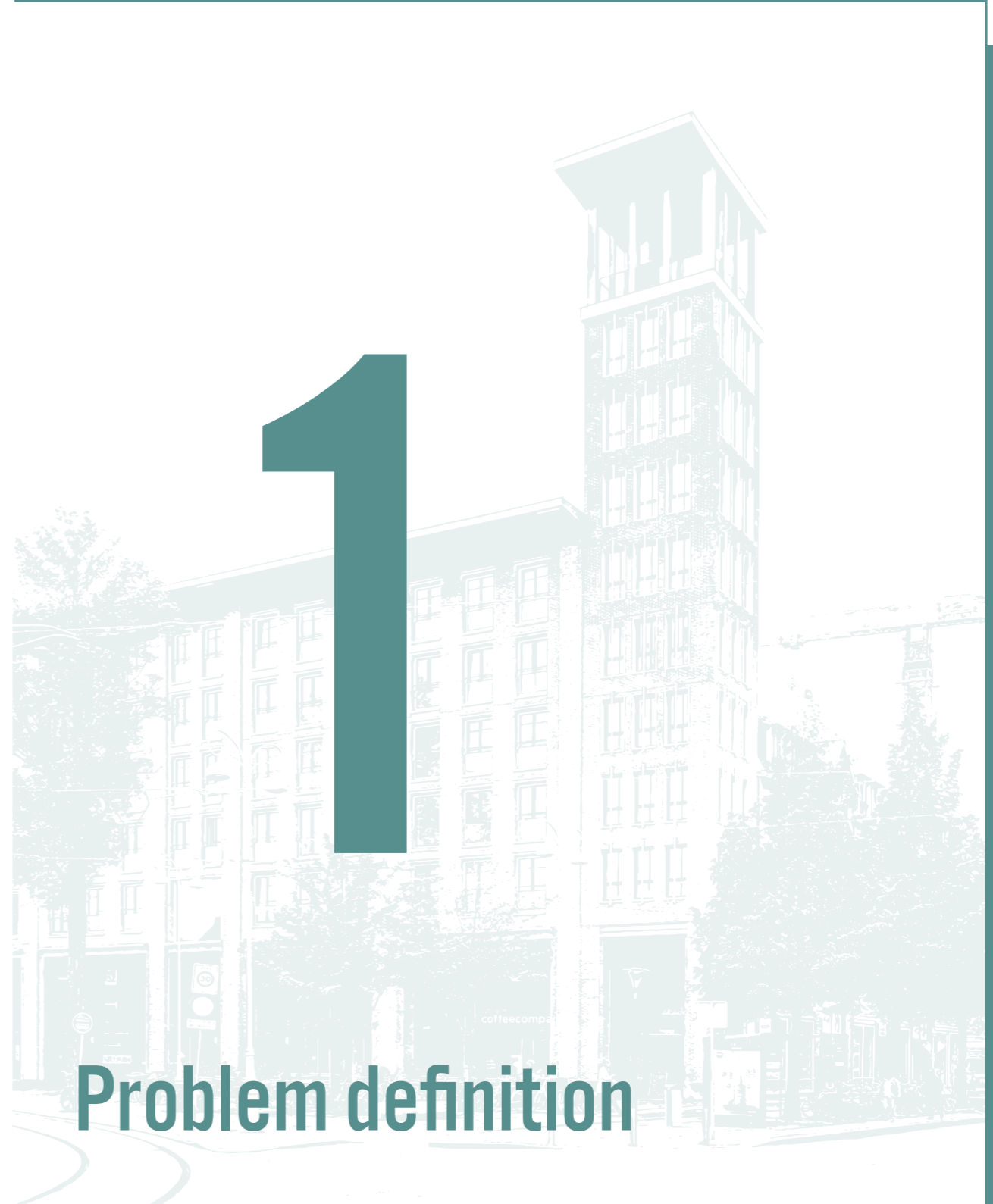
The world we live in is more and more a digital world and the number of people having access to digital communication technologies is growing rapidly. This integration of digital technologies into everyday life is what is called the digitalization process (IGI Global dictionary, 2018). It is a process that can be seen as a long-term societal transition influencing our daily life, like the way we work, how we do our shopping or how we communicate with friends and family (Van Winden & De Carvalho, 2017). As the way we live influences our use of the space around us, changes in this process also change our use of the space around us. On the other hand, our surroundings influence the decisions we make as well.

This graduation projects will focus on the use of public space and how public space is affected by the introduction of digital devices. It is believed that this digitalization process has introduced new behaviour, making public space not just a space for traditional uses, like meeting people, but also places where digital devices are used more often, either for practical or for social purposes. Public space is seen as one of the fundamental elements of cities and thus also of Dutch cities, and cities need to prepare themselves for future changes. This graduation project tries to find a new synergy between this traditional use of public space and the use of digital devices in public space, by analysing the phenomenon in the Indische Buurt, a neighbourhood in the eastern part of Amsterdam. It will provide an analysis of this neighbourhood, research the impacts using personal digital devices have on the use of these spaces, and how to deal with these changes. The results of the analysis will be translated into urban design interventions which have the ultimate goal to find a new synergy between the different uses of public space. With reflecting on these interventions and proposals, a matrix will be produced to show how certain interventions are connected to different types of use and user roles. This will show how the design interventions could be integrated in other neighbourhoods or cities.

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1.1 Introduction

In 2017, the number of individual people worldwide that were connected to a mobile service surpassed 5 billion (5.000.000.000); a milestone. It is predicted that by 2025, this number will have risen to 5.9 billion people, meaning 71% of the world population is connected to a mobile service (see Figure 1 and Figure 2) (GSMA, 2018). An even bigger growth can be found in the predictions of mobile internet connections. For these connections, it is predicted that 2025, 5 billion people will be connected to mobile internet, a growth of 1.75 billion people since 2017. (GSMA, 2018)

Figure 2 shows the relative growth of smartphone connections, compared to all connections, in the same amount of time. Again a huge growth of 20% this time is seen. So, in the coming years, a growing number of people in the world will have access to a smartphone and are thus easily connected to each other and the rest of the world.

Also in the Netherlands a growth is still visible, although not as rapidly as seen worldwide. Especially the growth in devices that can be used everywhere for communication, mobile devices like smartphones, tablets, and laptops, is noticeable. (See Figure 3 and Figure 4)

This digitalization process is a worldwide phenomenon, and has been a topic of interest for urban planners and designers already for many years. However, the focus of this research has mainly been on implementing smart technological solution within the urban processes and structures of cities, creating what we now call 'smart-cities'. There is another side to the story of digitalization, that focusses more on the direct users of the city: people.

The introduction of the telephone, and later the internet, has changed the way people are in contact with one another, even if they are not physically in the same room. Already in the mid-2000s, research showed that the introduction of mobile



Figure 1: Predictions for smartphones worldwide (GSMA, 2018, p.6)

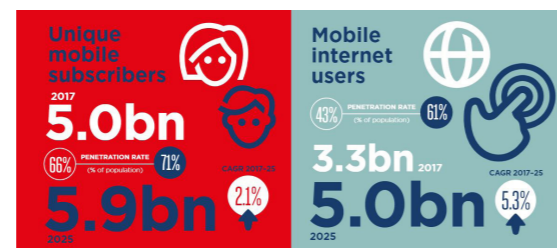


Figure 2: Predictions for 2025 worldwide (GSMA, 2018, p.6)

phones, although having increased the connectedness of people, ultimately led to less face-to-face communication between people. (Eriksson et al., 2007) And exactly this physical contact and communication between people is why public spaces in cities exist. Public spaces are not just for transportation and to get from point A to point B, but also to meet up with friends, walk a dog, do some exercise or just to walk around. Public space, and the design of these spaces, did not react to the new developments in the field of information technologies the way for example coffee shops did by offering free Wi-Fi networks (Riether, 2016).

This constant access to mobile phones and other digital devices thus has its impact on the way people use cities, and more specifically the public spaces in cities. In this graduation thesis, the relationship between the traditional use of public space and the new use of public space due to the growing use of digital devices in these spaces is the central topic. It seeks to find a new synthesis between these uses, by proposing interventions in current public spaces. The Indische Buurt, a neighbourhood in the eastern part of Amsterdam, has been used as a testcase location, to analyse how public spaces are used and to show what the implementation of proposed interventions might look like. According to associate professor Gernot Riether, of the College of Architecture and Design in New Jersey, "As public space has lost its original role, information technology can create an opportunity to reclaim these essential functions." (Riether, 2016, p.260-261)

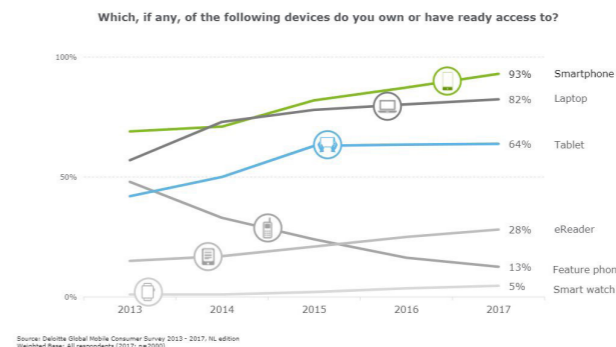


Figure 3: Accessibility to devices in the Netherlands (Deloitte, 2017, p.24)

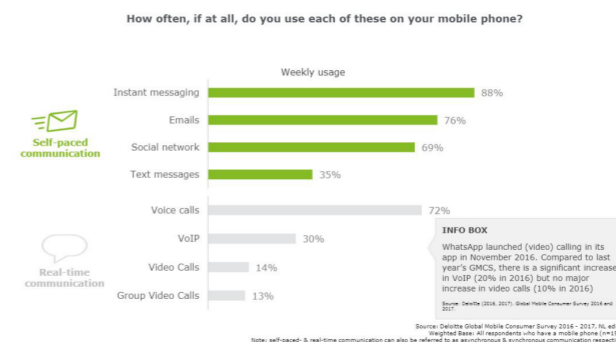


Figure 4: Use of mobile phone for communication (Deloitte, 2017, p. 55)

1.2 Personal motivation

Being in contact with friends and family, grocery shopping, watching a movie or scrolling through social media. Nowadays it can all be done on our smartphone. The amount of hours we look at our screen is increasing each year and it has its effect on our lives.

I live less than five minutes from the faculty where I study every day. A lot of the time, one of the last times I do before I get onto my bike is take a look at my phone. When I arrive at my destination, five minutes later, I look at my phone again. I might text a friend that I am walking into the building at that point, although they will probably see me in less than a minute anyway, or look what time it is, although I know it is only a few minutes later than the last time I looked.

I can sum up numerous examples of situations where I am in public spaces and using my smartphone. Texting a friend while I wait for the bus, using the navigation system on my phone to find the way in a new city while quickly checking my messages, walking to the supermarket and checking the news at the same time, and so on. All these situations I did not have to use my smartphone, I could have had a conversation with the person also waiting for the bus, I could ask someone for directions or follow my instinct and sense of direction, and I could wait checking the news until I was home again.

Realising my own dependency, we might even want to call it an addiction, on my smartphone and communicating with people, has been one of the starting points for this graduation project. Looking around, I do not think my behaviour regarding my mobile phone use is very different from others. So, if I act the way I do, others must do so as well right?

Thinking about this, I started to wonder how this behaviour is impacting the use of our cities and how cities could prepare themselves for changes caused by this behaviour. For me, cities succeed or fail depending on their public space. The design of the square I like to watch people walk by, the park we come to relax and meet up with friends, but also the organization of streets, sidewalks, bicycle paths etc.

In this graduation project I tried to combine my fascination for peoples' behaviour in cities and the development of the city. Understanding how people behave in the city and the consequences this behaviour has spatially is in my opinion key to create more sustainable, flexible and adaptive cities.

1.3 Theoretical background

This graduation part has three main topics that are being researched and connected to each other. It is about:

- Digitalization and the use of digital devices
- Public space and the use of public space;
- People and human behaviour.

In the coming pages, these topics will be explained and defined using several (academic) literature sources, resulting in a problem statement for this graduation project.

As the introduction already suggests, this thesis is about digitalization, public space and people. In this section, a (theoretical) explanation of the different notions will be given, which will conclude in defining the alignments between the notions. This conclusion will be the starting point for defining the problem statement and later conceptual framework of this graduation project. Parts of the upcoming writing has been based on or copied from a theory paper written by this author, as part of the graduation process. The whole paper can be found in appendix ii.

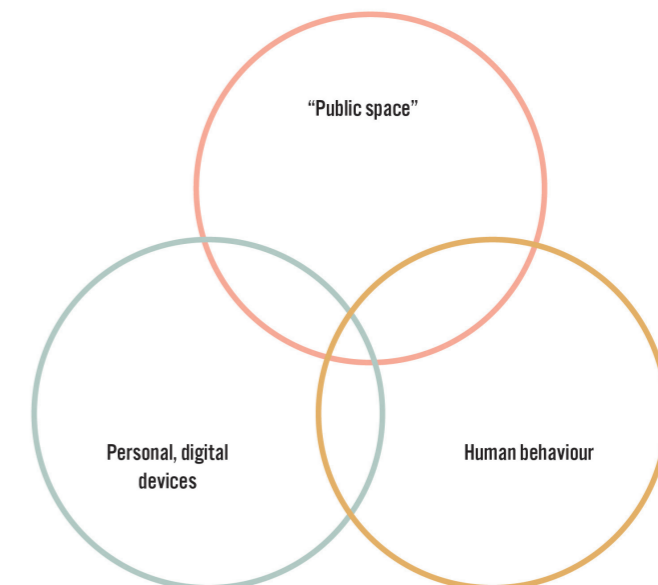


Figure 5: Addressed themes in graduation project (image by author, 2020)

1.3.1 Digitalization

Digitization vs. Digitalization

In the past centuries, a process of rapid technological and digital innovations has been going on, categorized in three periods, called the Industrial Revolutions. The First Industrial Revolution centred around mechanizing production by using water and steam power. The Second Industrial Revolution used electric power for mass production and the Third Industrial Revolution was about automation made possible by electronic and information technology (Schwab, 2016b). According to Klaus Schwab, we stand on the edge of a new technological revolution “that will fundamentally alter the way we live, work and relate to each other” (Schwab, 2016a, p.1). Schwab calls this new revolution the ‘Fourth Industrial Revolution’, which builds upon the Third Industrial Revolution and is “characterized by a fusion of technologies” (Schwab, 2016a).

All the Industrial Revolutions have had an enormous impact on society, but the speed of which they have developed is changing. The Fourth Industrial Revolution is evolving exponentially rather than linear (Schwab, 2016b) and it is less likely

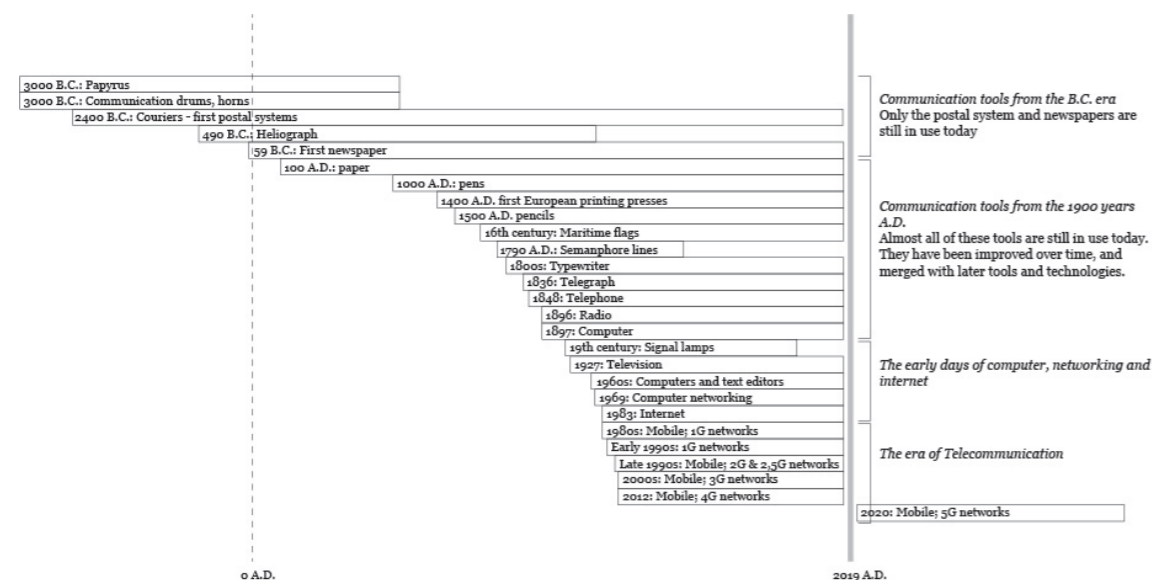


Figure 6: Overview of communication tool development in time (Adapted from “Timeline of Communication tools”, n.d.)

to predict what is going to happen next. This exponential growth or development does not only apply to the Fourth Industrial Revolution, but can be seen in many technological developments through the ages. An example is the development of communication tools that were used other than speech. The development of these technologies is shown in Figure 6. The exponential development is mainly visible in the decreasing time between introduction and development of new communication tools in the last 5.000 years.

Although debate exists on whether the Fourth Industrial Revolution is a revolution on its own or just a part of the Third Industrial Revolution, it cannot be denied that digitization has been going on for many years (Schreckling & Steiger, 2017). Digitization is defined as ‘the process of changing from analog to digital form’ (Gartner, n.d.). This can refer to, for example, products and processes, or any other thing, service or system that can be transformed into a digital form. This process of digitizing is not a new phenomenon but “the effects of an increasingly digitized world are now reaching into every corner of our lives” (Friedrich et al., 2011, p.3). This quote actually introduces a second phenomenon: the process of ‘digitalization’. Again this process comes in many forms, but the definition that is being used in this thesis is provided by the IGI Global Dictionary (n.d.):

‘the integration of digital technologies into everyday life by the digitization of everything that can be digitized.’

What is meant here is we now live in a world where people have worked towards the automation and digitization of everything that could be digitized and to implement this into our daily lives, presumably to make our lives easier. This is the core of the Third Industrial Revolution. The phase we are in now is to combine these digitized technologies, to implement these ‘new’ technologies into our daily lives. Exactly this integration of technology into people’s life is what this graduation thesis is about. Within this digitalization process, many different aspects can be defined, such as finding where to go using a phone instead of a paper map, video-calling friends or family, or looking up information online.

As said before, the Fourth Industrial Revolution is evolving exponentially rather than linear. But actually, this can be said about the whole technical development throughout the years. Take for example communication technologies. Figure 6 shows the development of different technologies that made it possible to communicate over larger distances. Here, the exponential development of technologies over the years is clearly visible. Especially the last 30 years, also defined as the era of telecommunication, technologies developed rapidly.

This example of the development of communication technologies was not chosen completely randomly. As said, many different aspects and elements can be defined within the digitalization process and one of these aspects is the use of digital communication technologies, like laptops, tablets, mobile phones and smartphones. It is precisely these devices that are meant when talking about the use of digital devices in this thesis. The main reason for this is because of the way these

devices can be used in public space (the second aspect that will be explained later on in this paragraph). The advantage these devices have, and most probably the reason they are so popular, is that people are able to use them for personal reasons, while on the move. These devices are therefore also called ‘personal, mobile digital devices’.

1.3.2 Public space

Defining public space has been the topic of (academic) debate and research for years in many different research fields. Every field has its own ideas, holding different criteria. Very strictly spoken, public space can be seen as the areas and civil structures, like bridges and tunnels, that are being maintained by the (public) government (Meyer, 2006). However, this is a very governance-based way of looking at public space, and it should thus be argued that there is more that defines public space than just these regulations. It does however seem like researchers in different fields, like Geography, Planning, and Sociology, roughly agree on the idea that public space can be seen as a place that is of, for and by people (Van Melik, 2010), freely accessible by everyone (Hajer & Reijndorp, 2001) and free of charge (Eriksson et al., 2007).

Public vs private

When talking about public and private space, mentioning the opposite is unavoidable: private and public space. It is therefore inevitable not to mention the debate between public and private space since it has been one of the main topics in Western urbanist thinking since the nineteenth century (de Sola Morales, 1992). Maarten Hajer and Arnold Reijndorp (2001) indeed state that “public is the opposite of private” (p. 11) and thus public space is the opposite of private space. Then again, it should be noted that there is a debate going on, whether this hard distinction between public and private should be made at all whilst trying to define space.

Although geographer Ted Kilian (1998) profusely states that he does not believe public and private spaces exist as such anymore, he does believe that ‘public’ and ‘private’ are two very real and relevant terms. This is based on the idea that “privacy – the power of exclusion” (Kilian, 1998, p. 124) and “publicity – the power of access” (Kilian, 1998, p. 124) are the main values in defining private and public. Both values play out in defining space and thus publicity and privacy both exist as part of all spaces. Hence, this suggests that public and private spaces do not exist as such, but that every space finds a different balance between the two core values. To Kilian, there is a duality between the “real physical space and the socially constructed publicity or privacy” (Kilian, 1998, p. 124). Ignoring the duality would doom “any definition of public space to insufficiency” (Kilian, 1998, p. 124).

Also, Manuel de Solà-Morales is questioning whether the words public or private should be used at all when defining space: “Hence, if all urban space is more or less

public (and all public space is more or less of or for private interests), what would be the specificity of what we conventionally call ‘public spaces?’” (De Solà-Morales, 2013)

So, maybe trying to define exactly what public space is, is something that should not be tried at all anymore. A short research on how to define public space leads to thousands of books, papers, essays, and opinions, going back to the ancient Greeks, 3000 years ago (De Solà-Morales, 2013). And although Kilian does not believe in public and private spaces, he does acknowledge that these spaces are meaningless without social interaction. The balance between public and private, between publicity and privacy, is what ultimately defines a space. It thus might be wiser to focus on the one aspect that does seem to be agreed upon in understanding public space: people. Without people, public spaces would not exist, Kilian’s values of publicity and privacy only exist because they are people’s values, and according to numerous renowned researchers, like Jane Jacobs and Richard Sennett, public space was (or still is) mostly a place for (impersonal) contact between people (Jacobs, 1961; Sennett, 1977).

Looking back at the definition of public space that was formulated above, it becomes noticeable that, although the definition is based on different research fields, they do have in common that they take people as a central element in the definition. People are what defines a space, whether it is public or private (or maybe even something in between?) and people have used, and presumably will always use, public spaces as places for interaction with other people.

Spanish architect and urbanist Manuel de Sola-Morales takes it even a step further saying that public space being a structure of streets and squares, means it is ‘the substance of coexistence, interaction and redundancy that shared life brings.’ (De Solà-Morales, 2013). So, public space is not only about the physical elements, like the street, but has, or should have, the potential to create interaction between people. Hajer and Reijndorp underline this, but use a different term for this: the ‘public domain’. According to them a public domain is a space where exchange between people not only is possible, but is also actually happening. (Hajer & Reijndorp, 2001) So, not every public space is a public domain, since not every public space agrees with this requirement of interaction.

Geographer Ted Kilian agrees with this concept by stating that public space in literature can be defined as either a place for impersonal contact of a place for representation. He bases this on a comparison of different researchers of the concept of public space, like Jane Jacobs, Richard Sennett, Jan Gehl, Henri Lefebvre and others. For Jacobs and Sennett, public space was about being a place for contact. Thus, they worried that loosing this contact would be the end of the city. (Kilian, 1998)

Public space as an interface

A lot of researchers believe that public space is mainly a space for exchange between people and impersonal contact. (Carr et al., 1992; Sennett, 1977; Jacobs, 1961) For

other researchers, like Hajer and Reijndorp (2001) the definition of public space is more strict, as it is just a freely accessible space. However, they do acknowledge the part of interaction between people, but define this in a different way, calling it 'the public domain'. This public domain is, in essence, a place where interaction between different social groups is possible and actually happening. According to them, not every public space is a public domain, as not every freely accessible space matches this requirement of facilitating interaction. However, in their opinion, a coffee shop, public library, or cafe could also be seen as a public domain, since they facilitate interaction between people and are accessible free of charge. As the focus and scope of this research are on spatial public space, these kinds of public domains are not regarded as such.

Although Hajer and Reijndorp make a clear distinction between the notions of public space and public domain, other researchers explain public space within the ideas of the notion of the public domain. Therefore, and because the word 'space' is easier associated with the spatial focus of urbanism, in the continuation of this paper, the word public space will be used. Though, from now on, the ideas behind the notion of the public domain are recognized and integrated into the understanding of public space.

It is clear that public space is one of the most important elements in the 'classic' city, for meeting up, interaction, and communication with other people. According to Eva Eriksson, assistant professor of the School of Communication and Culture in Aarhus, Denmark, and her colleagues "public space is an amazing physical and social interface between people" (Eriksson et al., 2007, p. 32), once again elaborating on the social aspect of public space.

An interface can broadly be seen as something that stands between two other things or systems, helping with the communication and interaction between the two (De Souza e Silva & Frith, 2012). Thus, it can be concluded that people and their need for communication and interaction is the key element in defining what a public space is, not necessarily as a physical space, but as an experienced space. Public space, therefore, should be a space where people come together, interact with each other, or just pass by each other, and hence becomes a place (Gieryn, 2010).

Since talking about public space as a place for interaction, or as the ultimate place to meet strangers, friends, or family, defining public space as an interface might actually be the right thing to do. It combines the ideas of the notion of 'public domain' as described by Hajer and Reijndorp (2001), while still using the more spatial associated sound of 'public space'. In this new light of public space functioning as an interface between people, the conclusion might be that, although not every public space functions as an interface, it should be the goal to become one. This is where (urban) designers, policy-makers and decision-makers come into play. When redeveloping or redesigning public spaces, this idea of public space functioning as an interface should be the ultimate goal.

1.3.3 Defining public space

So, public space is, according to the explained researchers, first and foremost a place that is used for communication and interaction between people. However, this is quite a sociological point of view, which is good to have an understanding of. Interesting is to also have a look at how municipalities view public space and define it spatially. The municipality of Amsterdam is both very clear and very broad in her understanding: "All urban space, within the boundaries of the municipality of Amsterdam, that is not a building." (Gemeente Amsterdam, 2017, p. 12) This definition gives a spatial component to the idea of public space, which was lacking in previous definitions. However, coming back to the discussion between public and private, some spaces in the city might be regarded as urban, but are privately owned, like private gardens. It is important to note that the definition of Hajer and Reijndorp given earlier in this paragraph comes into play here again: public spaces are spaces that are freely accessible by everyone.

Combining the spatial definition of the municipality of Amsterdam and the more theoretical definition of the researchers explained above gives the spatial definition of public space that will be used in this thesis:

Public space is regarded as all urban space (within the municipality boundaries of Amsterdam), which are not buildings, that are freely and publicly accessible for everyone.

Even with this definition, a lot of side notes can be made. For example the question whether a park that is freely accessible for only a certain timeframe during the day, because the gate closes, is still a public space. Or is a place that is publicly accessible for everyone, but designed in such a way that only a smaller group might be attracted to it (like in Figure 7), still a public space? However, because a lot of these arguments are either perceptual or strict rules, and to keep the definition as simple as possible, elements like these are not taken into account when trying to spatially define public space.

Although, this definition includes part of the more social aspects of public space, the main focus still seems to be on the more spatial aspects of public space. Therefore, giving one definition of public space might not be enough, and a clear distinction should be made in defining what public space is. On the one hand, policy-makers and regulators should have a strict definition, almost like a rule, of what public spaces in the city are, to actually maintain and improve these. On the other hand, people and how they experience public spaces is as important, because without people, public space does not really exist. A second definition of public space should therefore be given, focussing on the people, their use and experience of spaces, a definition that is already mentioned in the beginning of this chapter, combining parts of definitions of other (Eriksson et al., 2007; Hajer & Reijndorp, 2001; Gieryn, 2010; Van Melik, 2010).

Public space is a place that is of, for, and by people, freely accessible by anyone, and free of charge, where people come together and where interaction with others is possible and facilitated.

Combining this definition with the more spatial definition given above, would result in a very broad definition, that integrates both the physical as well as the experienced space:

Public space is regarded as all urban space (within the municipality boundaries of Amsterdam), which are not buildings, and a place that is of, for and by people, freely accessible for anyone, free of charge, where people come together and where (impersonal) contact between people is possible.

On page 19 the question was raised whether one should try to define public space at all, or if it is impossible to do so. Giving a definition of public space is not easy, and completely covering everything that has to deal with the idea of public space is not possible. The difficulty does not lie within writing down a definition, but is deciding how broad or narrow the definition should be. In this thesis the choice has been made to use two separate definitions, but also combine them into one definition



Figure 7: Playing chess in public space (Amerongen, 2016)

that covers a lot of aspects of what public space is, or should be.

Also, it should be noted that public space in this thesis is not seen as one specific space. It is believed that public space as defined here mainly refers to a network of public spaces. A square can be seen as a public space, but is also surrounded by other public spaces, like streets connected to the square. As it is believed that consequences of digitalization are not bound to specific spaces, the spatial interventions that deal with these consequences do not have to be in the specific locations, but can also be in the surrounded area. Hence, a network of public spaces is regarded as the area of intervention.

1.3.4 Digitalization in public space

The digital devices mentioned earlier in this paragraph, are more and more used in daily life. Probably, most people cannot remember how a day without their smartphone or tablet would look like. So we are increasingly living online, and this connectedness through these devices creates a lack of communication between people. The reason for this is that devices, like mobile phones, mp3-players and later smartphones are designed for single-use and therefore creating personal bubbles or spheres around the person using it (Eriksson et al., 2007). However, as established earlier in this paragraph, the core idea of public spaces is communication and interaction between people. So the question arises how the introduction of these personal devices is influencing the use of the physical public spaces in the city.

To recap, for a long time, public space was seen as an interface, a tool to help with the communication and interaction between, in this case, people. The notion of public space is therefore often seen as being interactive, social, democratic, and self-organizing (Eriksson et al., 2007). However, according to Israeli architect and urban planner Tali Hatuka and computer scientist Eran Toch, access to media and personal devices is changing this social nature of public space (2016), and the use of these (personal and mobile) digital devices in public space often creates the opposite of this notion. There is no, or less, physical interaction between people, which can thus be seen as anti-social, in a space that is built upon physical and social interaction. Although people are physically present in the public space, they do not participate in urban life. Paul Goldberger (2013), for example, argues that using a mobile phone while walking down the street, eliminates this person from participating in street life.

The lines between the physical and virtual spaces are blurring, due to the introduction of these digital devices in daily life (Hatuka & Toch, 2016). More often than not, the virtual world is the world mentally lived in, whilst physically being present in the 'real' world. Already twenty years ago, in the early 2000s, several researchers noticed that the use of mobile phones enabled people to communicate beyond their physical surroundings. One of these researchers was Vincente Rafael who observed the following: "Even when they [people] are part of a socially defined group – say, commuters or mourners – cell phones users are always somewhere else, receiving and transmitting messages from beyond their physical location."

(Rafael, 2003 In: Hatuka & Toch, 2016, p.2194) Noticing this made it clear that people are not always mentally present when in a physical place and that people are able to be at several places at the same time, hence the blurring line between physical and virtual spaces.

This distinction between the physical and virtual world has since become more blurry or, one might say, almost non-existent. Where the mobile telephone could just be used as a temporary distraction by calls and text messages, the introduction of the smartphone, making the use of internet available everywhere, changed the whole dynamic once again. Nowadays, social media, internet access and the expectation to always be available, forces people to act within their own bubble constantly, even though also being physically present in a 'public' space.

This creation of private bubbles is one of the impacts the use of digital devices has on the use of public space. However, there are more aspects that can put pressure on public spaces in the city. One of these aspects is the use of navigation technologies, creating new routes in the city, that an increasingly amount of people will use. This creation of new routes potentially puts a lot of pressure on certain public spaces, like streets, because they are not build to accommodate such an amount of people.

It is undeniable that digital devices have taken over parts of our lives and the way we use our cities. This is thus becoming, or already is, a trend that needs to be acknowledged and acted upon. According to Gernot Riether, associate professor of the College of Architecture and Design in New Jersey, "public spaces has ceded the exclusiveness of its essential role" (2016, p.260), this essential role being a place where information between people is transferred, like gossip of heated public debates (Giether, 2016). The development of public space in the city cannot be seen apart from the effects of digitalization processes on the use of public spaces and is thus a combination that is inseparable.

The creation of these personal bubbles, but also virtual public spaces, is putting a lot of pressure on the existence of public spaces in the city. Although public spaces are believed to be one of the most important interfaces between people, digital devices are added as a tool and are slowly becoming more important. And if people do not need public spaces anymore as an interface, will they make use of public spaces, apart from getting from point A to point B?

The real question that should be asked is, whether public space even exists anymore. It should be noted that physical contact between people will probably always exist, but in this thesis it is also believed that the role that public spaces play in these interactions is decreasing, with the introduction of digital devices. This traditional use of public spaces as an interaction mode should therefore be maintained, without ignoring the new uses that are being introduced at rapid speed.

Therefore, maybe the conclusion is not that there are no real public spaces anymore, but that the introduction of digital devices is introducing new uses of and in public space. Where the main use of public space used to be the traditional use of meeting people and travelling from one point to the other, digital devices have introduced new forms of use. Within this new digital use of public space,

two distinctions can be made: the practical digital device use and the social digital device use. So, instead of one use, public space can now be a location for:

- The traditional use;
- The practical digital use;
- The social digital use.

The traditional use focusses on the use of public space as a meeting place, interface or mode of transportation. It is the use of public space how it has been used since the introduction of public spaces. The other two uses are the new uses of public spaces, focussing on the use of digital devices while being present in public space. The use of these digital devices is distinguished into two categories, the practical use and the social use. The practical use focusses on using digital devices for navigating, searching for information about the place one is in, or finding facilities in the neighbourhood. On the other hand, digital devices can be used for social activities, like calling, texting, or using social media. These two different uses presumably have a different impact on the use of public space.

The idea is not to focus on one or the other use, but to facilitate all these different uses, without ignoring the others. Finding a balance or synergy between these uses is what this graduation project is about. The role people and their behaviour play in finding this balance will be explained in the next paragraph.

1.3.5 Human behaviour

The third component of this graduation project is people, or, more specifically, human behaviour and how this behaviour can be influenced. Because cities would not exist without people. A big part of human behaviour is influenced by their decisions and their decision-making. The problem, or challenge, here is that people often do not make these decisions rationally. Research done in behavioural economics, a field decision-making has often been researched, has shown that people "often choose the easiest route, the default answer or the first option they are presented with" (Ranchordás, 2019, p. 4). In short, people are lazy when it comes to making decisions.

However, the decisions we make as humans collectively do shape and form our cities (Ramakuru, 2018). And, on the other hand, our environment is guiding our behaviour as well, often without us even knowing it. It is therefore very plausible that urban design interventions and solutions can influence human behaviour to a certain point. And, it is imaginable that these interventions are an important element in achieving the results people would like to see in a city (Ramakuru, 2018), even when not knowing that.

The way different options are presented to an individual are often designed. This is called choice architecture, an idea that originates in the 1970s. Choice architecture is, to a certain point, unavoidable and has always existed (Thaler & Sunstein, 2008). People who are responsible for the organization of the context in which other people make decisions are called choice architect. So actually choice

architects are the people that design the environment in which other people make choices and decisions. These choice architects can be anyone, from policy-makers to designers, and from doctors to parents.

But what if we could influence the decision individuals will make, without these individuals realising they are influenced? This is where the theory of nudging comes in. This idea was first published in the book *Nudge: Improving Decisions About Health, Wealth and Happiness*, by Richard Thaler, a behavioural economist, and Cass R. Sunstein, a law scholar (2008). In this book they explain the idea of choice architects and introduce the concept of nudges. They define a nudge as “any aspect of the choice architecture that alters people’s behaviour in a predictable way without forbidding any options or significantly changing their economic incentives.” (Thaler & Sunstein, 2008, p.6) They do state some requirements for an intervention to act as a nudge. It “must be easy and cheap to avoid. Nudges are not mandates.” (Thaler & Sunstein, 2008, p.6) This addition is, however, a very important addition is explaining the idea of nudging, and should therefore not be forgotten.

The concept of nudging is already being used a lot in policy-making. Instead of rigid policies, commands, or bans, nudges guide people into behaving in a more sustainable, healthy, or societal accepted way (Ranchordás, 2019). Thaler and Sunstein believe that people’s decision-making could be influenced by certain interventions, without them actively knowing this. However, people should always have the choice to choose another option. An often used example is the way food is displayed in a supermarket or cafeteria. People tend to pick food that is displayed at eye-level or easy to reach more often. So, if we would like to stimulate people into healthy eating, the nudging intervention would be to display the healthier options at eye-level and the more unhealthy options at less reachable places. This way, placement of food items ‘nudges’ people into making a healthier choice.

Types of nudging

The idea of nudging has been researched by multiple researchers in the past decades. Pelle Hansen and Andreas Jespersen (2013), distinguish two types of nudging: type 1 and type 2. They believe that, although nudging always affects the automatic mode of thinking, this does not always involve reflective thinking. So, they distinguish two types of nudging interventions, where this difference in reflective thinking is key.

Influencing the automatic thinking modes is what both types of nudges are focussing on. However, type 1 nudges are more focussing on influencing the behaviour that is being maintained by the automatic thinking processes without the involvement of reflective thinking. Type 2 nudges, on the other hand, focus on incorporating reflecting thinking in decision-making processes that normally only require automatic thinking. The big difference here is thus the focus on whether or not an individual is actively thinking about a decision or not.

This all still seems a little bit abstract, so let’s look at some often shown examples of type 1 and 2 nudges. In the book *Nudge*, one of the first examples of a nudge

they give is the “fly in the urinal” nudge. This was a solution first incorporated in the male bathrooms at Schiphol airport in Amsterdam. Here stickers of flies were places in urinals to prevent spilling, and thus have cleaner toilets. According to Hansen and Jespersen, this nudge works by attracting reflective thinking, because of the visual aspect of the nudge. It immediately leads to thinking about whether to aim at the fly or not, and this is thus an example of a type 2 nudge. An example of a type 1 nudge is narrowing the side-lines of a road, to slow down traffic. Because of this, the road is seemingly narrowing down, and the automatic reaction of the driver will be to slow down. Only later it might become clear to the driver that this was an optical illusion.

This last example already gives an idea of how to implement the idea of nudging into spatial design and planning. More examples are to slow down traffic by planting trees increasingly closer to the road, again opting for the optical illusion that the road is narrowing down. Another option is to decrease the distance between planted trees, making it seem like drivers are speeding, nudging them to slow down. Other ideas are using different paving for different modes of traffic, like the red cycle paths that can be found everywhere in the Netherlands as opposed to sidewalks. Or placing green footprints that lead up to garbage bins, stimulating people to throw their trash in the garbage bin instead of on the ground.

1.3.6 Human behaviour is public space

Public space is about people. The use of public space about the behaviour of people. Behaviour of people can be influenced. But, what does the use of public space look like? Who are these people, and how do they behave?

How public spaces are used is based on the people present in these spaces. Each of these persons behaves differently, moves around different, and has different needs and wishes. So, when looking at how public spaces are used, different behaviour and move patterns can be found. For this graduation project, five different behaviours, or roles a person can play, are defined. Calling these different behaviours “roles” was done on purpose, because it is not fixed that one person will constantly behave the same way, and therefore be the same type of user of public spaces. On individual can, and probably will, play more roles during the week of even during the day. Someone living in the neighbourhood can act like a resident some of the time, be a commuter during the week, and be a socializer other moments. Although the mentioned roles are only five, generalised, roles, and more can be defined, these five different types represent the majority of the whole. So, these five roles will probably not completely cover what is going on in the neighbourhood, but it does cover a big part of the activity observed in the neighbourhood currently.

These observations have mainly led to the distinction between the different roles, but also other spatial or functional components have played their part in the distinction. For example the location of the train station “Muiderpoort station” in the western part of the neighbourhood, creating a public transport hub, or the facilities around certain squares, like a public library and coffeeshops. The five roles that are defined are:

- The resident
- The tourist/visitor
- The commuter
- The socializer
- The digital nomad

Each of the roles have different behavioural characteristics, which will be explained next.

The resident

The resident is a very common user of public space, and is based on the people actually living in the Indische Buurt, or any other neighbourhood. The resident is very well known in the neighbourhood and can be found in streets where other people normally do not come. They are mostly destination focussed, for example when they want to go to the supermarket, but can also include more wandering around, like someone walking their dog. The resident as a person can also behave in different roles, making it sometimes harder to specify what exactly the resident is.

The tourist/visitor

The tourist or visitor is the person exploring the neighbourhood for the first time. This person wanders around a lot, likes to get more information about the places they are in, or likes to sit down and soak up the environment. These persons are more activity focussed and are not often in a hurry. You can find persons playing this role around touristic attractions, places where a lot is going on, or around public transport stops, like train stations or bus and tram stops.

The commuter

The commuter is the role that has very specific times in the day they are active. In the mornings, and the end of the day, and only during the week. Commuting people are destination focussed, and do not like to have a lot of obstacles on the road. They do not really care about the facilities that are offered in the public spaces they are crossing through, as they will most probably not make use of them. You can find high concentrations of commuting people around public transport hubs, in the morning and late afternoon.

The socializer

The socializer is the type of person that likes to meet up with friends and have a nice conversation with each other in person. They like to meet at a place that is nicely decorated, easily accessible, and offers comfort and probably something to eat or drink. These people do not really move around, when they are in this role, but are very destination based and activity focussed.

The digital nomad

The digital nomad is the person that lives their life online, working from home for

example. These persons can be found around coffeeshops, libraries, or locations where free Wi-Fi is offered. Again these people are quite destination based and activity focussed, and do not really have a large moving pattern.

1.3.7 Conclusions

Public space is defined in this thesis as “Public space is regarded as all urban space (within the municipality boundaries of Amsterdam), which are not buildings, and a place that is of, for and by people, freely accessible for anyone, free of charge, where people come together and where (impersonal) contact between people is possible.” This is based on definitions found in literature and policy documents and combined to a definition that is both spatially as well as sociologically applicable.

It can however be concluded that the introduction of digital devices, like mobile phones, smartphones and tablets, is changing the way public space is used. There are a lot of different reasons for this change, like the creation of private bubbles in public places, changing the ‘nature’ of public spaces. Also, there are a lot of indirect ways the use of public space is changing, like the creation of new routes and places, because of navigation tools, putting a lot of pressure on certain spaces because they are not built for this use.

However, people are what makes a space used, and are thus one of the key elements of public space. It is undeniable that public space needs to take these people into account, otherwise public space would not exist. Thus, the introduction of digital devices, introduced by people, cannot be ignored and has once again changed the dynamics in public space, and will presumably do so in the future.

From all of this, it can be concluded that public space becomes the host of both traditional and new types of uses. On the one hand, people will use public spaces in the original way, focussing on meeting people, walking around and getting from point A to point B. On the other hand, the introduction of digital devices has created two new uses in public space, digitally focussed. A distinction can be made between practical and social digital use. This introduction of digital devices also has its impact on the people using public space and their behaviour. The practical use refers to using digital devices in a practical way, for example to find the way or look for a good restaurant. The social use refers to the user that mainly uses its digital device to stay in contact with the rest of the world, while being physically present in public spaces. Here one can think about people texting, working outside on their laptop, or using social media to record their life.

These three uses of public space should all be facilitated in the design of public spaces, in order to keep public spaces and the city relevant. So dealing with the consequences of the introduction of digital devices, and facilitating these new types of uses, asks for spatial interventions in or around these public spaces. A new synergy should be found between these three different uses. To find this synergy and define the interventions, the specific behaviour of these three uses should be defined, based on the people making use of public space. For this thesis, five roles

are defined, a person using public spaces could “play”. The five roles are:

- The resident
- The tourist/visitor
- The commuter
- The socializer
- The digital nomad

Each of these roles shows different behaviour, has different moving patterns, and clusters of the same roles can often be found in different locations. The descriptions of these roles as written in the chapter 1.3.6, are still very much based on the traditional use of public space. However, the introduction of these digital devices and the embracement of using these devices while in public space also results in new behaviour of people. So a resident behaves differently when making use of public space in the traditional way and when using public space as a space for using digital devices. How people specifically behave in these three categories of use differs per person and per role they are playing at the moment. Therefore, Figure 10 shows the specific behaviour of the different roles, when using public space as a location for the different uses.

The scheme in Figure 8 defines the different relationships between the roles of people and the type of use. Each filled in cell describes very briefly the predicted behaviour a person will preform while in public space. As can be seen in the scheme, some of the cells are left out, because the type of use and the user role contradict with each other. For example, the behaviour of the ‘social meeter’ is not defined for the use of digital devices, since their main goal is to meet up with other in person, and thus to not use their digital devices at all. These are the cells that have a full cross in them. There are also some cells that have a dotted cross in them. These crosses mean that there is a chance people will preform certain behaviour in this type of use is very small, and therefore the focus will not be on them. It is however possible for the person to preform this behaviour.

This scheme is not only made for now to show the specific behaviour of people, but will later on in this thesis be used as a guideline for the vision and design interventions for the Indische Buurt in Amsterdam. This scheme will be used to define focus points for the design of more specific locations, resulting in five different schemes. This will be elaborated on more in Chapter 4.

Now that the specific behaviour in public space is shown and elaborated upon, the question remains whether this behaviour can, and should, be changed. As said earlier, people tend to make decisions irrationally and unconsciously, and are therefore easy to manipulate, if we would want to. Proposing interventions that could nudge people into a different behaviour, could be an argument behind certain proposed interventions. In this case, behaviour refers to the use of public space, so the behaviour of a person playing a certain role in certain circumstances. Some interventions that will be proposed, might have a nudging effect, and might result

in people deciding to change their current behaviour at that moment in time. Of course, not all interventions will have this intention, and it is important to notice that people should always have a choice. So, even though some interventions might be focussed on a certain type of use, every individual should still have the choice to behave differently than originally intended with the intervention.






		Type of use		
		Traditional analogue	Practical digital	Social digital
ROLES	Resident 	Walking	Working Using Wi-Fi	Posting on social media Whatsapp
	Tourist 	Walking around	Finding route, information, facilities	Posting on social media Keep in touch
	Commuter 	Walking A > B Using public transport	Working Using Wi-Fi	Posting on social media Keep in touch
	Social meeter 	Meeting people	Working Using Wi-Fi	Posting on social media Keep in touch
	Digital nomad 	Walking Walking around	Working Using Wi-Fi	Contacting people / clients

Figure 8: Interrelations between types of use and users (image by author, 2020)

1.4 Two scenarios

As explained in the previous chapters, the introduction of digital devices is changing the way people use public space. It is believed that this use has a significant impact on the city, both spatially as well as governmental. Roughly, there is a switch from just one use, the traditional use, to a second use of public space, the digital use. Of course, there are a lot more uses, and this distinction is hugely generalised, however, it makes it easier to show the importance of the research. The main question is how either of these uses might affect the design and use of the city in the future. Therefore, this hypothesis is a sort of figment of the imagination, showing two extreme future scenario's of the city.

Figure 9 shows these two future scenario's in short, where the focus is on either physical contact or digital contact, based on the theory study, and accompanied by some first spatial elements that could be of interest. The explanation of these two scenarios ultimately lead to the hypothesis of this thesis presented in chapter 1.5.

Theoretical

- > Going back to the classic ideas of public space
- > Spaces for (impersonal) contact
- > Discouraging use of digital communication devices

- > Embracing the new digital world and facilitating things
- > Spaces for transportation instead of meeting places
- > Encouraging the use of digital communication devices

Physical contact

- > Furniture for meeting places
 - > Benches
 - > Tables
 - > Playground
- > Creating activities that stimulate physical contact
- > Clear directions
- > Landmarks

Digital contact

- > Focussing on transportation and infrastructure
- > Furniture to the minimal
- > Efficiency >> Comfort

Spatial

Figure 9: Two future scenarios (image by author, 2020)

Scenario 1

When focussing completely on physical contact between people, the goal will be to create public spaces that completely facilitate the traditional use of public space. This means that every design decision is made to create meeting places, stimulate personal and impersonal contact, and creating environments that are attractive to walk or cycle through. Reference images can be found in Figure 10, Figure 11 and Figure 12. The ultimate goal is to create space where people come together, are always in the street, and go back to how it all started with the first creations of public spaces. For example by placing a lot more comfortable street furniture everywhere, adding green to streets and squares, and overall create nice environments to meet up with people. Comfort is in this case more important than efficiency, and the focus is on the actively using users, like people, and less on transportation users, such as cars and public transport.



Figure 10: Los Angeles Grand Park. (Wilkins, 2013)



Figure 11: Meeting places. (Bennetts, 2015)



Figure 12: Luxembourg Gardens, Paris. (Project for Public Spaces, 2005)

Scenario 2

On the other side, the focus could also shift to complete digital contact between people. The idea of public spaces as meeting places and spaces for impersonal contact becomes redundant, and the city will transform into a city merely for transportation to go from point A to point B. (Figure 13) Thinking even further, even this might not even be necessary, if our whole lives, including our jobs can be done from home, groceries are delivered at home, and so on. However, we will not go this far now. In this future, efficiency is more important than comfort, and the design of public spaces is therefore focussed on this efficiency, for example texting walk lanes, like shown in Figure 15, and traffic lights on the street, because people do not look up from their phones anymore, Figure 14.



Figure 13: The car city. (Angerer, 2018)



Figure 14: Traffic light on the street. (Bruining, 2017)



Figure 15: Cellphone walk lanes. (Boer, 2014)

1.5 Hypothesis

The two scenarios explained in the previous chapter are, as said, extremes, and right now it does not look like it will go as far that the examples shown in the previous chapter will take over cities completely. However, thinking about these possible scenarios does make it clear something needs to be done, in order to keep cities relevant. We have to find a point somewhere in the middle, where the traditional use of public space is not neglected, while the new uses of digital devices is also integrated better in street life. Maybe by something like shown in Figure 16, Figure 17 or Figure 18?

What the future will bring is not clear, because the future is as unpredictable as anything. However, we can say that something in the design of public spaces has to be done in order to keep them relevant and used, by facilitating traditional and new uses altogether.



Figure 16: "Off-grid Solar-Powered Charging Stations" (Innes, 2017)

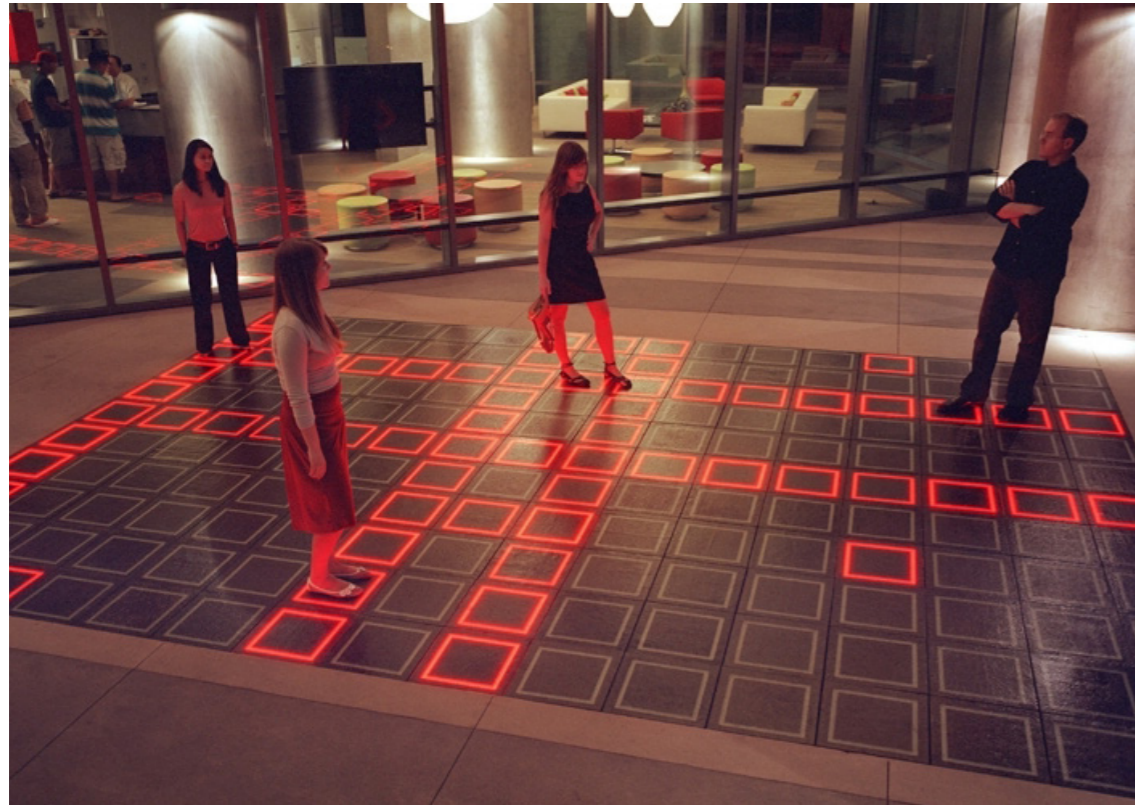


Figure 17: Interactive game. (Electrocredits, n.d.)



Figure 18: Augmented reality Ad from (JCDecaux Group, 2019)

1.6 Problem statement

The introduction of personal digital devices, such as smartphones, has a growing impact on how people make use of public spaces in the city. Public spaces as transforming from 'meeting places' to a mere tool for transportation. The current design of public spaces therefore does not, or not sufficiently enough, support the new uses of public space, decreasing the quality of these spaces. The design of public spaces should accept and integrate the introduction of these digital devices and facilitate the use of these devices in public space, while not forgetting about the more traditional, physical uses of public space. Only then, the original qualities of public spaces in the city can be maintained and improved.



2.1 Aim

Although it seems like the aim of this project is to maintain and increase the qualities of public spaces, this is only partly true. Improving the quality of current situations is, or should be, the ultimate aim of every urban designer, planner, or design in general. It is thus also the ultimate aim of this graduation project. However, since 'quality' is such an implicit term, it is nearly impossible to measure this, let alone measure improvement of quality. What one person values in a space, someone else might despise. And, quality of space can cover a wide range of characteristics, from the cleanliness of a space, to how busy it is or not, to the availability, design and placement of street furniture.

Therefore, the more specified aim of this graduation project is to create a new synergy between the different uses of public space. It aims to find a new balance between the original uses of public space, while also accepting and facilitating the new digital lifestyles. People using public space should always have a choice how they want to make use of a space, and should not be forced into certain behaviour. To achieve this aim, urban design interventions are proposed, to in the end contribute to maintaining and increasing the quality of these public spaces.

2.2 Research questions

Main research question

How can urban design interventions contribute to a new synergy between the traditional use of and the use of digital devices in urban public spaces in cities?

Since this research is not location specific, it is based on a trend that can be found roughly in every city, for this research the choice has been made to pick a neighbourhood in Amsterdam as a research location. This neighbourhood is the Indische Buurt, in the eastern part of the city, that houses a wide variety of people, and has undergone massive changes in the past twenty years.

Sub research questions

RQ 1: How is public space defined in this thesis?

RQ 2: How is public space used and how did the use of personal digital devices influence this use?

RQ 3: What are the differences between different users and their behaviour in public space?

RQ 4: In what ways can the use of public spaces be influenced by urban interventions and how can urban design interventions influence the use of public space?

RQ 5: How can urban design interventions create new synergy in public spaces in the Indische Buurt in Amsterdam?

These sub research question will be answered throughout the report. Since there is not a specific research question per chapter, the answers are a bit spreaded throughout the whole report. Roughly, chapter 1 forms the base for a lot of the research questions, 1 to 3, and a little bit of 4, and chapter 4 answers the rest of the questions.

Chapter 2 and 3 are chapters to create an understanding of the research project and the chosen location.

2.3 Conceptual framework

The problem field, problem statement, aim and research questions together are translated into the conceptual framework down below. This framework shows the main research topics of this thesis, the relations between the topics, the aim of the project in the centre and the end product of the project. Urban design interventions will be used as a framework to create a new synergy between the different uses of public space, in the Indische Buurt in Amsterdam.

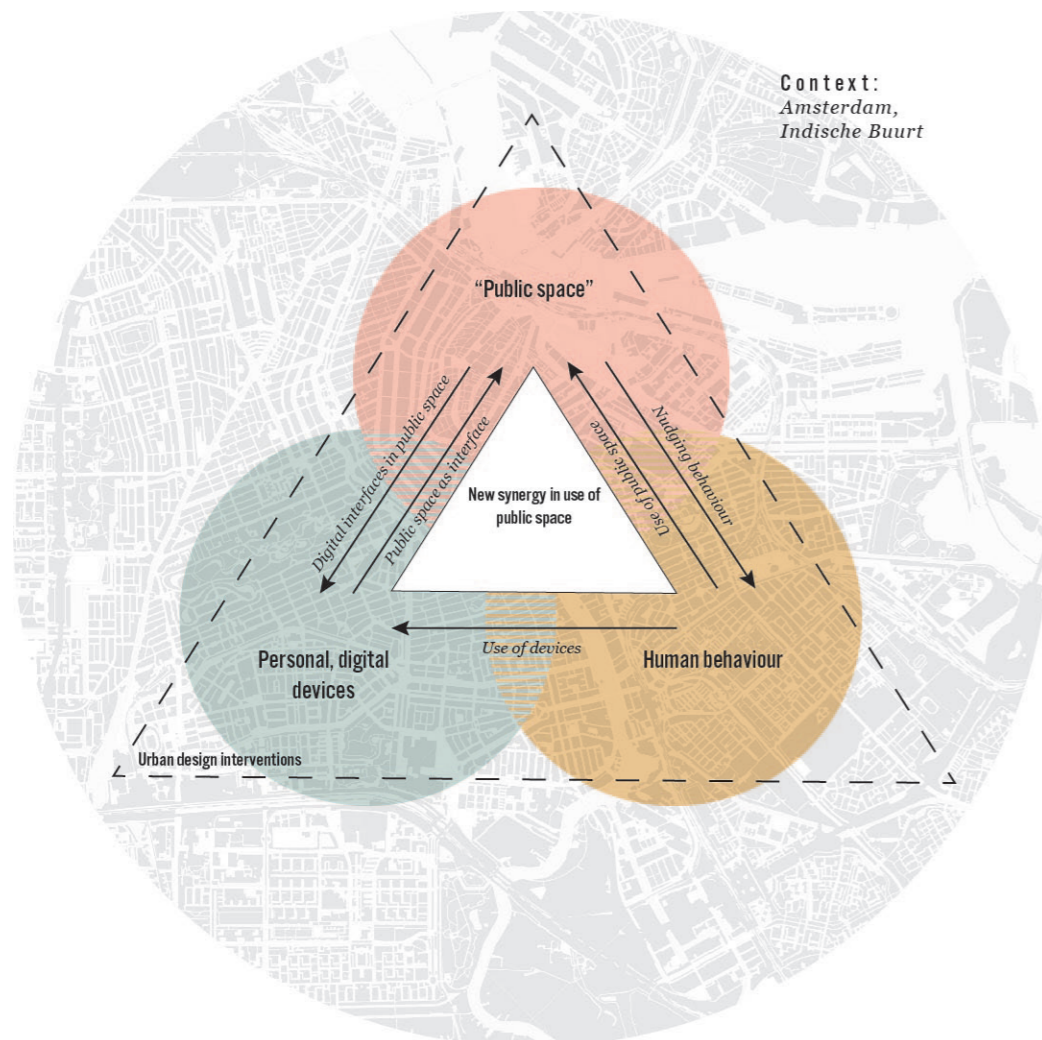


Figure 19: Conceptual framework (image by author, 2020)

2.4 Methods

During this graduation project, several different research methods will be used to answer the previously mentioned research questions. In this part, each method will be explained and linked to the sub research questions. The diagram in the end schematically shows the relations between the research questions and the methods, but also between the different research questions itself. Since sometimes the outcome of one question is used as input for following questions, these relations are also shown.

Literature review

Aim and outcome

A graduation thesis often starts with a thorough review of academic literature and research. It helps with the foundation of the project, get an understanding of the chosen topics, and might help with narrowing down the research. Also in this thesis, literature research was one of the first methods to be used. In this thesis, this method is mainly used to get a theoretical understanding of the main topic, but also later on as an argument of certain decisions. Literature research is also used a lot in defining the relations between the different main topics of this project.

It has resulted in a theory paper, see appendix i, of which parts are also used in the theory chapter of this thesis.

Research questions:

1, 2, 3, 4

Media study and reference projects

Aim and outcome

Apart from purely academic writing, a lot has also been said or written about this topic in other media, like newspaper articles, blogposts, TEDx talks, documentaries, interviews, etc. These sources were very helpful for showing different perspectives on the topics, and more 'real life' opinions. Where academic literature is often based on other researchers, research, and theories, these sources are often more based on personal experiences of people. Again, this method is used to get an understanding of the main topics and is used for building the foundation of the project. There is not one main outcome, but this method has been used throughout the whole graduation process, as can also be seen in the attached research questions.

Research questions

1, 2, 3, 4, 5

Mapping

Aim and outcome

Mapping is one of the classic analysis methods in the field of urbanism. This method is used to better understand the chosen location spatially and demographically. On the bigger scale, this method is used to show how the chosen neighbourhood relates to the rest of Amsterdam. Within this method, several different types of data sources are used, which all have a different purpose: GIS data, demographic and city data (CBS, OIS), Google Maps/Google Streetview, and social media data. The main outcome of this method is a collection of maps, showing all this different data.

GIS:

GIS data has been used as the main research tool, to analyse the spatial structures Amsterdam and the Indische Buurt. Main sources were the BAG (Basis Administratie Gebouwen), the BGT (Basisregistratie Grootchalige Topografie), and the municipality of Amsterdam (maps.amsterdam.nl/open_geodata).

Demographic and city data:

Analysing demographic data is used to get a better understanding of the people living in Amsterdam and the Indische Buurt in general. Using city data gives some more information on how the city of neighbourhood is experienced by its residents and how this has developed over the last few years.

Google Maps/Google Streetview:

These two tools of Google were used for specific analyses of the locations, for example to look at proposed routes crossing the neighbourhood. Using these tools gives a first glimpse of the impact using digital/mobile devices have on the city. Since this project is about digital devices, it is almost ironic to use tools like Google Streetview to look for certain objects for example, instead of going to the location itself and walk around in person.

Because people use their mobile devices more to look up information about the place they are in, how to go from one place to another, or to look up hotspots to visit, it is interesting to put into place all this data. After mapping this data, it can be compared to other data, like facilities in the neighbourhood. Do they match or is there a mismatch between proposed use and offered facilities.

Social Media analysis:

Social media are the new way to communicate with people. Media like Twitter, Facebook, Flickr, Instagram and Snapchat, are all relatively new communication tools, some even already outdated, that can be used everywhere as long as there is a digital device and access to the internet. Some of these media provide location data, which can be used to map these locations. This gives insight in possible locations social media are often used.

Unfortunately, a lot of companies behind these social media networks do not share their data publicly, because of privacy regulations. The platforms that could

be used are Flickr, Snapchat to some extent, and Instagram. For Flickr, python was used to program an algorithm that can decipher the location codes behind uploaded pictures. Snapchat has an open source map that shows the locations of public snapchat messages. A screenshot was taken almost every day for a month, and translated into a combined map. Instagram has very strict privacy regulations, but does have a lot of public posts, of people who did not put their account to private. Based on location tags and hashtags, a map was made of all these posts, during one month.

Research questions

2, 3, 4

Personal observations

Aim and outcome

This method is one that is a more implicit method used during this graduation process. On the one hand it is used to just experience the chosen neighbourhood and get a feeling about the life in the neighbourhood and how the neighbourhood is used. This is the more location specific part of this method. Conclusions about these observations are based on the site visits during the last year, but are also based on previous knowledge of the neighbourhood. I grew up next to this neighbourhood and have visited it since I was a little kid. Therefore I have seen the neighbourhood change dramatically in the last fifteen years, and this knowledge is indirectly also used in this graduation project.

On the other hand, observations in general while in public space have also contributed to this process. This does not mean specifically in Amsterdam or in the Indische Buurt, but also in other locations. This project is based on a trend that can be seen everywhere, and can thus be observed everywhere. This observation in general was one of reasons this topic was picked in the first place.

Research questions

3, 4

Sketching and designing

Aim and outcome

The previously mentioned methods are mainly used to get an understanding of the problem field, the location and the spatial elements. To come up with a design for the chosen neighbourhood, interventions are needed. This method is used to identify which interventions are needed, how many are needed, and where they are needed, by spatially testing several options. The main aim of this method is to bring together all the gathered information of the previous methods and translate them into spatial interventions and design proposals. Sketching interventions and reflecting on these interventions is key to come to solutions that might be right for the specific location.

Research questions

4, 5

The figure below shows an overview of the previously mentioned research questions and the methods that are used to answer these questions. The diagram also shows how different methods or outcomes of steps are used as input for next steps in the research.

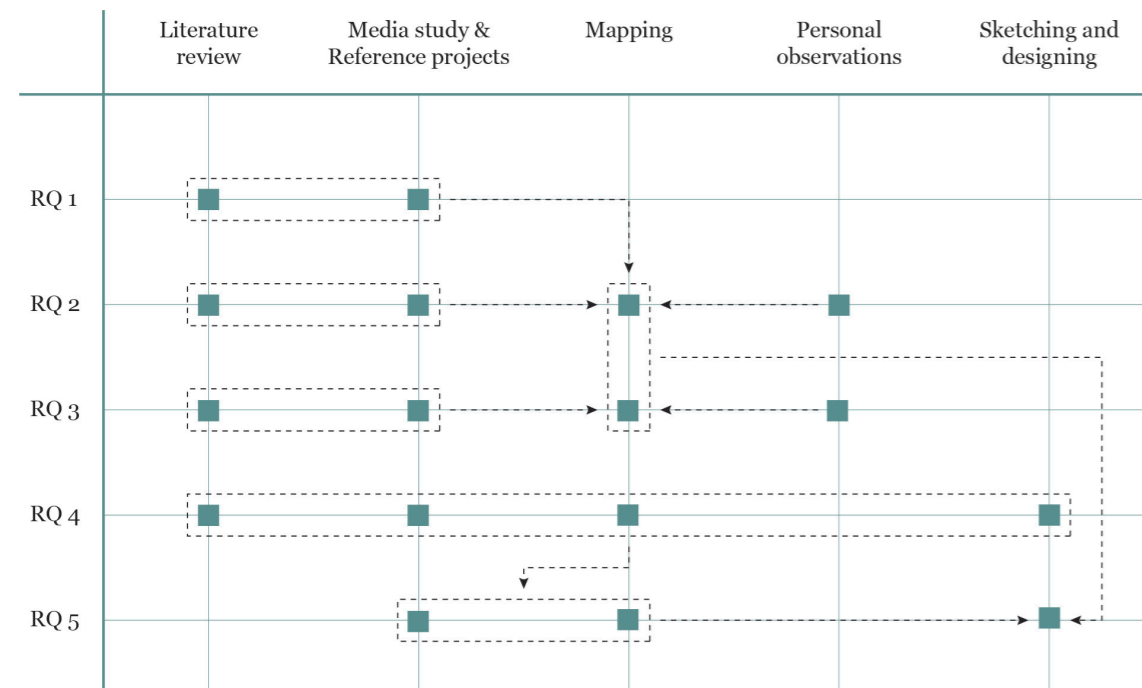


Figure 20: Analytical framework (image by author, 2020)

2.5 Expected outcomes

For this graduation project, three main outcomes are presented in the end:

- Future vision for Indische Buurt
- Design intervention proposals on specific locations of Indische Buurt
- Intervention matrix for a broader implementation of the project

Future vision for the Indische Buurt

After the analysis of the Indische Buurt, the first step will be to translate the conclusions into a future vision for the Indische Buurt regarding the use of public spaces. Finding synergy between different uses of public spaces should happen on several scale levels, of which the neighbourhood is one. The vision therefore aims to show how this synergy in the neighbourhood could be achieved.

Design intervention proposals

Within the proposed vision, several locations are chosen, for which a redesign will be proposed. Each of these locations has a different characteristic and different focus, showing in a broad way what kind of interventions are possible, and what these could look like. This outcome also shows on lower scales how the synergy can be realised.

Intervention matrix

In the end, a reflection on the proposed interventions will be done, to see which interventions link to which type of use and behaviour of people. By generalising the interventions, and connecting them to specific characteristics, a matrix is formed that can be used in other locations as well.

All of the outcomes will be explained into more depth later on in this thesis.

2.6 Research framework

The image on the next page schematically shows the proposed research approach of this thesis. The framework is divided into three components, the problem definition, the project approach, and the project definition. It shows how all the elements of the process are related to each other and how they follow each other up.

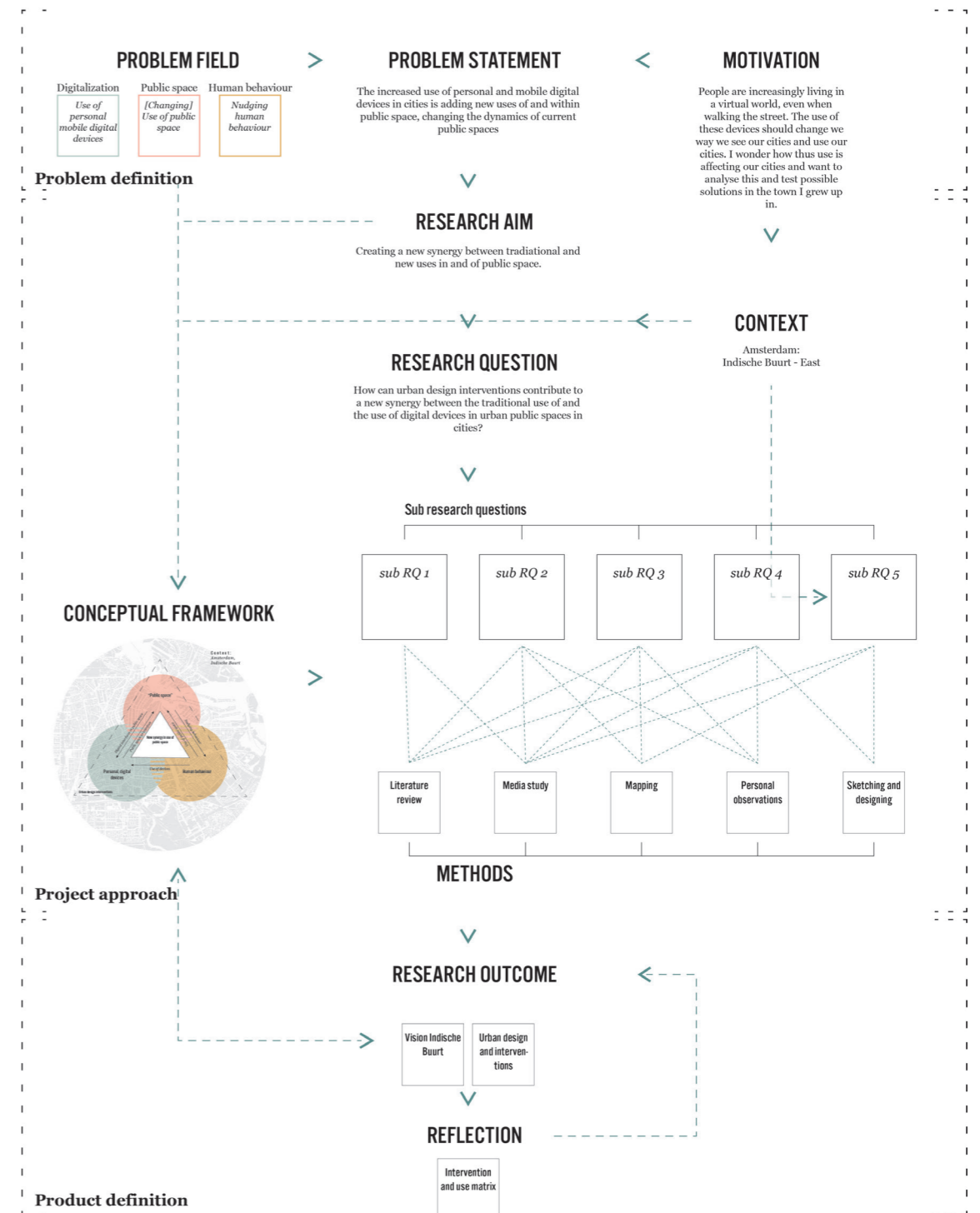


Figure 21: Research framework (diagram by author, 2020)



3

Case definition

3.1 Introduction

The main global trend that is addressed in this thesis is digitalization and the impact this trend has on the use of public spaces in the city. Since this is quite an universal theme, the research is not specifically bound to a place. Therefore, this topic could be researched everywhere in the world, or even purely theoretical. However, since this is an urbanism graduation project, the scope of this research is an urban environment, in this case a neighbourhood in the capital city of the Netherlands, Amsterdam. The chosen neighbourhood is called the Indische Buurt and is located in the eastern part of the city, see Figure 23. This neighbourhood houses a wide variety of people, and has undergone massive changes in the past fifteen to twenty years. More information about the neighbourhood itself can be found in chapter "3.3 Analysis Indische Buurt" on page 76.

The choice for this city has first and foremost a personal motivation, but it is also a city that is under a lot of pressure from several societal trends, like a growing number of tourists visiting the city, and increased migration to the city. This is important to mention, because these trends are directly and indirectly linked to the trend of digitalization. Since digitalization in this graduation project is seen as the integration of digital devices into everyday life, the focus is on people. People are using their devices in the city and while in public space, and it should be noted that more people are likely causing more problems in the use of public space.

As said, the choice of Amsterdam, and particularly the Indische Buurt is not a complete random one. It is the city I grew up in, in a neighbourhood right next to the Indische Buurt. I have walked, biked, and driven through the neighbourhood since I was about six years old, and have seen it transform from a place one would not want to even be, to a hip, young, and attractive neighbourhood, where old and new are working together quite well. Especially in the last years I was fascinated with the neighbourhood that houses so many differences, and the changes it had brought. This huge attraction of students and younger people, together with the many children in the city, I believed was a good criterion for doing my research in this neighbourhood, since it is commonly understood that younger people in general make more use of their digital devices everywhere, than older people.



Figure 22: Map of the Netherlands showing location of Amsterdam (image by author, 2020)

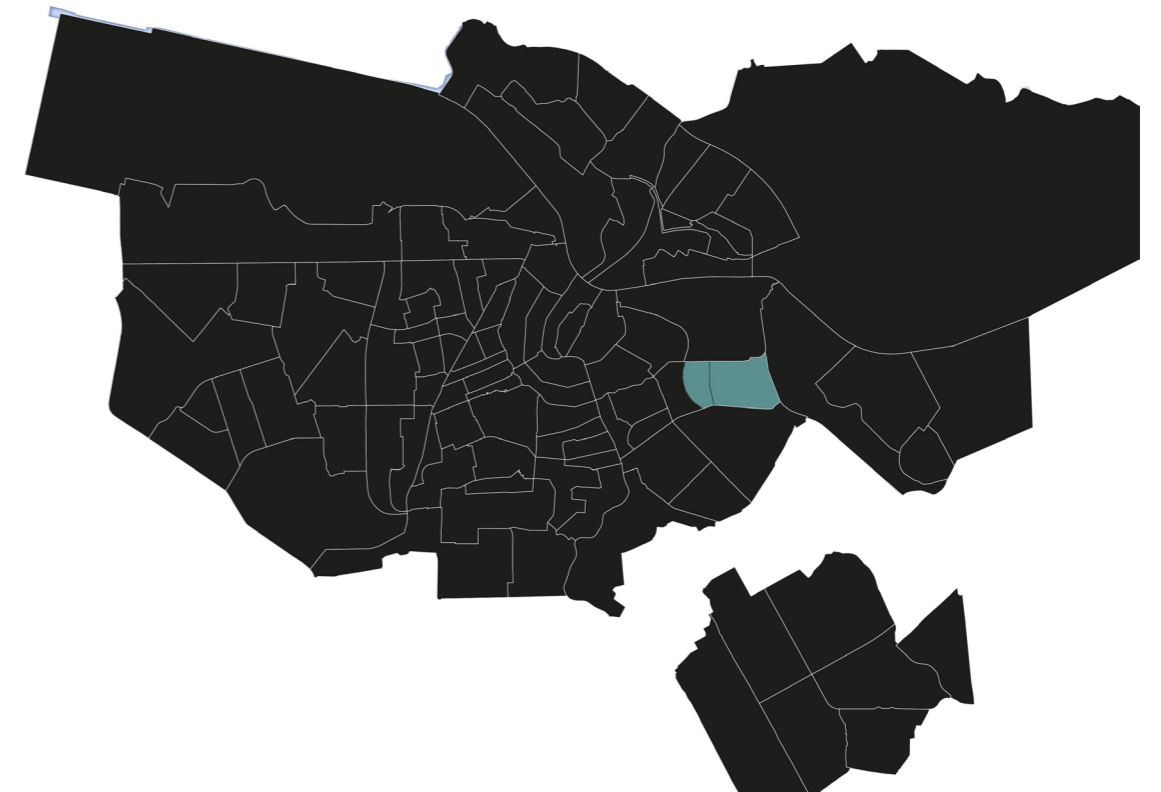


Figure 23: Map of Amsterdam showing location of the Indische Buurt (image by author, 2020)

3.2 Analysis of Amsterdam

For this graduation project one neighbourhood in Amsterdam, the capital city of the Netherlands is chosen as a case study and testing location. In this section, some analysis of the city are shown, to give a better understanding of the city as a whole, but also to compare the chosen neighbourhood to other neighbourhoods. This was done to figure out if the chosen neighbourhood is actually a fair representation of the city as a whole, but also to see which locations or neighbourhoods might have more or less the same characteristics. This information can later on be used for reflecting on the proposed design interventions, to test the applicability of these interventions in other locations. In this paragraph, first some background information about the city will be given, before the analysis maps are shown, and conclusions are drawn from these.

Amsterdam is under a lot of pressure from a lot of different sides: citizens, visitors, local, regional and national governments, businesses, and so on. It is thus a perfect location to observe how the use of public space is influenced by an increased use of mobile and digital devices. The municipality is expected to grow from approximately 863.000 inhabitants in 2019 to 1.6 million in 2040 (Afdeling Ruimte en Duurzaamheid/OIS, 2019). In 2017, the city had to deal with 21 million tourists and, according to the Dutch Office of Tourism and Congresses (NBTC), this amount will grow to an astonishing amount of 32 million by 2030 (Couzy, 2018, October 10). More people means more pressure on the public spaces and thus a further need for interventions to maintain and improve the quality of these public spaces. These trends are of course not tied to the trend of digitalization, but as mentioned before, all of these trends cannot be seen separately from each other anymore. More people in the city automatically means more use of digital devices in public space, and thus more or bigger pressure of the digitalization trend on public spaces.

A quick analysis of the policy documents for future developments of Amsterdam, like vision documents, shows there are a lot of different documents. All focused on how to develop the city, maintaining and improving the liveability of the city in the future, however, with different focus points, and thus different policies, strategies, and ideas. A lot of these documents are quite promising, and built upon different predictions and trends. However, it should be noted that, although many of these documents mention 'public space', the global trend of digitalization is often forgotten. One of the documents, focused on the development of public space, does indeed mention digitalization as a trend in the introduction of the document, to not come back to this trend in the 60 pages after this. Solutions and ideas on how to deal with this trend in public space are not proposed. This suggest once again a lack of awareness of the consequences of digitalization on the city. Although the topic of this thesis is quite a specific part within the whole digitalization process, it is believed that governments, planners, and designers should do more in adapting

this trend in their development strategies. .

This shows once more the importance and potential of this thesis, since it is believed that this trend is a big one, that will not stop developing any time soon, and will thus have an impact on how we use our cities, nowadays but also in the future.

Spatially, some first impressions can be given as well. The idea of this graduation project is to use one neighbourhood as a case study, to test certain hypotheses, and to come up with interventions how to deal with the proposed challenges. Later on, these interventions and ideas will be reflected upon, to translate them into more general interventions that could potentially be implemented in other locations in the city. Therefore, it is important that the chosen location is quite an average neighbourhood on different levels. The aspects that will be used for analysis are, among others:

- Type and morphology of public space;
- Accessibility of public spaces;
- Perceived quality of public space;
- Urban typology (like city centre, sub-urban living, shopping street, parks, etc);
- Use and users of public space.

Verdeling van de openbare ruimte

In de verdeling van de openbare ruimte doet Amsterdam haar naam van 'stad aan het water' eer aan. Alle gebieden die aan het IJ liggen, bestaan voor een groot deel uit water. In de 19de eeuwse Ring bestaat het grootste deel van de openbare ruimte uit verhardingen (straten, wegen, pleinen en parkeerplekken). Openbaar groen vinden we het meest in de naoorlogse stadsuitbreidingen Zuidoost en Nieuw-West.

Data in tabelvorm, zie: bijlage 2.2

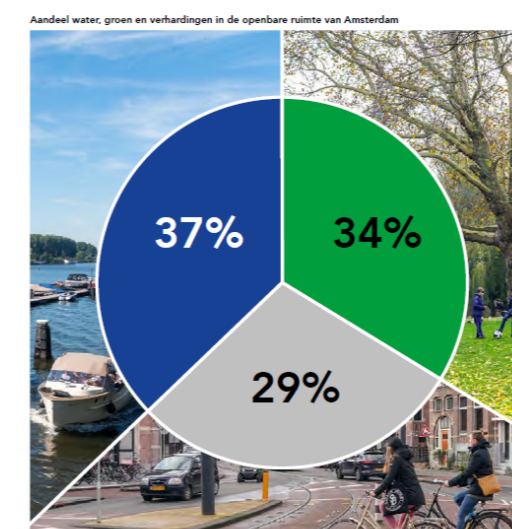


Figure 24: Proportions of public space (Gemeente Amsterdam, 2019b, p.20/21)

Figure 24 on page 57 and Figure 25 below are copied from one of the policy documents provided by the municipality, regarding the current state of the public space in the city.

In Figure 24 the proportions of types of public space, on average, in the city and the differences between neighbourhoods are shown. The city centre has a lot of paved public space, and almost no green public spaces, while on the edges of the city, this is the opposite. This is, of course not very surprising, so the analysis should dive deeper into the quality of these spaces.

Figure 25 already shows a sneak peak, focussing on the maintenance of the streets and how residents judge this. Although this map looks very green, and thus implies that residents grade the maintenance quite high, it should be noted that the lighter green areas represent a grade of 6 or 7 out of 10. Thus, not a very high rating.

Onderhoud straten

De mening van Amsterdammers over het onderhoud van straten en stoepen in Amsterdam is positiever dan voorheen. In grote delen van de stad wordt het onderhoud als voldoende of zelfs ruim voldoende beoordeeld. Uitzonderingen zijn te vinden in Noord, Nieuw-West en Zuidoost. De kwaliteit van de straten in Driemond wordt als een van de slechtste van Amsterdam beoordeeld. Dit is een negatieve trend die zich voordoet in de afgelopen tien jaar.

Data in tabelvorm, zie: bijlage 5.5

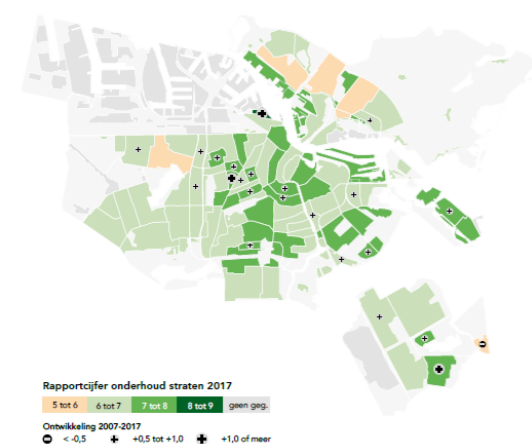


Figure 25: Maintenance of streets (Gemeente Amsterdam, 2019b, p. 50)



Figure 26: Sumatrastraat, Indische Buurt, Amsterdam (image by author, 2020)

Morphology and open space

Amsterdam is a city with quite big differences in building densities around the city. This is shown as well in the following map. [Figure 27] Adverse to the building density is the amount of greenery in the city. The more to the outside of the city, the lower the building densities and the higher the amount of green.

This roughly corresponds with the data shown in Figure 27, which shows the proportions of public space in terms of green, paved and water areas.

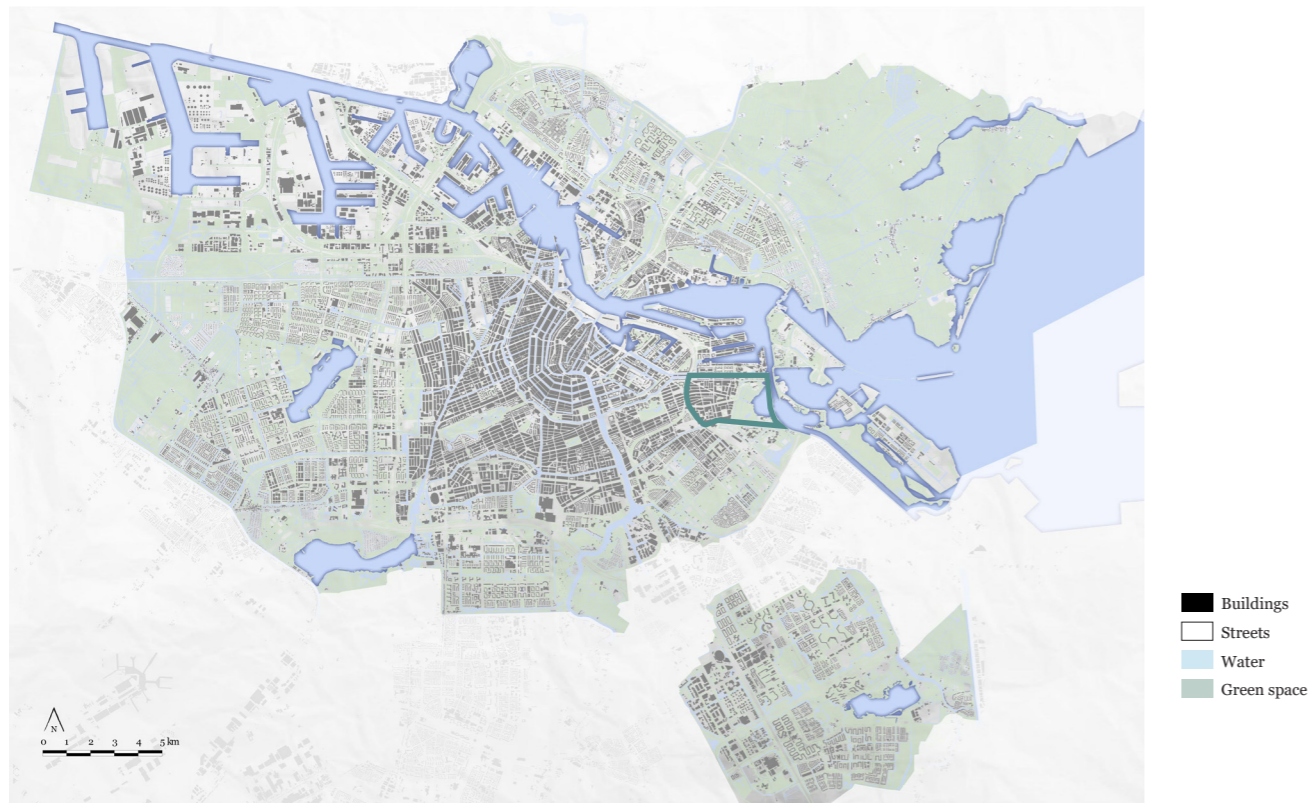


Figure 27: Morphology, Amsterdam (image by author, 2020)

Open space

This map [Figure 28] shows all open space in the city according to the definition of public space that was defined earlier in this thesis:

“All urban area within the municipality boundaries of Amsterdam, not being buildings”

- (Gemeente Amsterdam, 2017, p.12)

Not surprisingly, the centre of Amsterdam is way more dense, and thus showing less public spaces, see also the map in the middle of Figure 28, than in the outskirts of the city. Especially the western part of the city shows a completely different fabric than a big part of the rest of the city. These neighbourhoods consist of wider streets, more open green and squares, compared to other parts of the city.

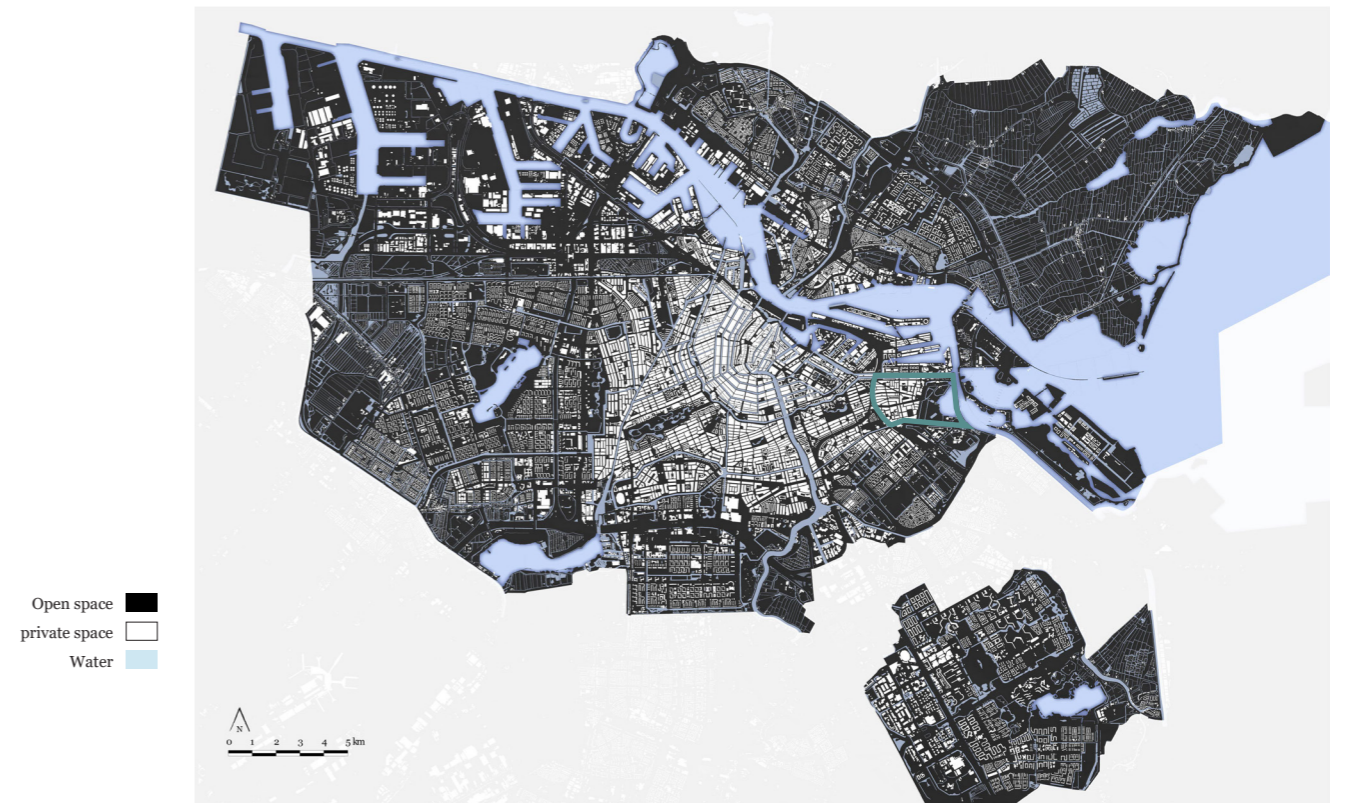


Figure 28: “Public space”, Amsterdam (image by author, 2020)

Land use

Figure 29 shows the different types of land-use that can be found in Amsterdam. Concentrations of specific uses can be found in different areas. For example industry in the harbor area in the northwest part of the city, and shops in the city centre.

However, this maps also shows a lot of grey areas, which represent residential areas. This is a bit deceiving, since there are also a lot of building that might have a mixed function, for example a shop on the groundfloor and residential function on top. This is why the next maps is also very interesting to look at.

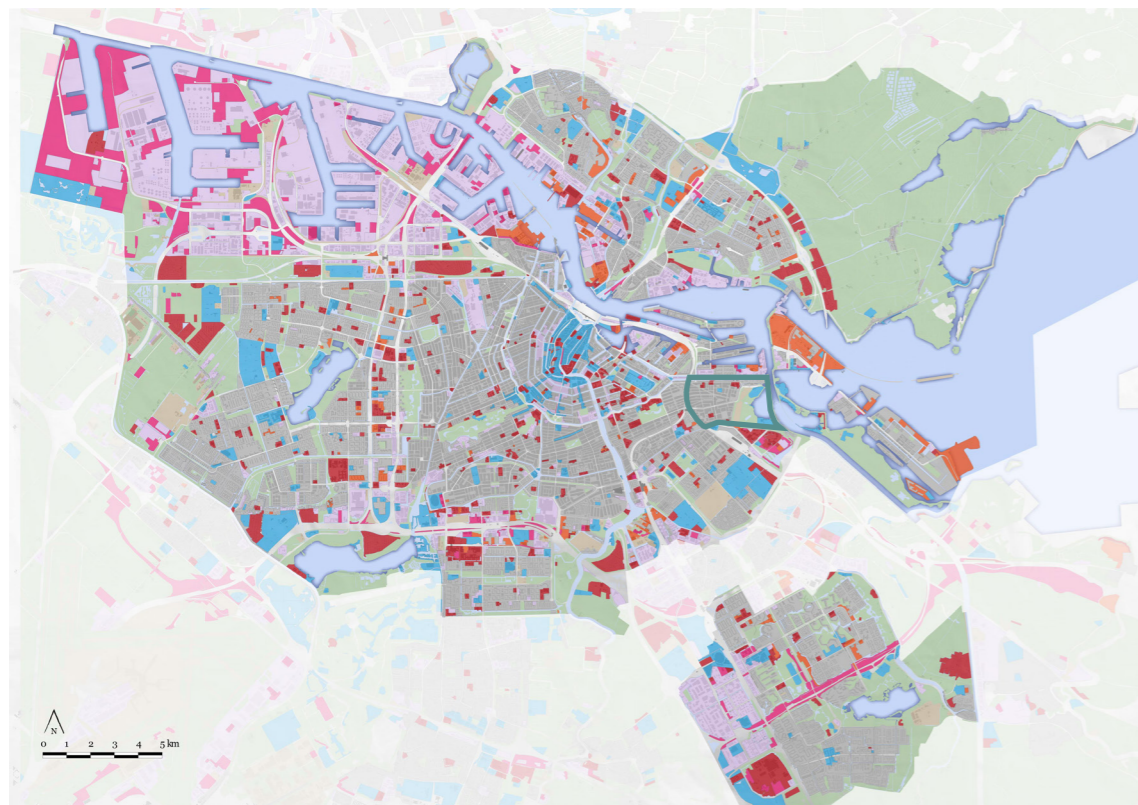


Figure 29: Land-use, Amsterdam (Gemeente Amsterdam - Ruimte en Duurzaamheid, n.d., edit by author)

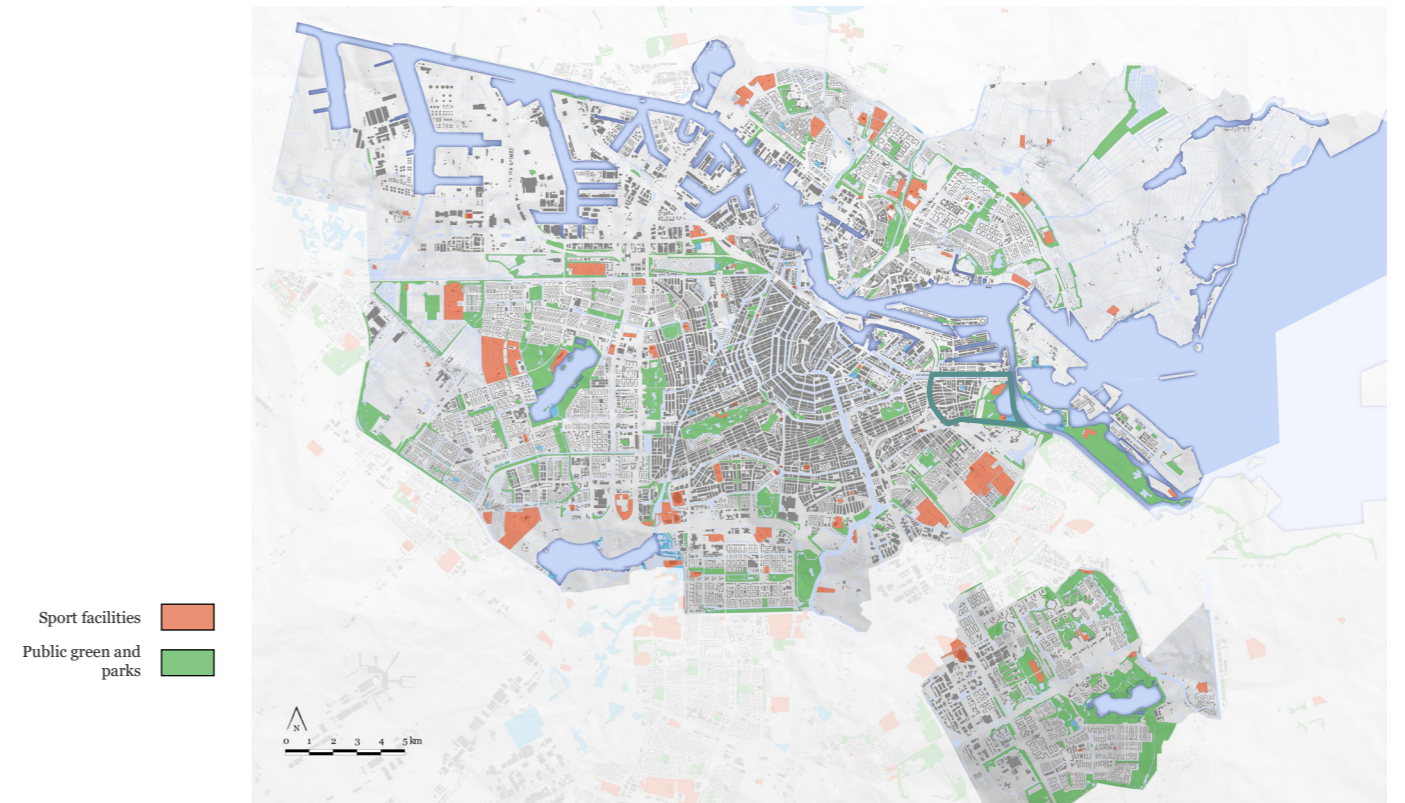


Figure 31: Public recreational areas, Amsterdam (image by author, 2020, based on gemeente Amsterdam)



Figure 30: Conclusion map: Recreational areas, Amsterdam (image by author, 2020)

Non-residential buildings

Amsterdam is often seen as a ‘world city’ resulting in a lot of areas where living and residential buildings are combined with other facilities and amenities. The map below, Figure 33, shows all the different non-residential functions in the city. The clusters of facilities in the centre and along some lines (streets) stand out. On the left, all the buildings with another function than residential have the same colour, showing the difference between these en residential areas.

In the conclusion map (Figure 34), not the areas with facility clusters are shown, but the areas with less facilities. These areas can be seen as mainly residential areas, where areas with higher non-residential functions can be seen as more commercial, or mixed areas.

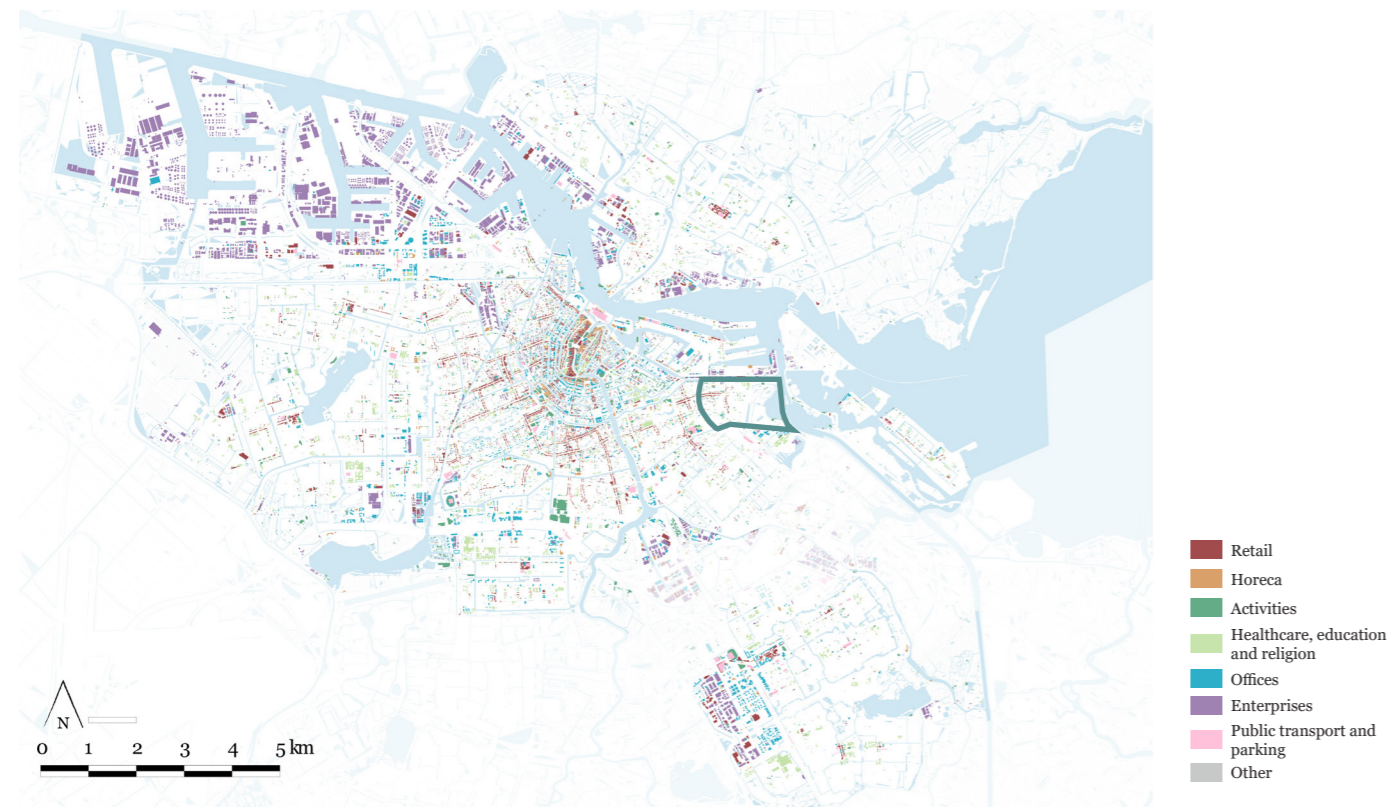


Figure 32: Non-residential function, Amsterdam (Gemeente Amsterdam - Ruime en Duurzaamheid, n.d., edit by author)

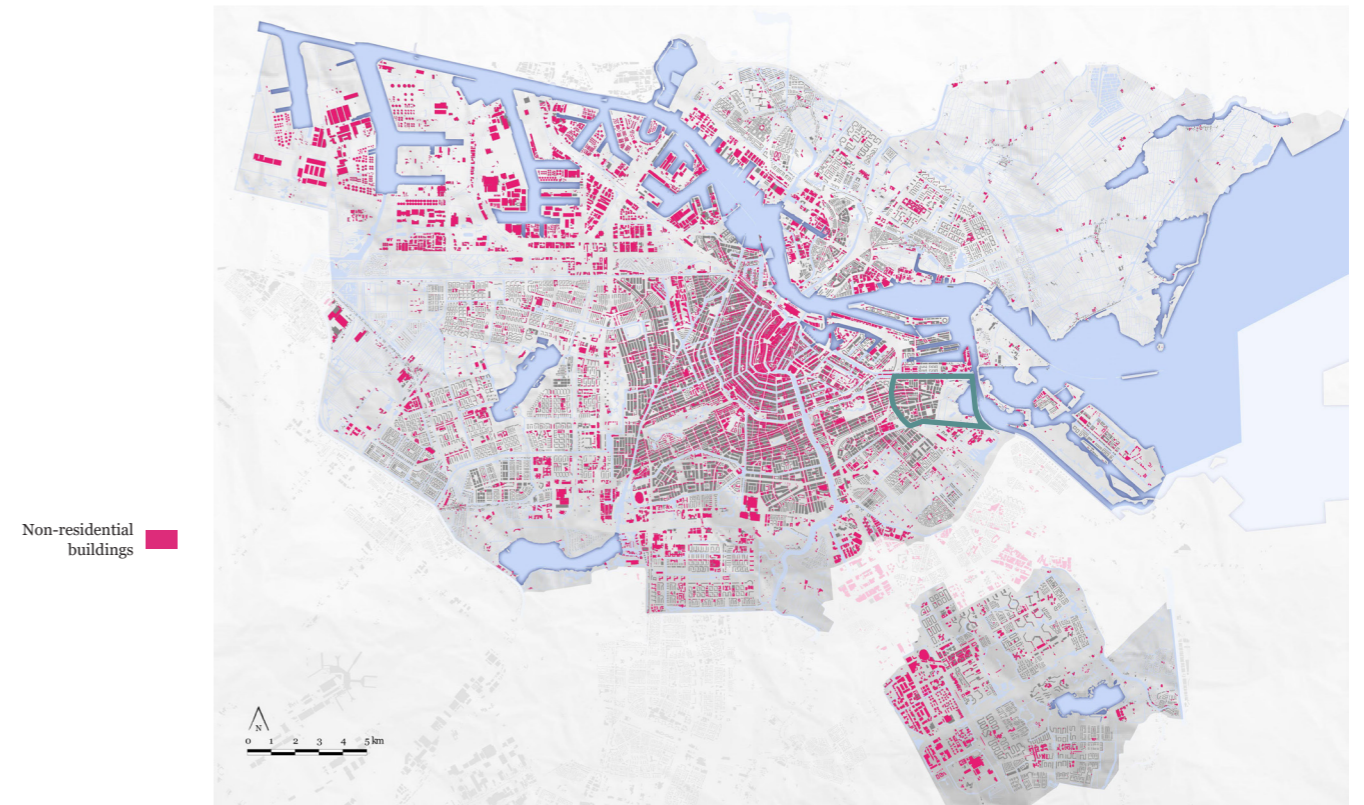


Figure 33: Non-residential functions, Amsterdam (image by author, 2020, based on Gemeente Amsterdam)



Figure 34: Conclusion map: Recreational and Residential areas (image by author, 2020)

Main and city streets

Apart from a computer program that calculates the best integrated or well connected streets, it is also interesting to look at other definitions of main streets. The municipality of Amsterdam has defined several main streets across the city. Some of these are also categorized as “city streets” meaning they play a more prominent role in the city. (See Figure 35)

Interesting is to overlay these main streets defined by the municipality, with the main streets calculated by the space syntax method, which is further explained on page 59. The map corresponding to this overlay is found and explained in Figure 38 on page 68.

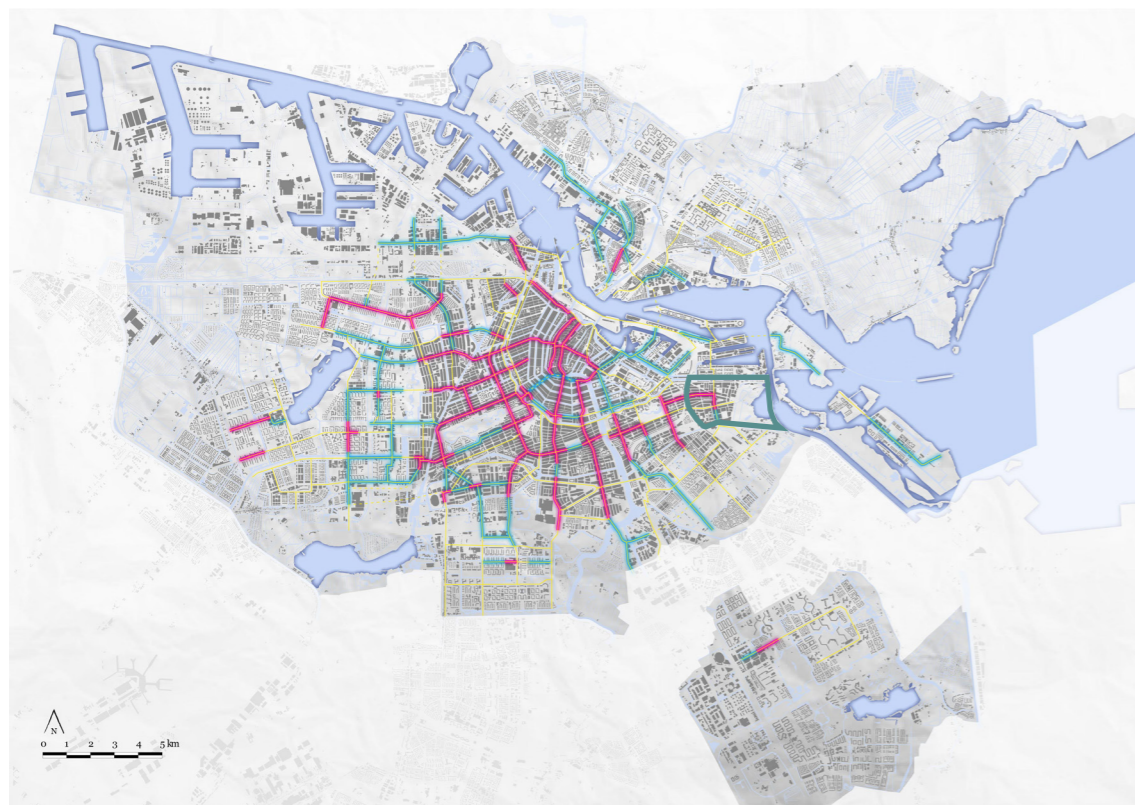


Figure 35: Main streets and citystreets, Amsterdam (Gemeente Amsterdam - Ruimte en Duurzaamheid, n.d., edit by author)

- Main streets
- Potential main streets
- Full city streets
- Potential city streets

- Recreation areas
- Residential areas
- Main streets without facilities
- Main streets with facilities

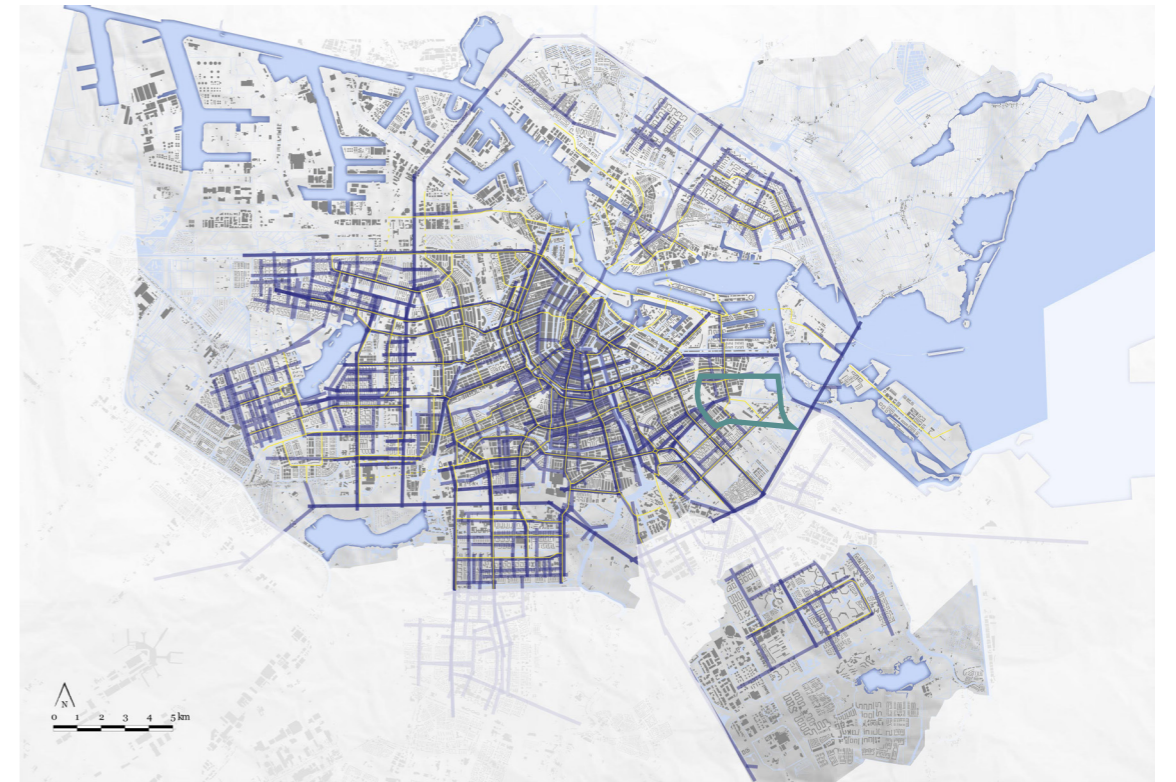


Figure 36: Overlay main streets according to space syntax and municipality (image by author, 2020, based on Gemeente Amsterdam)

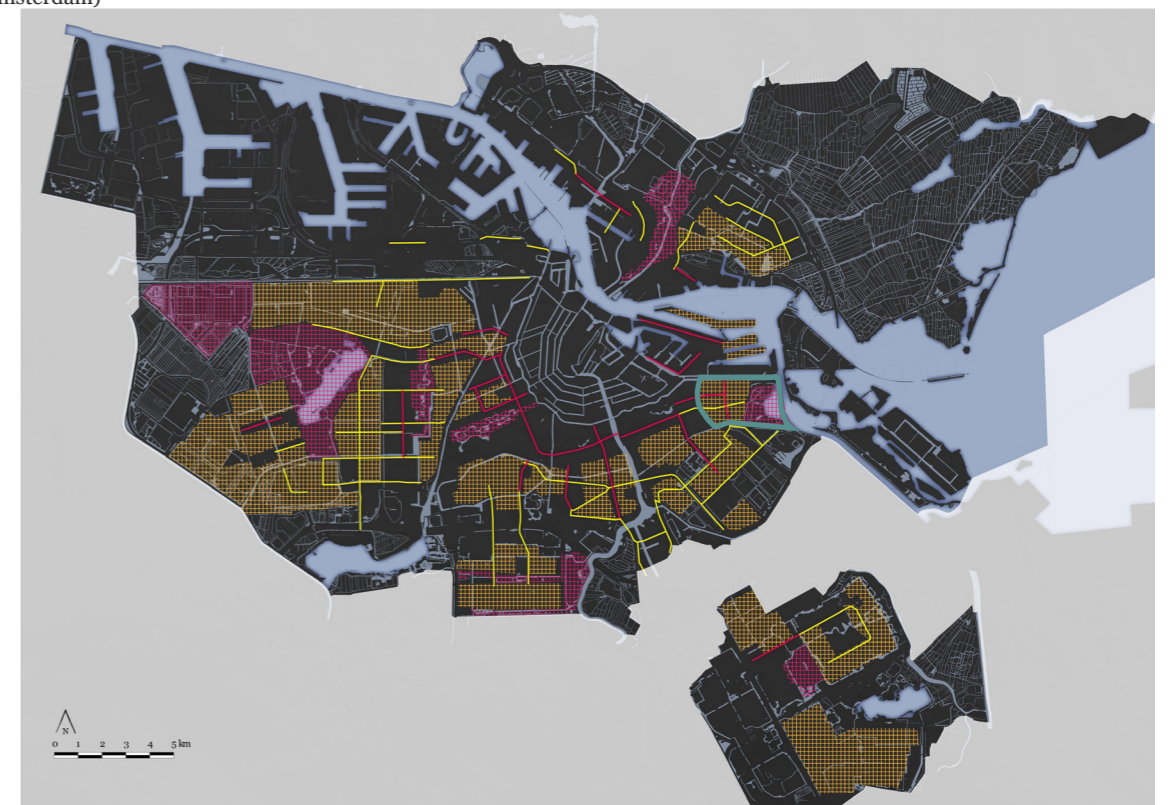


Figure 37: Conclusion map: Recreational areas, residential areas, main streets with and without facilities (image by author, 2020)

Space syntax analysis

This project is about public space, streets and how people move through these streets are part of this. Space syntax is a tool that looks at how well connected or integrated certain streets, or parts of streets, are in a city. Highly integrated streets may indicate potential local centres, although it is then up to the municipality, urban planners, policy-makers etc. to actually make these streets into well facilitated streets.

Figure 38 shows the most integrated streets according to these space syntax analysis, on two different levels. This map alone is not the most interesting to analyse, however, overlaying it with, for example, non-residential functions might show interesting, actual local centres.

More space syntax analysis maps can be found in Appendix iii



Figure 38: Space syntax analysis of Amsterdam (image by author, 2020)

Free (safe) Wi-Fi points

On November 15th 2019 the city of Amsterdam finally released a free, safe, Wi-Fi network, consisting of 50 points around the city. From January 1st 2020, the municipality of Amsterdam will start with connecting another 200 points around the city. The points are all connected to municipal locations, welfare organisations, and community centres (publicroom, n.d.).

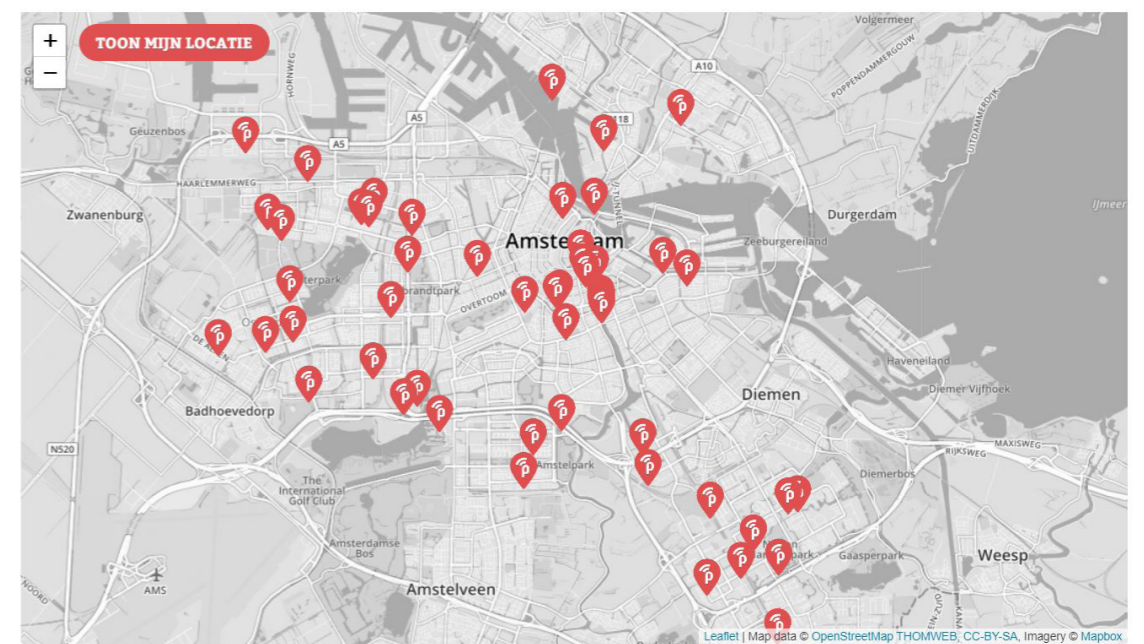


Figure 39: Locations of free Wi-Fi points by Public Roam (public room, n.d., [screenshot])

Comparable locations

Overlaying some concluding analysis maps has resulted in the conclusion map shown in Figure 40. This map shows the different types of areas (mainly residential and mainly recreational green), and some main streets that are well equipped in terms of facilities. The city centre is almost completely blank, which is not surprising. Here, the building densities are way higher, and facilities are spread out around the whole centre, resulting in one big commercial hub, instead of the more residential areas in the rest of the city.

The white marked locations on the map in Figure 41 highlight areas that seem to have matching characteristics based on the spatial analysis. So, these locations are areas in the city that are spatially and morphologically alike. Later on this map will be combined as well with the demographic analysis of Amsterdam, (Figure 45 on page 75) to further narrow down the amount of similar locations.

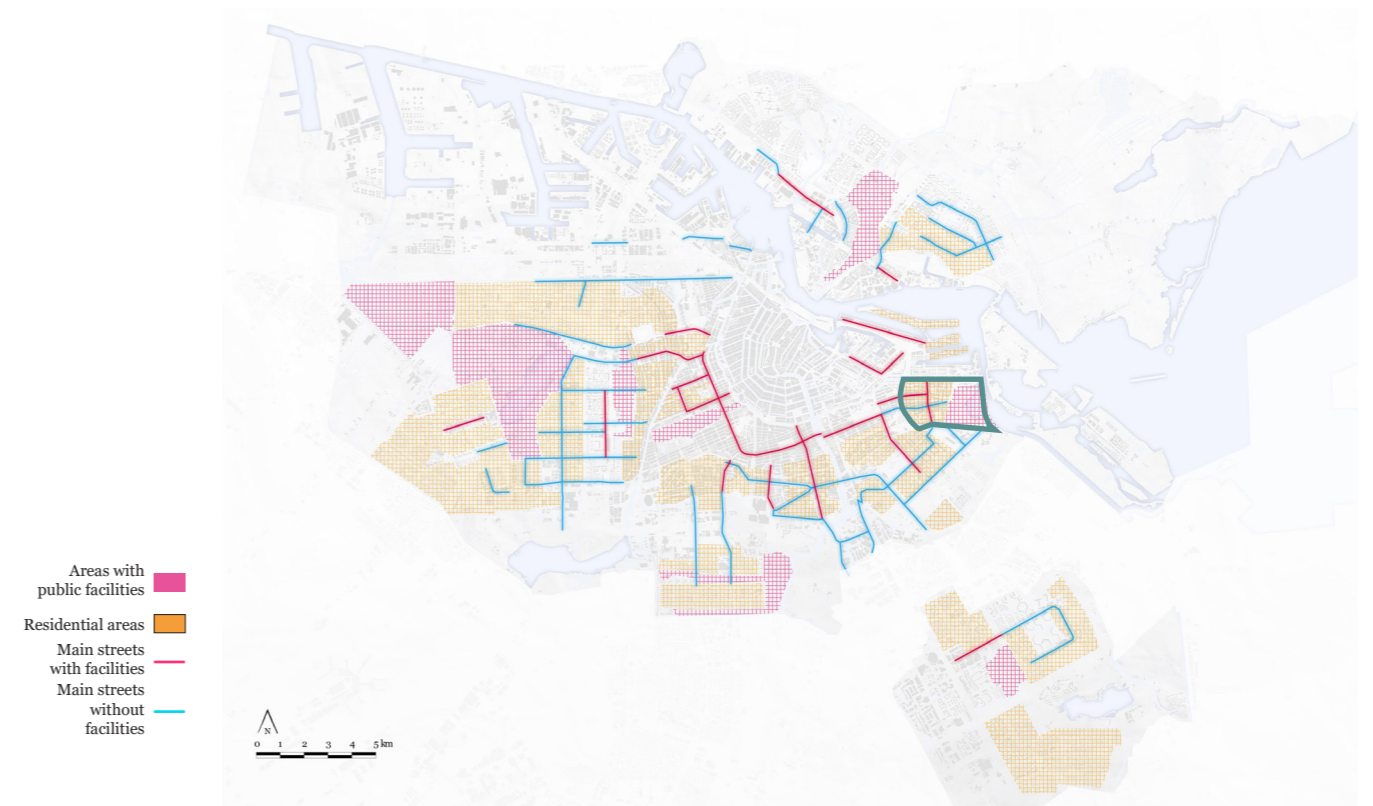


Figure 40: Conclusions of spatial analysis (Image by author, 2020)

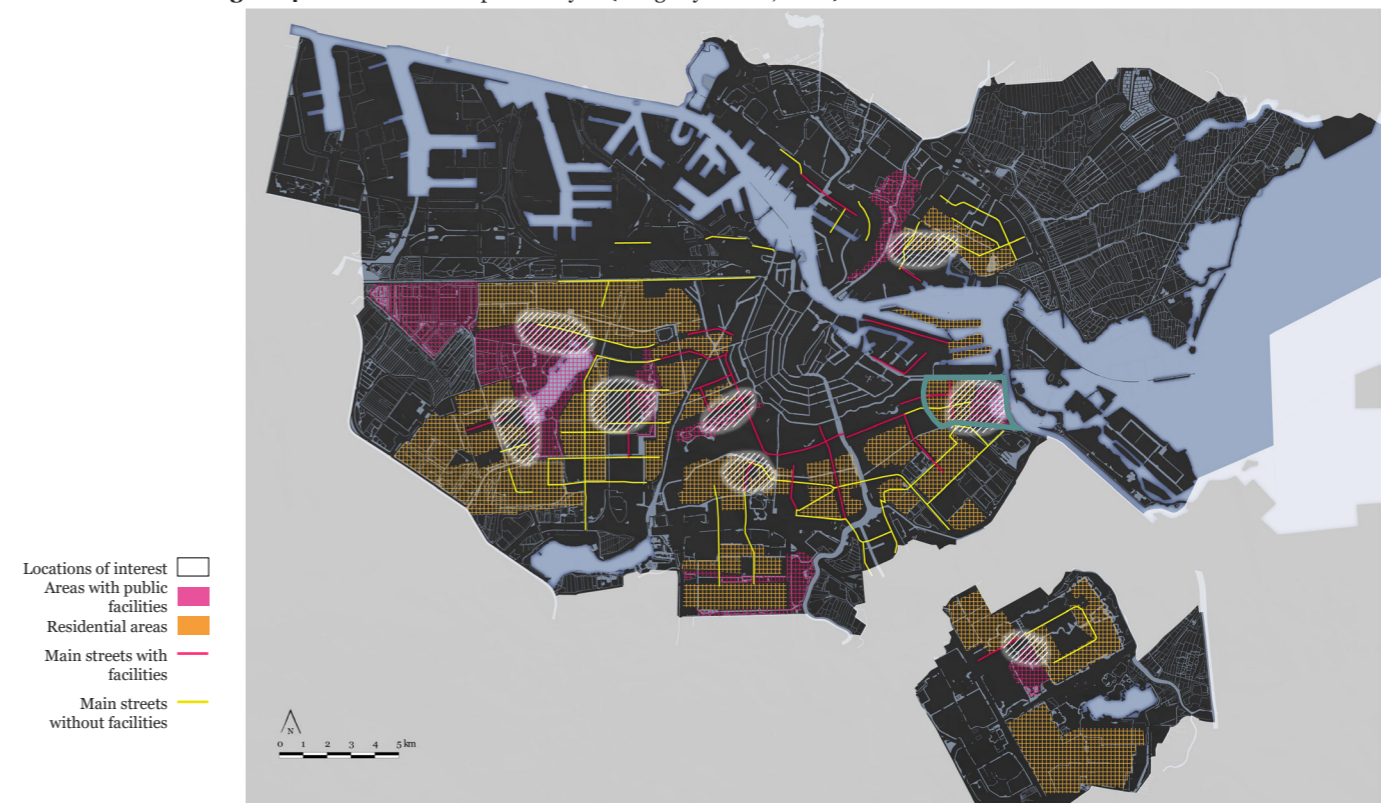


Figure 41: Conclusions of spatial analysis of Amsterdam (Image by author, 2020)

Demographic analysis

Apart from a morphological analysis of the city, it is also interesting to look at the demographic differences that can be found in the city. The first step is to look at the population density of the different neighbourhoods, see Figure 42. Big differences can be found in the city, but it can be concluded that the more towards the edge of the city you go, the lower the population densities become.

Interesting is to compare this first map with the second (Figure 43). This second map shows the 'stayers density index' (verblijversdichtheidsindex), meaning it shows the amount of people who stay in the neighbourhood. These 'stayers' are not only residents, but also people who work in the area, students and visitors. The index number of 100 was set as the urban average in 2014. Any number above this 100 thus means that on an average day more people per hectare are staying in the neighbourhood than on average in Amsterdam in 2014.

Ofcourse some neighbourhoods in the city centre stand out, but also a few neighbourhoods further away from the city centre pop-up. These high index numbers correspond for the most part with high population densities in the city as well.

Choosing a location in one of these areas might be interesting to research, since this suggests that there are a lot of people in the street on an average day.

It is often said that young people are more likely to use their digital equipment than older people. Therefore it is interesting to look at the percentages of 'young' people, in this case 12- to 26-year-olds. This is shown in Figure 175 on the next page.

Some of the analysed demographic data might seem very specific and almost unlogical to look at. However, due to previous knowledge of the chosen neighbourhood, these statistics are quite relevant. For example to look at the percentage of people with a non-western immigration background, see Figure 176. However, it was already known that this percentage would be quite high compared to other neighbourhoods, so it is interesting to see where this higher percentage is also found. The same applies to the data shown in Figure 177 and Figure 178, where level of education and income are represented.

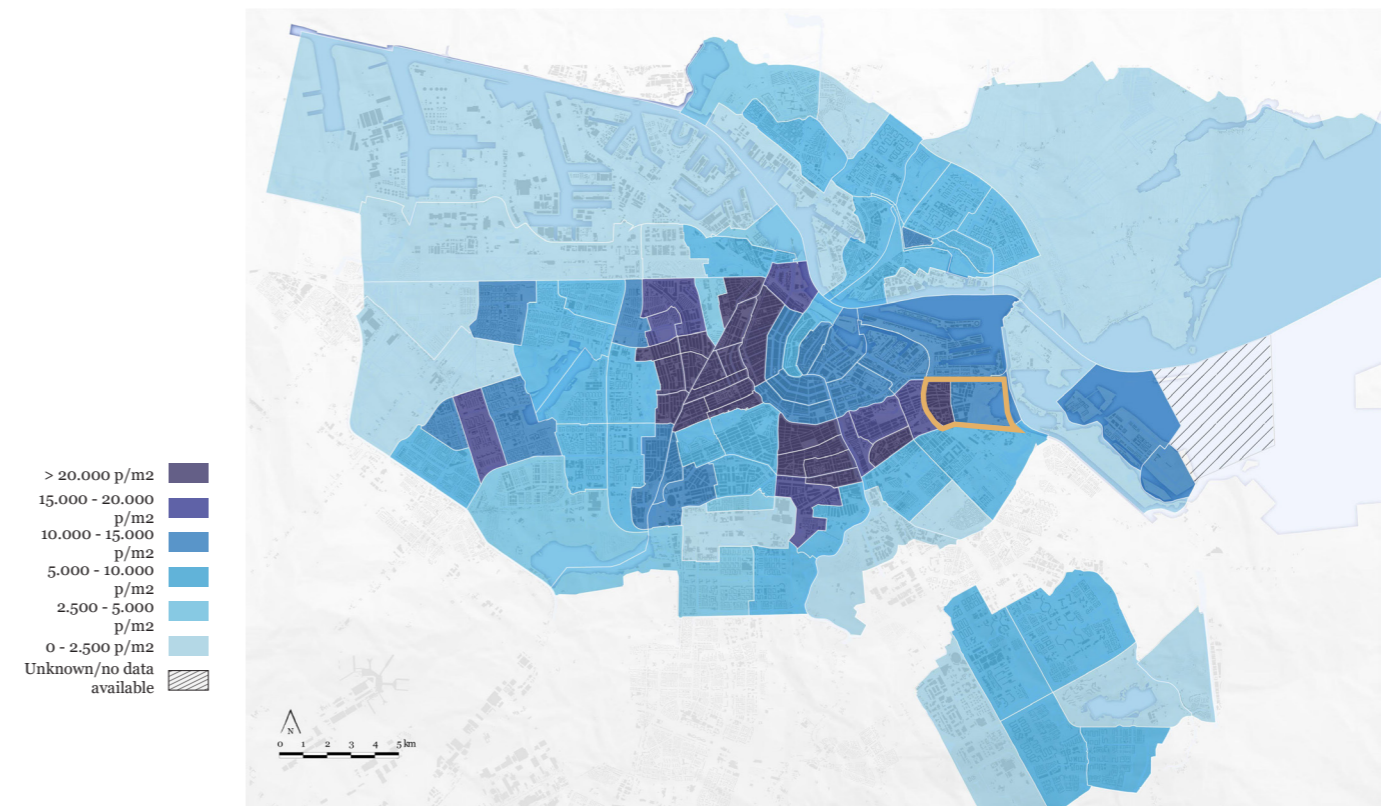


Figure 42: Population density per neighbourhood (IOS Amsterdam, n.d., edit by author)

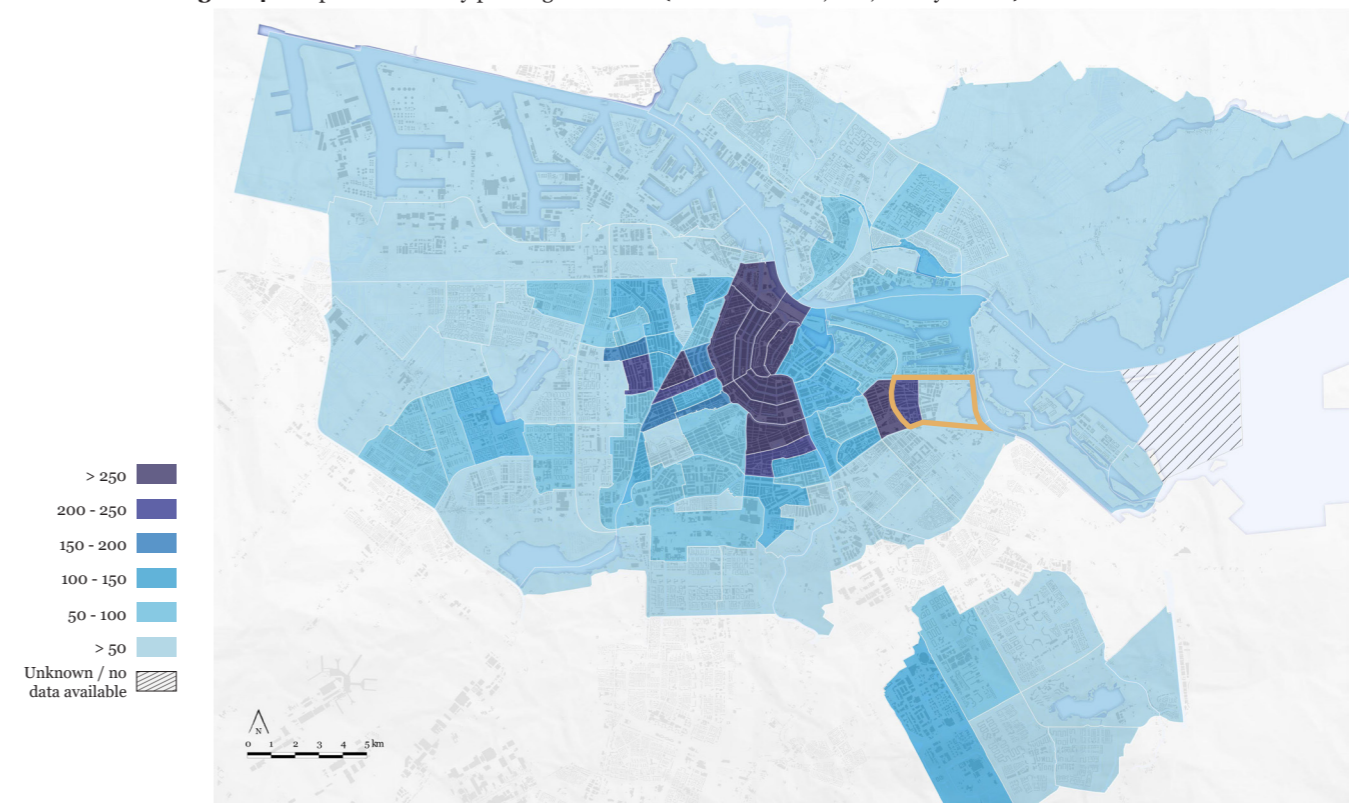


Figure 43: "Stayers density index" or "Verblijversdichtheidsindex" per neighbourhood¹ (IOS Amsterdam, n.d., edit by author)

1. "Verblijfsdichtheidsindex" is the amount of people staying per hectare public space on an average day. This includes residents, people working in the neighbourhood, visitors and students. A score of 100 is the average of the city, the higher the busier a location, the lower, the quieter.

Figure 44 shows a quick conclusion map of the neighbourhoods that share 3 or more of the same demographic data numbers as the Indische Buurt (shown in black). To show that the Indische Buurt is not a stand alone neighbourhood, it is important to look at the similarities between this neighbourhood and others.

This map shows that the Indische Buurt has the most similarities with neighbourhoods on the edges of the municipality boundaries, especially in the western part of the city.

These conclusions are combined with the concluding map of the spatial analysis, which has resulted in the map shown on map is combined with the concluding map of the spatial analysis (Figure 41 on page 71), and shown in Figure 45.

Here it becomes clear that there are indeed locations that have both spatial similarities as well as demographic similarities, and are thus very much comparable to the Indische Buurt.

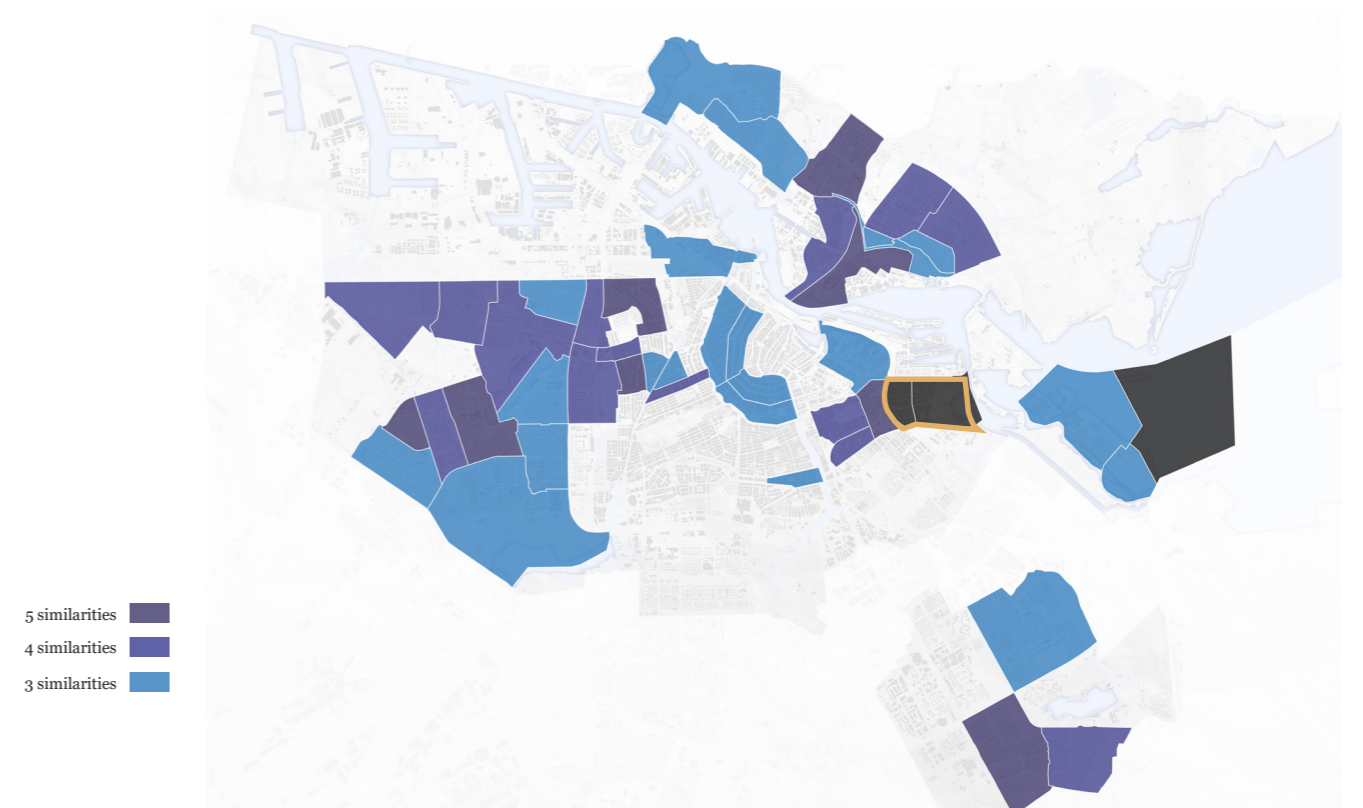


Figure 44: Neighbourhoods with comparable demographic characteristics to the Indische Buurt (Image by author, 2020)

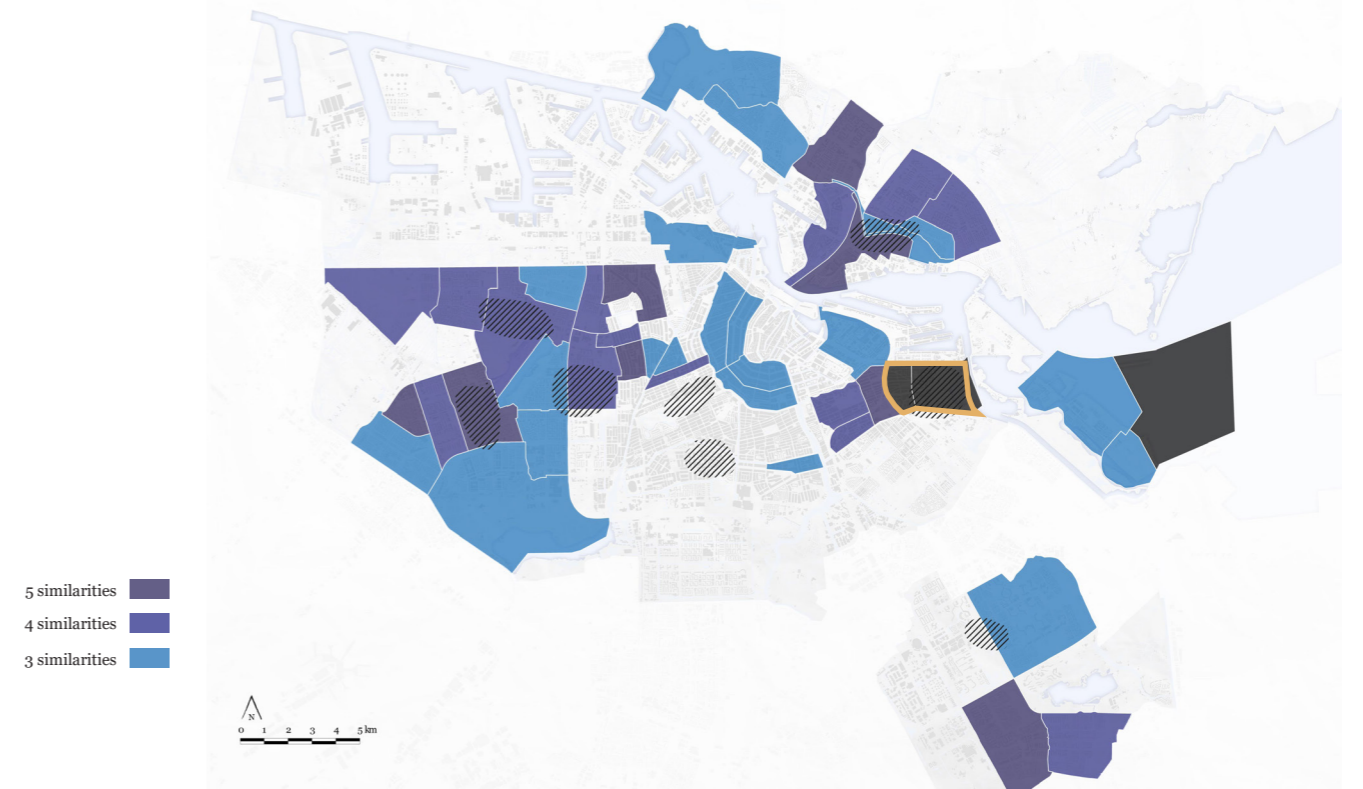


Figure 45: Similar neighbourhoods and potential research locations based on demographic and spatial analysis (Image by author, 2020)

3.3 Analysis Indische Buurt

Background information

The Indische Buurt in the eastern part of Amsterdam was founded roughly around 1900, in the western part of the current neighbourhood. (See Figure 47) In the beginning, the neighbourhood was quite isolated and separated from the rest of Amsterdam because of the intensively used railway that forms the border of the neighbourhood on the west side. Already in the very first beginning, the neighbourhood was famous for being an ‘immigration’ neighbourhood, meaning it attracted mainly people from all over the country and not so much people who already lived in Amsterdam. The neighbourhood could never really shake off this reputation, not even in present day. (indischebuurt website, n.d.)

The neighbourhood itself was mainly build for laborers with a lower income. In the beginning of 1900, the famous ‘Berlage blokken’ (see Figure 49 on page 78) were where the people with the lowest income would live, but was also the place that was the most socially problematic. Both the first world war and the second had a negative impact on the neighbourhood, and it degraded even more. In 2001 someone even called it a ghetto, emphasizing once more on the bad reputation the neighbourhood still had.

There was a lack of supervision of local governments and a lot of influence from drugs related crimes. The Javaplein was the place where drugsdeals were made, including during the day, and people did not feel safe enough to walk alone on the street during the evening. (Nul20, 2019)

In the early 2000’s the Indische Buurt was the neighbourhood that scored the lowest on resident appreciation in the whole city, see also Figure 46. Not surprisingly, Amsterdam-Oost, of which the Indische Buurt is a part of, was included in the list of

“Vogelaar wijken” (Essen, 2007). This was a list of forty problematic neighbourhoods in the country, that needed special attention, according to the former minister of Housing, Neighbourhoods and Integration (Wonen, wijken en Integratie) Ella Vogelaar.

Since then, a lot has changed. For the last fifteen years, structural changes in the neighbourhood have been made to level up the

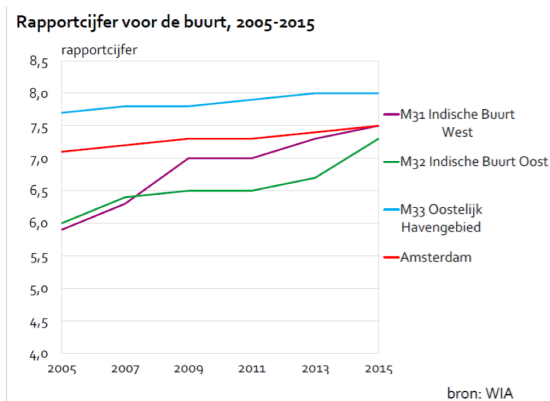


Figure 46: Neighbourhood appreciation by residents (score out of 10) (nul20, 2019)



Figure 47: Building ages Indische Buurt (image by author, 2020, based on Kadaster)



Figure 48: Percentage of residents with a non-western migration background (IOS Amsterdam, n.d., edit by author)



Figure 49: Berlage blokken, Indische Buurt Amsterdam (Image by author, 2020)



Figure 50: Javaplein and Javastraat (on the left) nowadays (Image by author, 2020)



Figure 51: Timorplein nowadays (Image by author, 2020)

quality of the neighbourhood, reduce crime rates and diversify the neighbourhood. Nowadays, the neighbourhood is in a process of gentrification, following the redevelopment of the Javaplein (Figure 50), the Timorplein (Figure 51) and the Javastraat (Figure 50). It is still a very multicultural neighbourhood (around half of the residents has a non-western migration background (Figure 48) and it is predicted that around 100 languages are spoken within the neighbourhood. The tabel in Figure 52 shows some more relevant demographic data, if which some are also translated into a map, that can be found in appendix iii. This table also shows some data on the quality of public space, and how this is percieved by the residents. As can be seen, the neighbourhood scores quite average compared to the rest of the city, making it again a nice neighbourhood to use as a testing location for this graduation project.

What stands out though, is that especially the western part of the neighbourhood suffers from quite a high “verblijfsdichtheidsindex”². This number is comparable to the historic and touristic city centre of Amsterdam. (See Figure 43 on page 73)

Demographic information	West	Oost
Total amount of residents	12626	10058
Population density (res/km2)	26930	11229
% One-person households	53	52,5
% Two-person households without child	22,5	20
% Two-person households with children	15	16,5
% One-parent households	7,8	9,6
% Other households	1,6	1,3
% No migration background	37,6	34,1
% Wester migration background	17,2	13,4
% Non-western migration background	45,2	52,6
% Lower education	26	33
% Low-income households	22	26
% Registered unemployment	12,5	16,1

Quality of public space	West	Oost
Neighbourhood satisfaction	7,6	7,3
Appearance of living environment	7	6,7
Cleanliness of streets	6,3	6,3
Cleanliness of greenery	6,5	6,8
Cleanliness of playground facilities	6,5	6,8
Playground facilities	6,8	7,2
Offered public transport	7,9	7,8
"Verloederingscore" ¹	25	25
"Verblijfsdichtheidsindex" ²	210	47

- A lot more/better than average
- More/better than average
- Average
- Less/worse than average
- A lot less/worse than average
- No comparison available

1. "Verloederingscore" is a combined score of the experiences trouble cause by maintainance of the neighbourhood (streets, green, stained walls, dog poop on the streets, etc. 0 means no experienced trouble, 100 means a lot of trouble.
 2. "Verblijfsdichtheidsindex" is the amount of people staying per hectare public space on an average day. This includes residents, people working in the neighbourhood, visitors and students.

Figure 52: Demographic numbers Indische Buurt West and Indische Buurt Oost (IOS Amsterdam, n.d., edit by author)

Morphology

The map below is the morphological map of the Indische Buurt. It shows how urban and green connected with each other, but not really integrated. The Indische Buurt, like a lot of the surrounding neighbourhoods, is quite an urban neighbourhood, with little public green, apart from the 'Flevopark' on the east side of the neighbourhood.

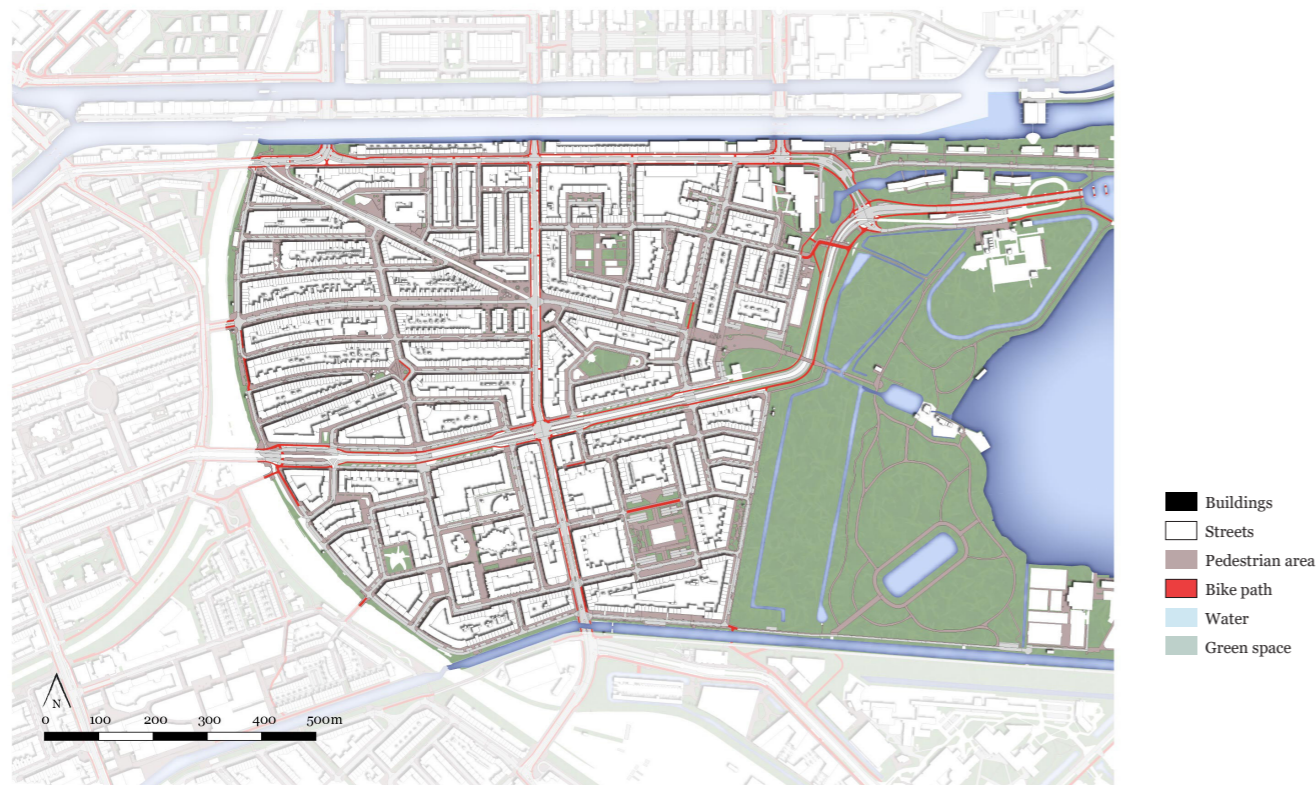


Figure 53: Morphology, Indische Buurt (image by author, 2020, based on SVB-BGT)

Open space

In this map, the technique of the Italian Architect Giambattista Nolli was roughly applied. It shows all the publicly accessible open space in the neighbourhood in black and all private spaces in white. In this case the open spaces are mainly streets with some squares attached to it, and of course park on the west side of the neighbourhood.

This is a first indication that interventions in public space will most probably be in streets, and occasionally on a square, since these are the two types of open space most common in the neighbourhood. It is good to have this realisation early on, since it might affect the continuation of the analysis or proposed interventions.



Figure 54: "Public space", Indische Buurt (image by author, 2020, based on SVB-BGT)

Meeting places

Figure 56 shows a few different kinds of public meeting places that can be found in the neighbourhood. A distinction was made between green spaces, urban space, playground and terraces. In this map, streets are not mentioned specifically, since they often not really act as meeting places, but often are merely for facilitating transportation. However, all the area that is marked black is open space, since the open space map shown in Figure 54 is used as a base for the coming analysis maps.

The second map on the page, Figure 57, shows the same information, but without the buildings in the neighbourhood. For now it looks like it is a repetition of the same information, however, this map will be build up with additional information from the analysis of the neighbourhood in the following pages. The end result will be a schematic summary of the analysis and be used to define the challenges the Indische Buurt has to deal with, according to the analysis.



Figure 55: Playground “Speeltuin Atjehstraat”, Eerste Atjehstraat, Indische Buurt, Amsterdam (image by author, 2020)



Figure 56: Different types of public meeting places (image by author, 2020)

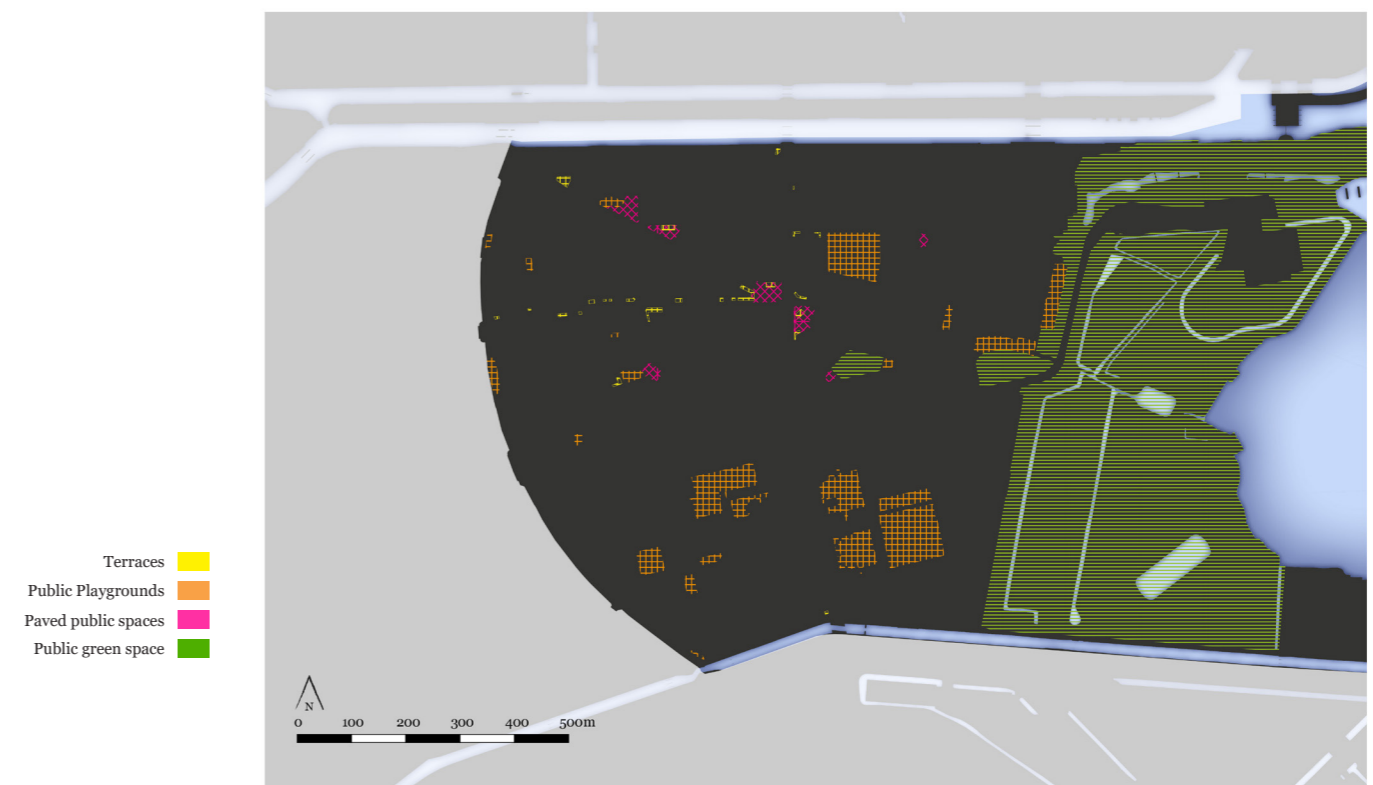


Figure 57: Spatial analysis map: Types of public spaces, Indische Buurt (image by author, 2020)

Benches

The following map shows the placement of benches in the neighbourhood. Since this project is also partly about meeting places, it would be interesting to see where potential meeting places are situated. It is believed that benches in public space are a good asset in creating physical contact in public space.

Ironically enough, this map was produced by using Google Streetview and mapping all benches that could be found while virtually walking through the neighbourhood.

A distinction was made between benches placed by the municipality and benches placed by residents themselves. It shows that the majority of benches placed by the municipality are placed around already defined meeting places, like playgrounds and plazas. While the benches of residents are almost always placed in the streets, next to front doors. This creates new 'meeting places' for people strolling through the neighbourhood, but more probable for neighbours meeting each other.



Figure 58: Man sitting on bench in Insulindeweg, Indische Buurt, Amsterdam (image by author, 2020)



Figure 59: Location of benches, Indische Buurt (image by author, 2020, based on Google Streetview)

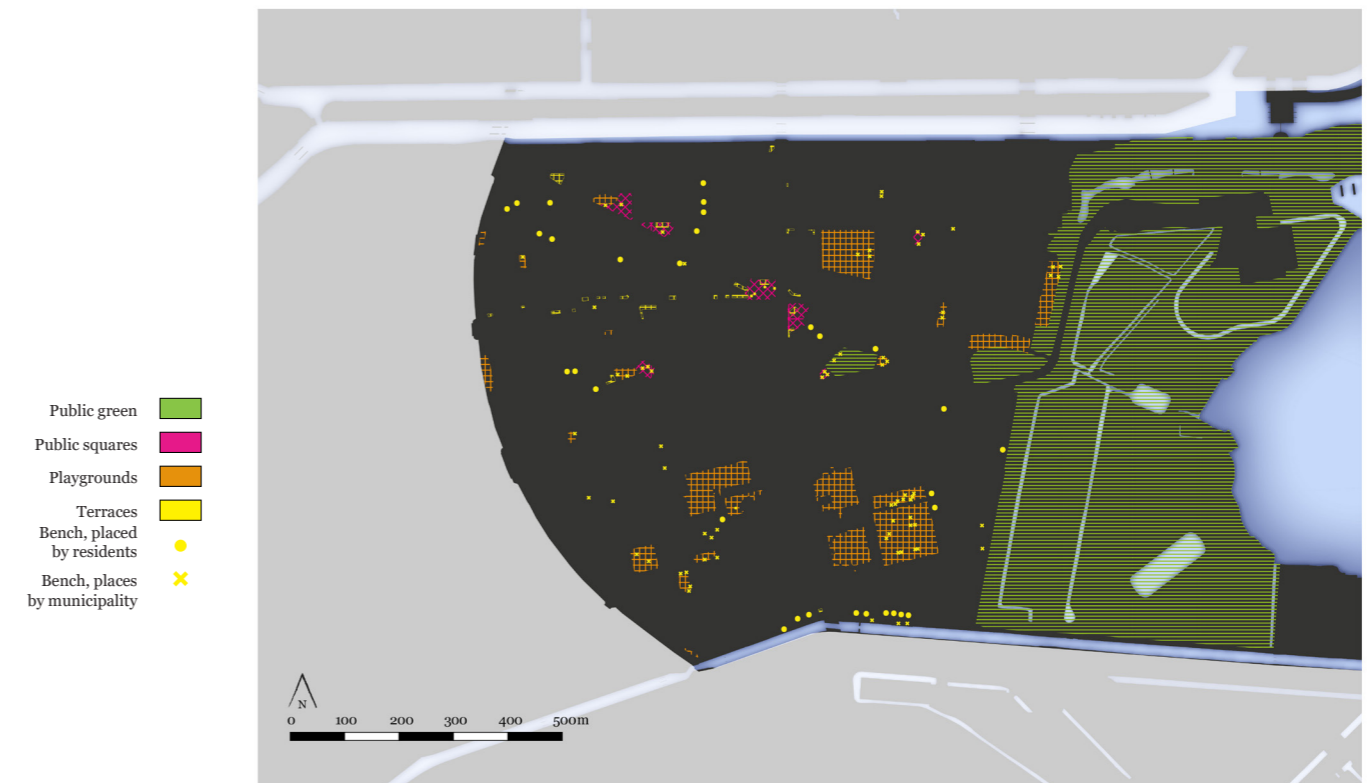


Figure 60: Spatial analysis map: Public spaces, benches, Indische Buurt (image by author, 2020)

Non-residential facilities

The quality of streets is not only defined by how they look, but also what they facilitate. For example, enough trash bins, good lightning, or a bench every now and then. However, the design of the buildings attached to the street, and, more importantly, their function, are just as important. Having supermarkets, retail stores, or coffeeshops attract people to a place, making these streets more lively, and thus often more attractive.

This map thus shows the non-residential facilities of the buildings in the neighbourhood. It shows quite a diverse availability in facilities. Going from education to healthcare and sportsfacilities, till restaurants, bars, and supermarkets.

Clusters of these facilities can be found along some main streets in the neighbourhood and around the church and mosque in the southern part of the neighbourhood.



Figure 61: Non-residential functions, Indische Buurt (Gemeente Amsterdam, n.d., edit by author)

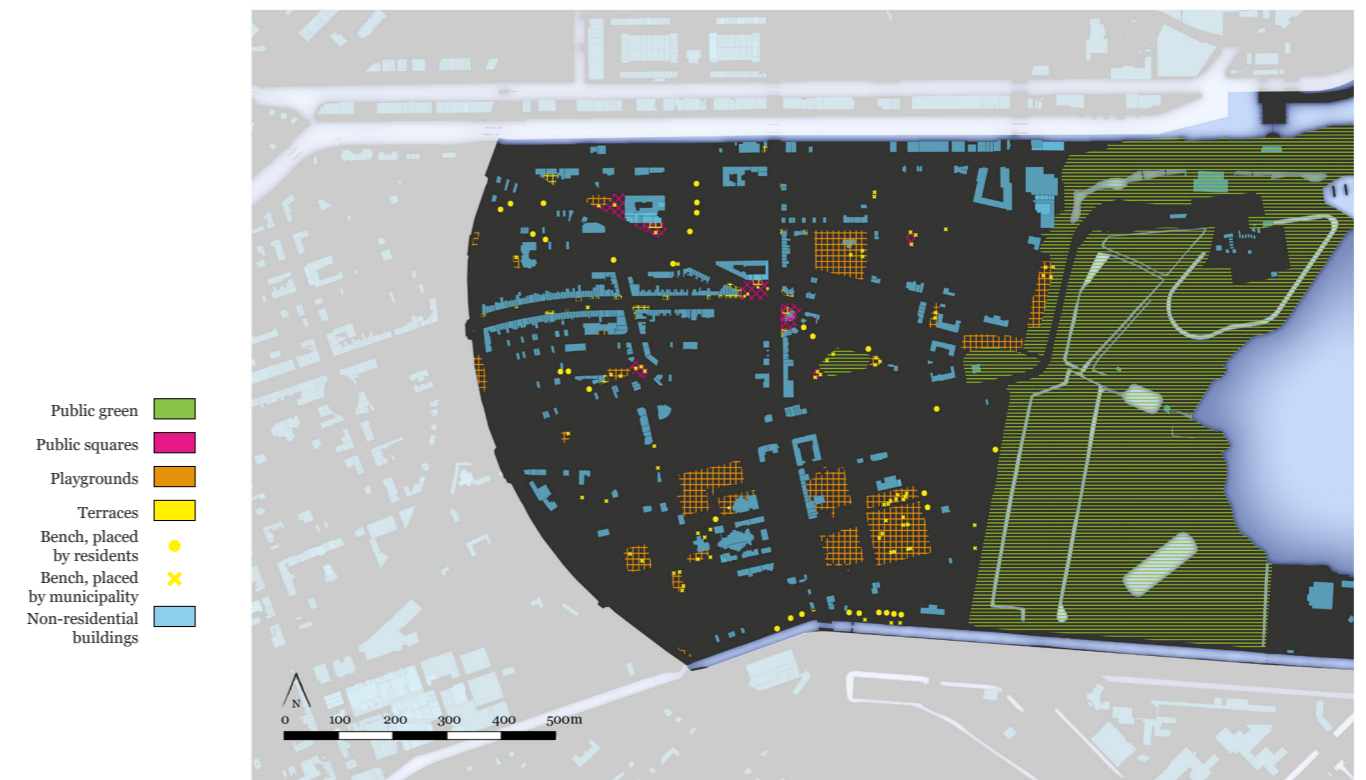


Figure 62: Spatial analysis map: Public spaces, benches, non-residential buildings, Indische Buurt (image by author, 2020)

Routing

More and more people are using their mobile devices to find their way. Without applications like GoogleMaps, people would not know where to go anymore. The question however is, whether the structure of the city or, in this case, neighbourhood, complies with the suggestions of GoogleMaps.

To research this, seven locations around the neighbourhood were picked. How one should walk from point A to point B was searched in GoogleMaps and traced on a map. All different suggestions of Google were traced separately. Overlaying all these different routes, with a high opacity, highlights parts of the routes that are most suggested by Google. As these are the streets mostly suggested by Google, it is very probably that these are also the routes most used by people walking through the neighbourhood. Figure 63 shows precisely these highlighted routes in yellow.



Figure 63: Combination of proposed routes by Google Maps crossing the neighbourhood, Indische Buurt (image by author, 2020, based on Google Maps)

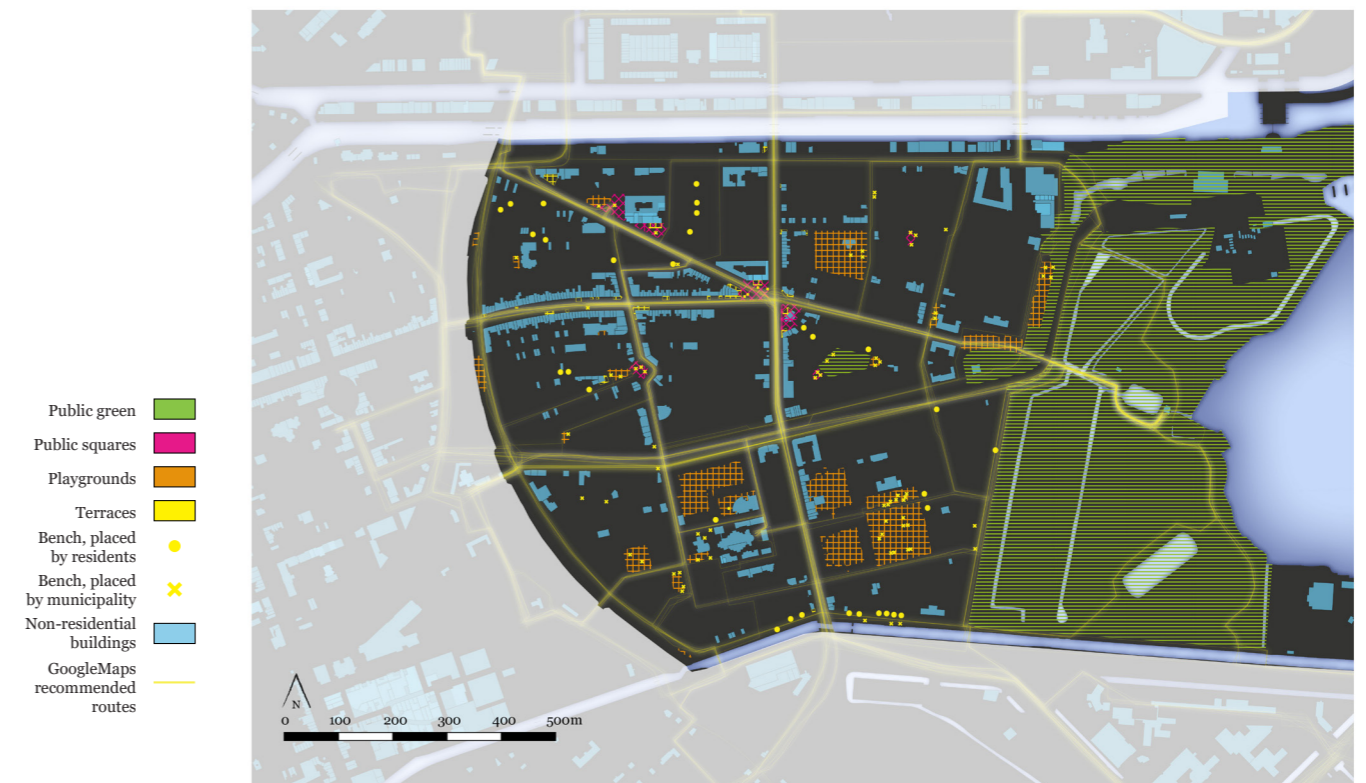


Figure 64: Spatial analysis map: Public spaces, benches, non-residential buildings, main routes, Indische Buurt (image by author, 2020)

Instagram analysis

Instagram is the first platform of which an analysis is shown here. Although Instagram has a very strict privacy policy, and geo-location data is not available to anyone anymore, here the option was still to look up public posts, based on location tags and hashtags. So this is what was done for this location.

This is of course not a completely watertight and objective method, because the one choosing the locations or hashtags can always make a choice not to count certain tags or forget about important ones. However, it was tried as best as could be to do this as thoroughly as possible.

Snapchat analysis

The second social media platform that has some form of public data is Snapchat. This platform has an open source map, showing all the public posts available on a specific location. For a few weeks, a few times a week a screenshot was made of this map, zoomed in on the Indische Buurt. The combination of these screenshots is shown below.

It should be noted that the amount of public posts was very limited, mostly not more than five, and often bij de same person or persons. It is therefore doubtful if this analysis is really useable for defining more specific intervention locations, which is a shame nonetheless.



Figure 65: Locations of public Instagram posts (image by author, 2020, based on Instagram public posts)

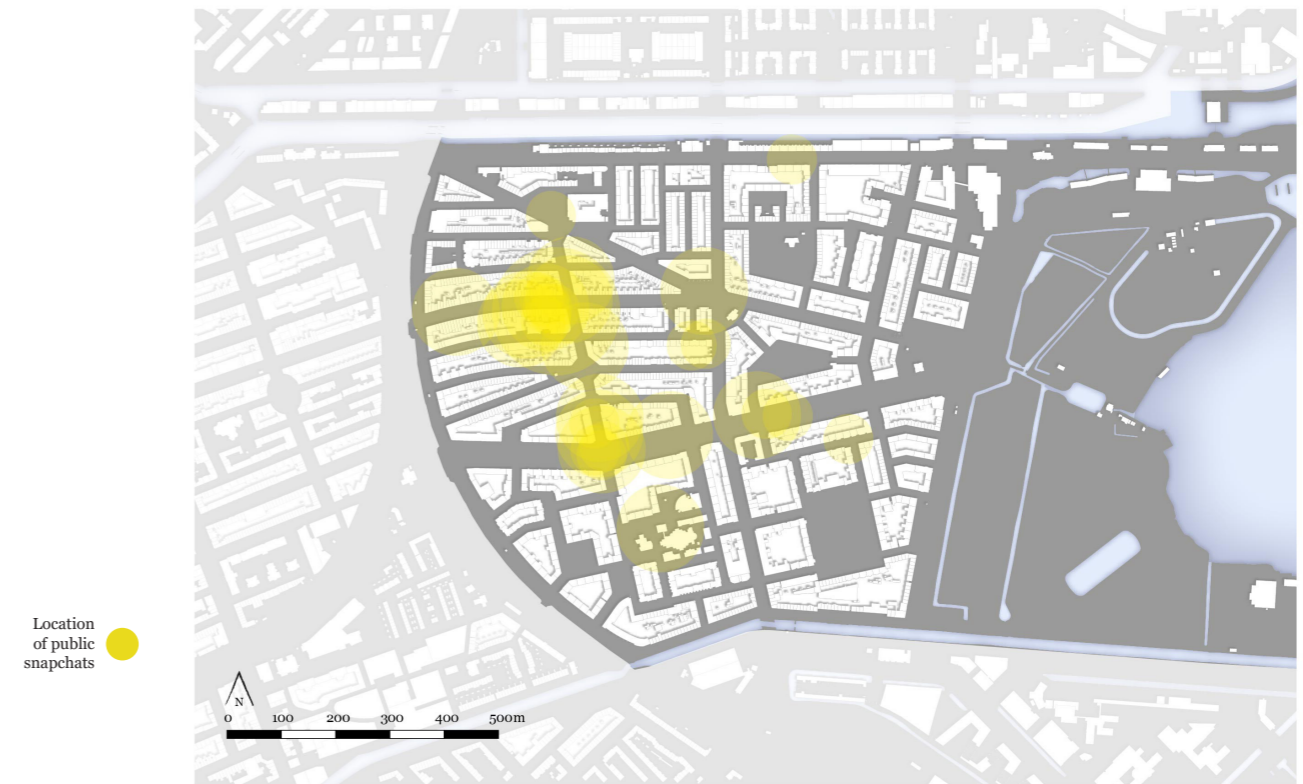


Figure 66: Locations of public Snapchat posts (image by author, 2020, based on Snapchat Inc. open heat map)

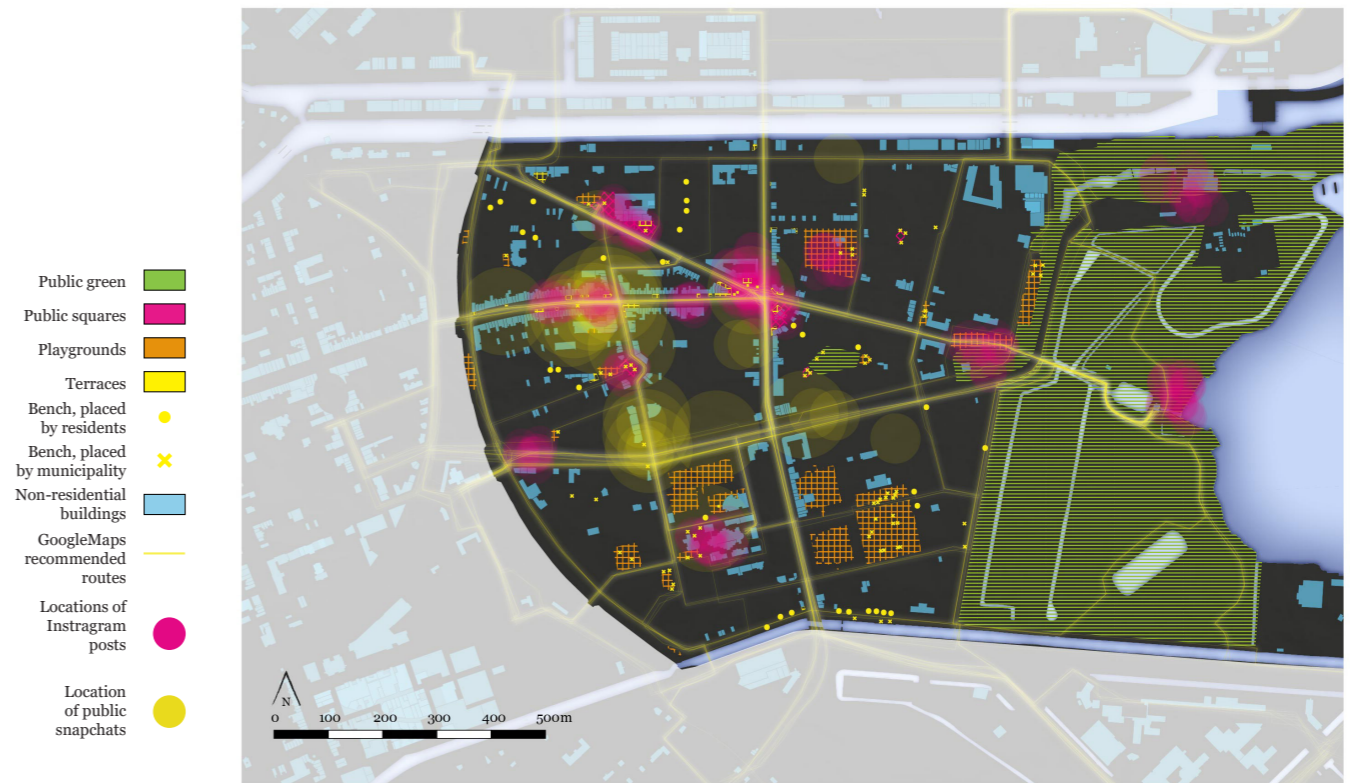


Figure 67: Conclusion map spatial analysis, Indische Buurt (image by author, 2020)

3.4 Challenges

The map on the left (Figure 68) again shows the in a schematic way the conclusion maps of the previous explained analysis elements. Based on the overall conclusions of the analysis, but also the theory part and observations done in the neighbourhood, several challenges are formulated the Indische Buurt has to deal with.

In general, it can be stated that the introduction of digital devices has changed the way public spaces are used. Although this is not a conclusion specific for the Indische Buurt, it is something also this neighbourhood, like lots of other neighbourhoods and cities in the world, has to deal with. Therefore, the first challenge for the Indische Buurt is :

1. Digital devices are taking over the role of interaction with people, which used to happen a lot in public space;

As shown also in Figure 68, parts of the highlighted routes are very well facilitated, some other parts however, really lack this availability of facilities. This does not make these routes very attractive to walk through or stand still to enjoy the surroundings. This already shows the first potential locations that might benefit from interventions, represented in green in the challenge map in Figure 69.

2. There is a mismatch between proposed routes and the facilities offered in the neighbourhood;

More based on walking through the neighbourhood and personal observations, with the analysis conclusions in mind, is the conclusion that the design of the routes that do have a fair amount of facilities along them, often do not really invite you to stay. They are designed in such a way that efficiency is more important than meeting up with people or enjoying a break. These locations are shown in orange in the challenge map.

3. The design of the main routes often does not invite to stay, therefore, there is no, or little, opportunity for (impersonal) contact;

Again more based on personal observations also shows that the areas in the neighbourhood that are designed as public meeting places, like squares, often lack a lot of facilities. Their design does not complement the needs of its users, especially when looking at using digital devices. These locations, in combination with the found social media hubs, show again interesting potential research locations in the neighbourhood. These are shown in pink in the challenge map.

4. The defined public meeting places often lack facilities for (impersonal) contact and general use, especially for the use of digital devices.

These four challenges are, like mentioned, shown in Figure 69, providing a first look at some potential interventions locations. In this paragraph, the conclusions of the analysis are linked to the challenges of the Indische Buurt. On the following pages, a more in depth explanation of each challenge is given, illustrated with maps and some photographs taken in the neighbourhood.

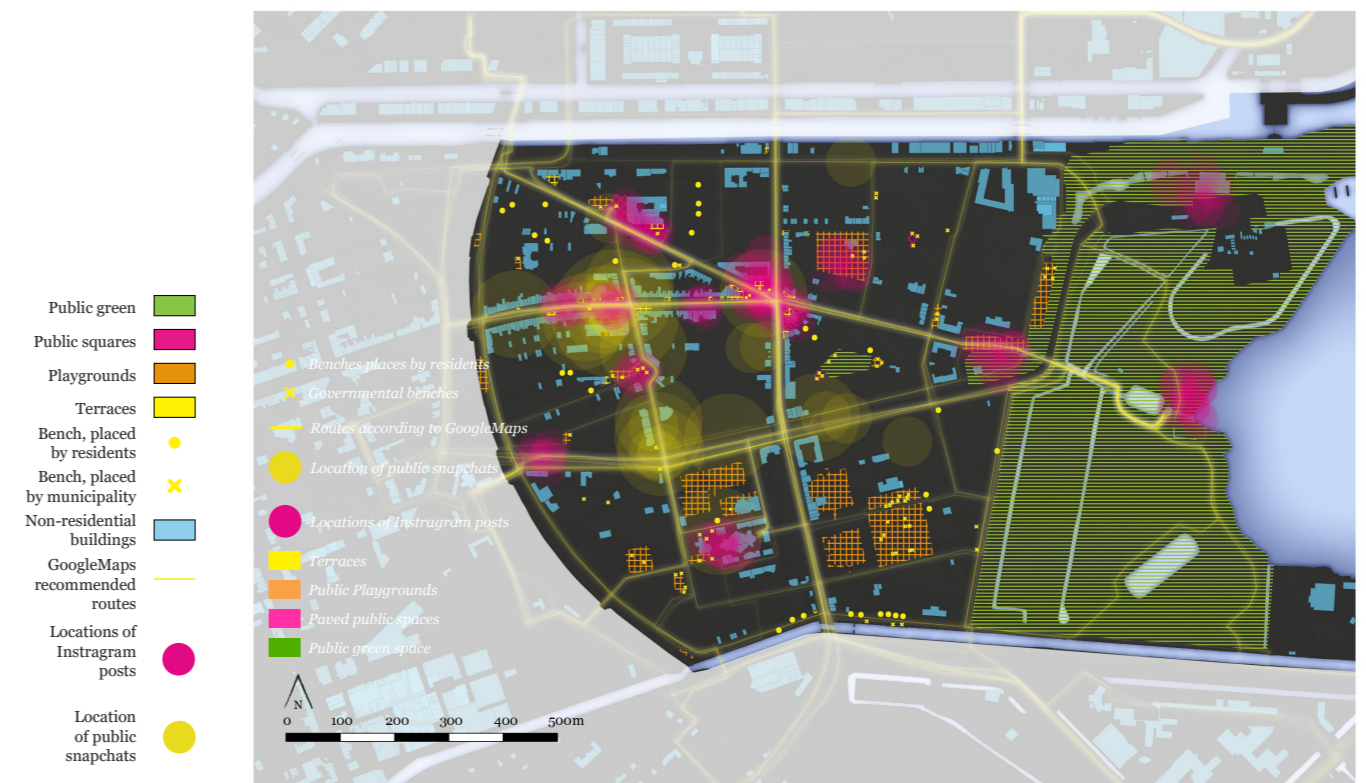


Figure 68: Conclusion map spatial analysis, Indische Buurt (image by author, 2020)



Figure 69: Challenges for the Indische Buurt (image by author, 2020)

4.3.1 Challenge 1

Digital devices are taking over the role of interaction with people, which used to happen in public space.

This challenge is not necessarily a specific challenge for the Indische Buurt alone, but more a global trend, already described in the introduction and theory chapters of this report. However, this trend quite visible also in this neighbourhood. Walking around in the neighbourhood showed a lot of people using their mobile phones, while making use of public spaces. One of the best observations is shown in the photos of Figure 70. Although sitting together on the benches, these youths were not really engaged with their surroundings, but rather with their digital world. In other places in the neighbourhood, but also in the city, we could see people being more engaged in their digital world than they were in the physical world. Talking to each other in person is becoming rarer, while digital contact is taking over this role.



Figure 70: Children in public space along the Ambonplein, Indische Buurt, Amsterdam (image by author, 2020)

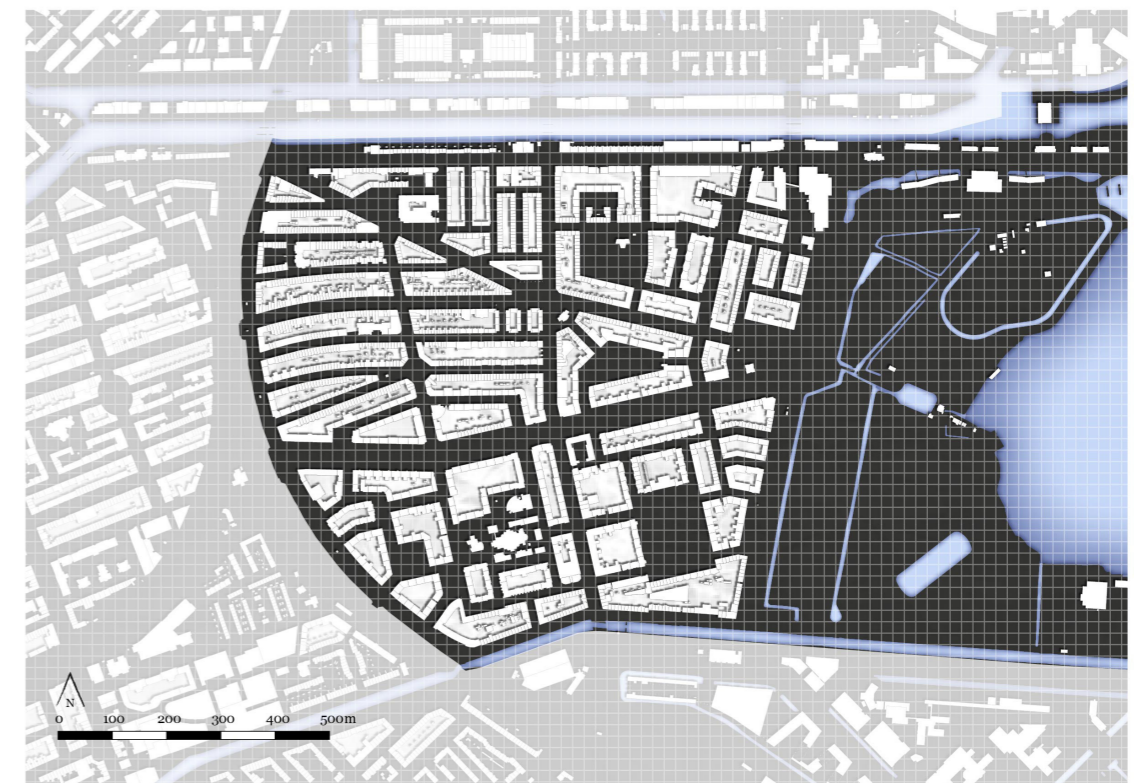


Figure 71: Challengemap challenge 1 (image by author, 2020)

4.3.2 Challenge 2

There is a mismatch between proposed routes and the facilities offered in the neighbourhood.

This challenge is mainly based on the analyses that focussed on using digital tools and applications, like GoogleMaps and different social media platforms. In several locations in the neighbourhood a mismatch can be found between, for example, proposed walking routes and the facilities offered in the neighbourhood, such as benches, retail shops or a coffeshop.



Figure 72: Renovated part of the Insulindeweg, Indische Buurt, Amsterdam (image by author, 2020)

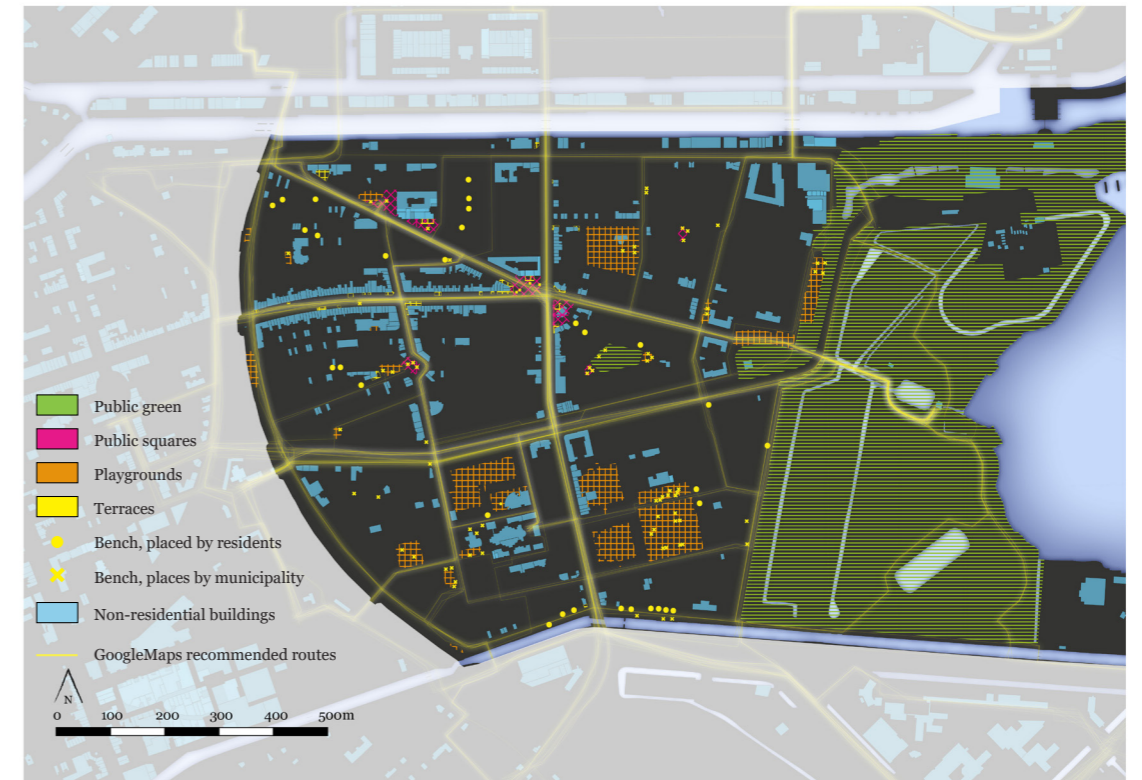


Figure 73: Analysis conclusion map, mismatch between routes and facilities (image by author, 2020)

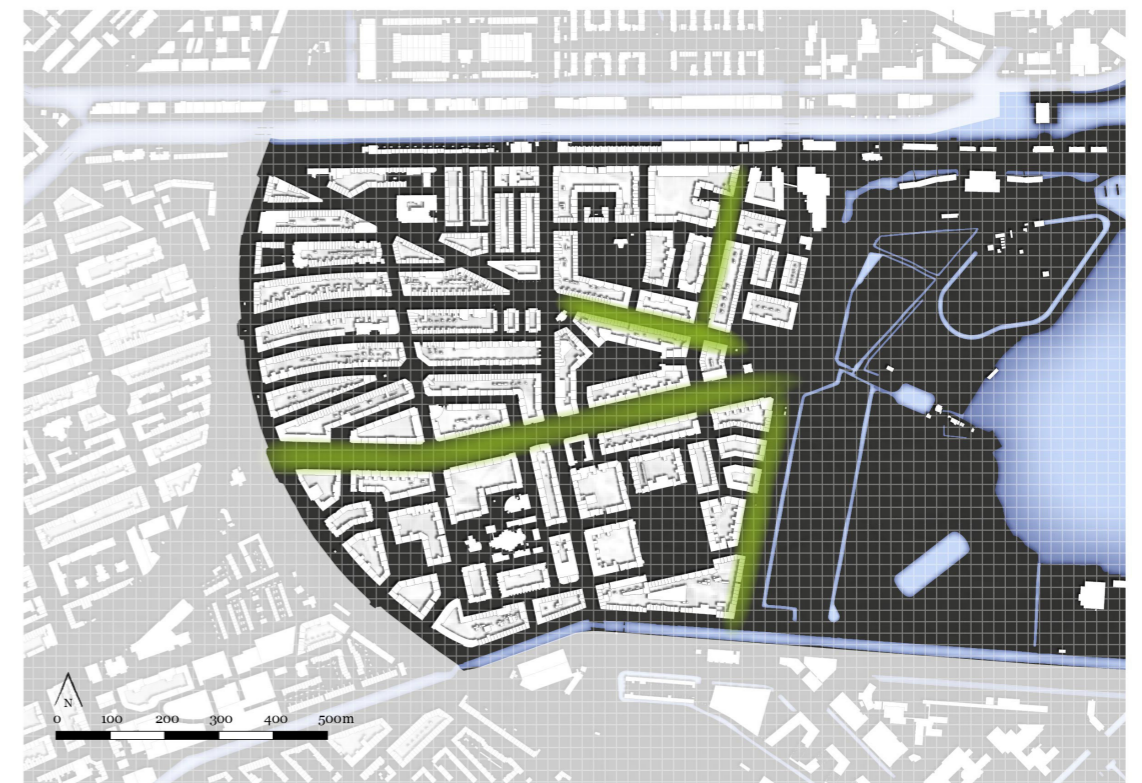


Figure 74: Challengemap challenge 1 and 2 (image by author, 2020)

4.3.3 Challenge 3

The design of main routes often does not invite to stay, and there is thus no, or little, opportunity for (impersonal) contact.

Some of the main routes that are proposed are not really designed to stay in. These streets are often just streets, and their main function is transportation. Because of a lack of facilities, like explained in challenge 2, and the practical design and layout of the streets, these streets are not really inviting to stand still and maybe have some (impersonal) contact with people. See, for example Figure 76, which is one of the main streets, and best connected streets in the neighbourhood. However, because of the car traffic and tram tracks, it is not a very attractive streets to walk along.



Figure 75: Javastraat, Indische Buurt, Amsterdam (image by author, 2020)



Figure 76: Insulindeweg, Indische Buurt, Amsterdam (image by author, 2020)



Figure 77: Challengemap challenges 1-3 (image by author, 2020)

4.3.4 Challenge 4

The defined public meeting places often lack facilities both for the analogue and for the digital use of public space.

Every neighbourhood has some places that are designed as ‘meeting places’. These can be squares, playgrounds, sportsfields etc. Also in the Indische Buurt, these locations exist. However, they do not really offer a lot of facilities. Some benches here and there is the main design solution, and thus no additional facilities to facilitate personal contact between people. The facilitation of the use of mobile devices is completely lacking in the neighbourhood, which is understandable. However, it would be good for the development of the neighbourhood to look at the options of implementing these facilities as well in certain places, to keep the neighbourhood up to date.



Figure 78: Javaplantosen, Indische Buurt, Amsterdam (image by author, 2020)



Figure 79: Square between the Sumatrastraat and Eerste Atjehstraat, Indische Buurt, Amsterdam (image by author, 2020)



Figure 80: Challengemap challenges 1-4 (image by author, 2020)

3.5 Vision Indische Buurt

Based on the analysis and challenges, a vision for the future of the Indische Buurt is proposed next. This vision consists of four main points, all aiming for the same goal: to create a neighbourhood where people still want to go outside, although living in an increasingly digital world. As said, the vision consists of four different steps:

- * Strengthen the main proposed routes with facilities of (impersonal) contact and staying;
- * Transforming the Javaplein into the heart of digital life of the neighbourhood;
- * Create different zones, focussing on different uses;
- * Propose interventions to create new synergy between uses.

All these steps combined create the vision map shown in Figure 81. The idea is to try to find a synergy between the traditional use of public space and the use of digital devices in these spaces. To create this synergy in the whole neighbourhood, the choice has been made to make a distinction between different places, regarding their focus. This way, different places in the neighbourhood will get their own identity, making them more attractive to visit and stand out more. Although a synergy needs to be found, some locations will have a focus on the more traditional uses of public space, and some areas will focus more in the use of digital devices.

To realise this vision, five different locations in the Indische Buurt are picked, which will be explained in the next chapter. Like mentioned for this vision, different locations will have different focusses. Here, the mentioned uses and user roles, which are explained in chapter 1, come into play. For every location, different roles and uses, and therefore behaviours, are picked and elaborated on

Through interventions proposed for each of the locations, these focusses will be shown. However, focussing on one type of use, does not mean other behaviour is not accepted in these spaces. By interventions, people are stimulated to behave in a certain way, by the options that are provided. Meaning, in places that will have a focus on more traditional use of public space, the use of mobile devices will not be banned, interventions will simply try to stimulate people to not use their devices. No person should feel restricted in how they wish to behave, because this will probably mean they will not come back again.

To achieve this synergy on the neighbourhood scale, the four steps that are mentioned before are crucial. To achieve this synergy also on the street, design interventions with a specific goal in mind are needed, which will be explained in the next chapter.



Figure 81: Visionmap Indische Buurt (image by author, 2020)

Step 1

Strengthen the main proposed routes with facilities of (impersonal) contact and staying

The main routes that cross the neighbourhood are also the routes where the biggest mismatch between use and offered facilities can be found. As these are still one of the most important and busiest routes, strengthening the design of these streets or along these streets could be a good first step in the development of the neighbourhood. Here one can think about making the routes more accessible for certain modes of transportation, making them more attractive to walk or bike along, or increasing the facilities along these streets.

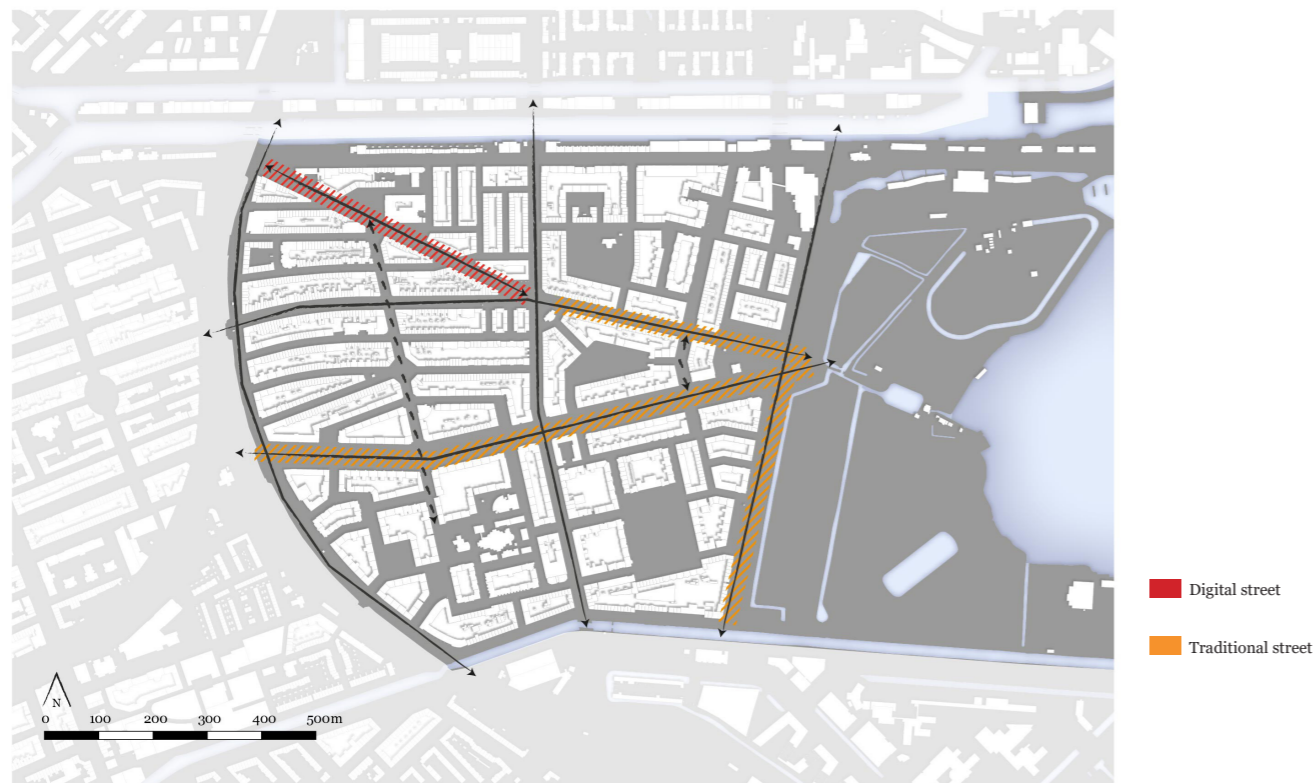


Figure 82: Vision map Indische Buurt - step 1 (image by author, 2020)

Step 2

Transforming the Javaplein into the heart of digital life of the neighbourhood

The Javaplein has been completely redeveloped in the past ten to fifteen years, with the idea that it should be the heart of the neighbourhood. Today this really is the heart of the neighbourhood, with great accessibility, facilities, and design. Because it is already one of the busiest parts of the neighbourhood, where a lot of people already stay, it might be a great place to add an extra dimension to this idea of the heart of the neighbourhood. With this extra dimension of marking it as the digital heart of the neighbourhood as well, it could very well be that even more people are attracted to this Javaplein. It would be the idea location to combine both physical and digital contact and lifestyles in one location, showing these can be combined without excluding one or the other.



Figure 83: Vision map Indische Buurt - step 1-2 (image by author, 2020)

Step 3

Create different zones, focussing on different uses

This step focusses on assigning focus points to different places in the neighbourhood. As explained earlier, the goal is to find a new balance in uses of public spaces. One of the steps to do so is to make a distinction in locations where the focus will be more on physical contact, and locations that will focus more on facilitating the digital lifestyle. Of course, choosing one does not eliminate the other, so both uses are still possible in all location. However, by assigning different zones, the proposed interventions will be more based on this use, giving it a pre clearly defined identity.

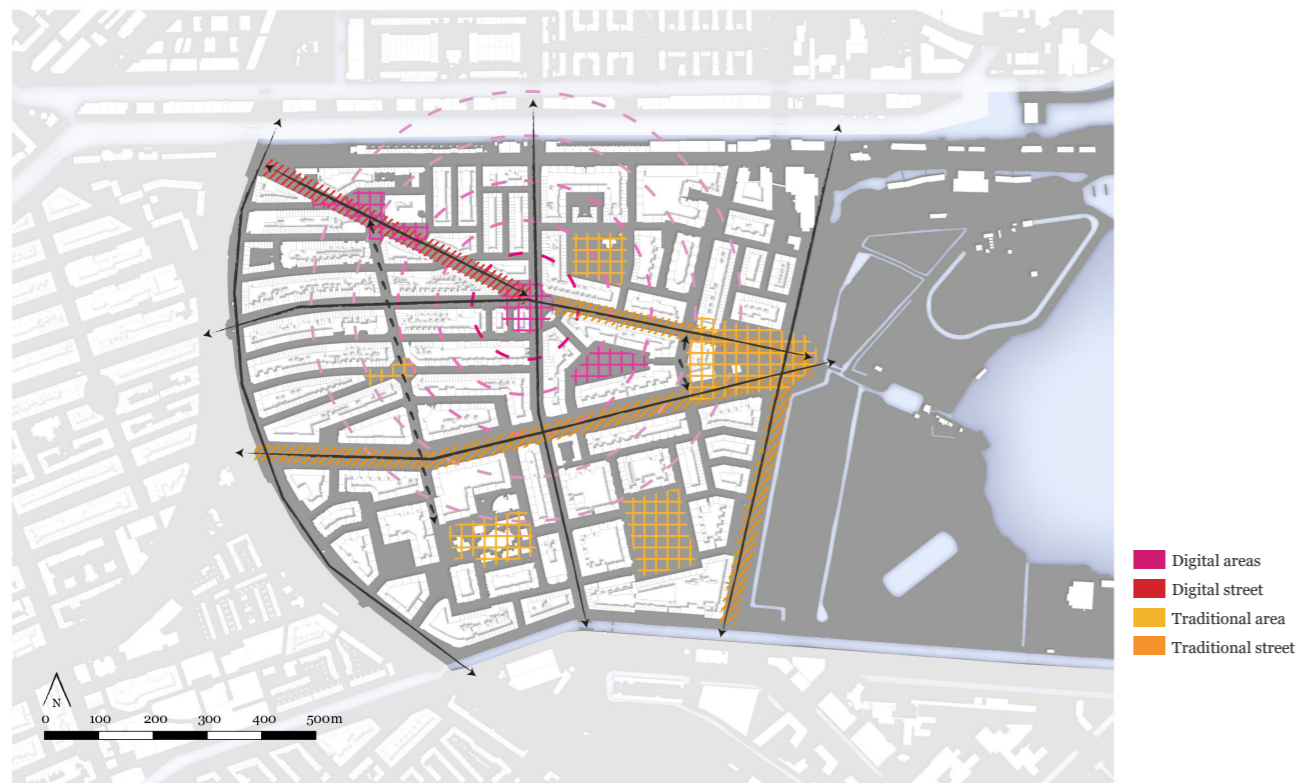


Figure 84: Vision map Indische Buurt - step 1-3 (image by author, 2020)

Step 4

Propose interventions to nudge people into different behaviour and create new synergy between uses.

When the specific uses are attached to locations, the next and final step will be to also intervene in these places. In this case it is about places and not the streets, as these have already been explained in the first step. Also the idea of nudging comes into place here, since these locations are more about staying instead of just going through, like the streets. Think about interventions that stimulate working outside on a laptop, benches that can charge phones, signs that stimulate using a phone to look up information, or differences in paving to creat texting and no-texting walk lanes. All these interventions will come into play in the next chapter, where the design proposals will be explained.



Figure 85: Vision map Indische Buurt - step 1-4 (image by author, 2020)



4.1 The Indische Buurt

The challenges and vision explained in the last chapter, have resulted in the definition of five suitable locations within the Indische Buurt. All of these locations are believed to have a lot of potential for intervening and really making a change in the neighbourhood. As the vision already shows, to find a new synergy in the whole neighbourhood, a key component is to create different zones, with different focus points. This way, locations in the neighbourhood will get more of their own identity, making them more attractive to visit or go through.

Another key element of this thesis is to in the end make it possible to apply the proposed interventions in other areas as well. In order to do this, the interventions should be shown in different urban characters, like more residential areas or a more touristic and busy area or street. This was also taken into account when creating the vision, and assigning the different uses and roles of people to these locations. Some of the locations have a focus on more traditional use of the street or square, some have a focus on more digital uses, both also with different roles of people assigned to them.

To show how this vision could be translated into real design changes in the neighbourhood, five locations are chosen, that represent these different identities and urban characters. Of these five locations, three are streets and two are squares, showing different kinds of public spaces and different uses. Each of the locations has a different character, based on the current use or the potential character explained in the vision. The five locations will now be explained very briefly, to show the differences between them and relate them to their location within the neighbourhood, as shown in Figure 86:

1. The Insulindeweg

A traffic busy street crossing the neighbourhood, acting as a barrier for slower traffic like cyclists and pedestrians.

2. The Borneostraat

Partly inaccessible for car traffic, dominated by tram line, and characterized by several squares along the street, with facilities attracting tourists and younger people, like a youth hotel and bar/cinema.

3. The Javaplein

The heart of the neighbourhood, characterized by its facilities for meeting up with others along the square, like a coffee shop, public library and fountain with sitting area.

4. The Javastraat

Only part of the whole Javastraat, very residential, very car focussed with a lot of parking spots

5. The Javaplantsoen

The square connecting the neighbourhood to the Flevopark, making it more acting like a street than a square where activities take place.

A more in depth explanation of the locations is given in the coming chapters, explaining the design proposals for each location. For each of these locations, a focus type of use is chosen, as well as a few user roles. The roles are either based on the current use of the location or on the type of use targeted with the design, and correspond to the urban characters explained above. Figure 87 on the next page shows the interrelations between the three types of use and the five user types explained earlier (see "1.3.7 Conclusions" on page 29). In the next sections, per location the use scheme, user roles, design and interventions will be explained and shown.

The interventions that are proposed and will be explained in the coming chapters are all more or less connected to these target roles and uses. But also a distinction



Figure 86: Intervention locations Indische Buurt, Amsterdam (image by author, 2020)

between the type of interventions can be made. Some of the interventions are more traditional intervention that are being used in urban design for many years. While other interventions are more digitally based. However, these digital interventions are often based on futuristic and hypothetical ideas, and not necessarily on innovations that are already produced today. This does fit in with the rest of the thesis, which is at times a bit hypothetical. This does not count for all the digital interventions that are proposed though, some are based on innovative ideas and art project that have been realised in the past couple of years.

Type of use

		Traditional analogue	Practical digital	Social digital
R O L E S	Resident	Walking	 	Posting on social media Whatsapp
	Tourist	Walking around	Finding route, information, facilities	Posting on social media Keep in touch
	Commuter	Walking A > B Using public transport	 	
	Social meeter	Meeting people	 	
	Digital nomad	 	Working Using Wi-Fi	Contacting people / clients

Figure 87: Uses and user scheme interrelations (image by author, 2020)



Figure 88: Javaplein, Indische Buurt, Amsterdam (Image by author, 2020)

4.2 Insulindeweg

The Insulindeweg is one of the main streets in the Indische Buurt. It is a street full of high speed traffic, houses a public transport line, and is generally seen as a barrier through the neighbourhood. This barrier is mainly experienced by pedestrians and cyclists, since there are only a few points to cross the street safely. Figure 90 shows the exact location of the street, showing the central position through the neighbourhood. As also explained in the analysis, this is one of the streets that is very frequently proposed by navigation systems as the street to take, however, there are not a lot of facilities along the street. Therefore, it is not a very attractive route to walk, which can also be seen in Figure 91, showing a picture of the current street. As said, the Insulindeweg houses a public transport line, and is very well connected to the train station 'Amsterdam Amstel'. The locations of the different public transport hubs are shown in Figure 92 on the next page.

Type of use




		Traditional analogue	Practical digital	Social digital
ROLES	Resident	 Walking		
	Tourist	 Walking around	Finding route, information, facilities	
	Commuter	 Walking A > B Using public transport		

Figure 89: User scheme Insulindeweg (image by author, 2020)



Figure 90: Location of the Insulindeweg, Indische Buurt, Amsterdam (image by author, 2020)



Figure 91: Insulindeweg nowadays (image by author, 2020)

Since this street is such an important traffic based street, the choice has been made to pick two uses to focus on: the traditional and the practical digital use (see also Figure 89). The traditional use is mainly based on the fact that the west side of the street is a public transport node, where trams, bus and train come together. Therefore, the focus is on tourists and commuters. Residents are also an interesting focus group, because of this street being a barrier, and the fact that there is a parallel road, mainly used by residents and visitors. The second use is the practical digital use, since it is very likely, some groups, like tourists, will use their devices to look up where to go, but also maybe commuters to look up when their transport is leaving or answering a work call.

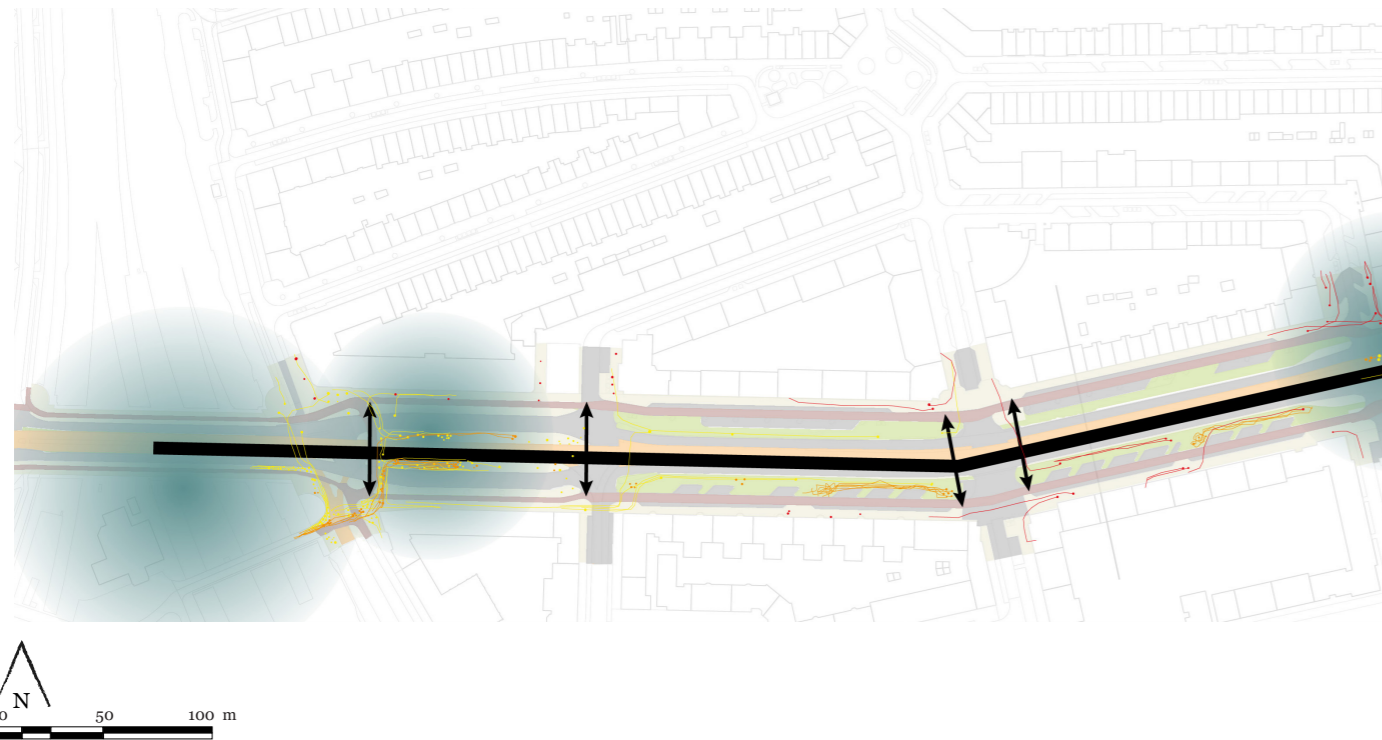
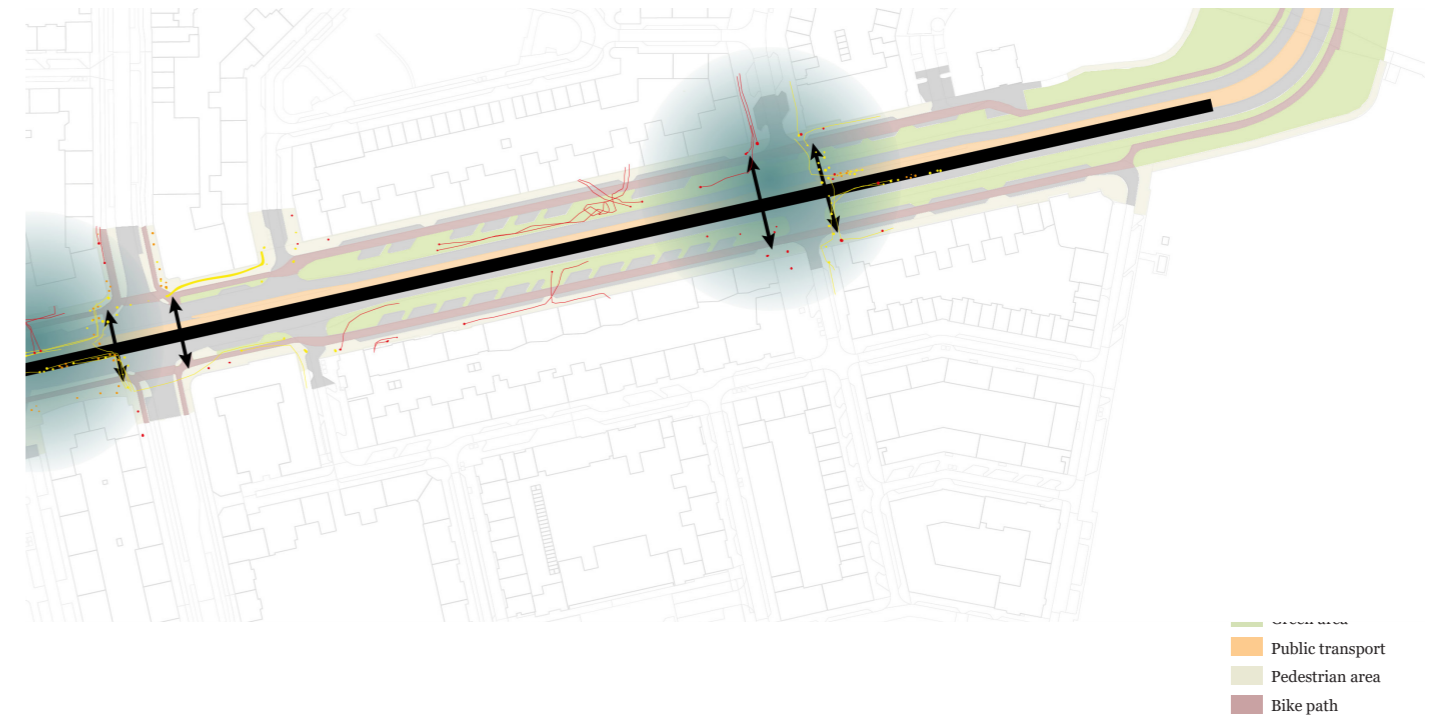


Figure 92: Public transport hubs of the Insulindeweg (image by author, 2020)



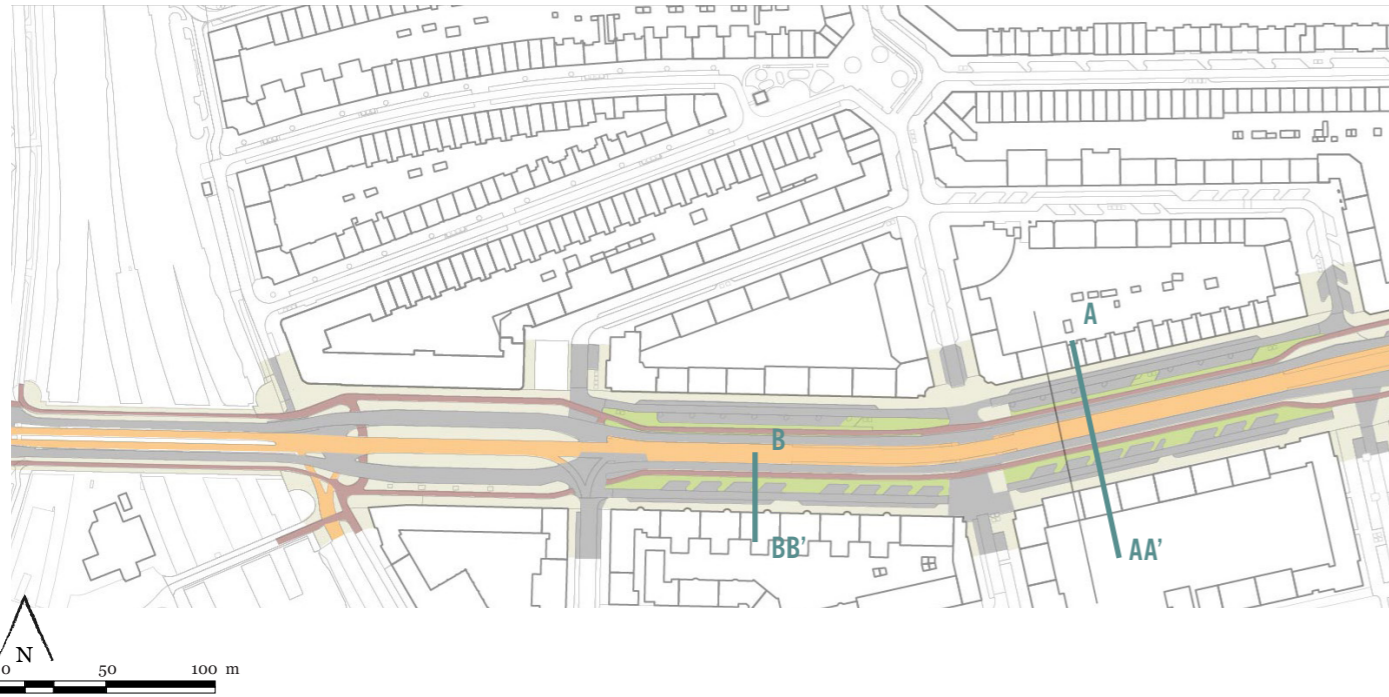


Figure 93: Current situation of the Insulindeweg (image by author, 2020)

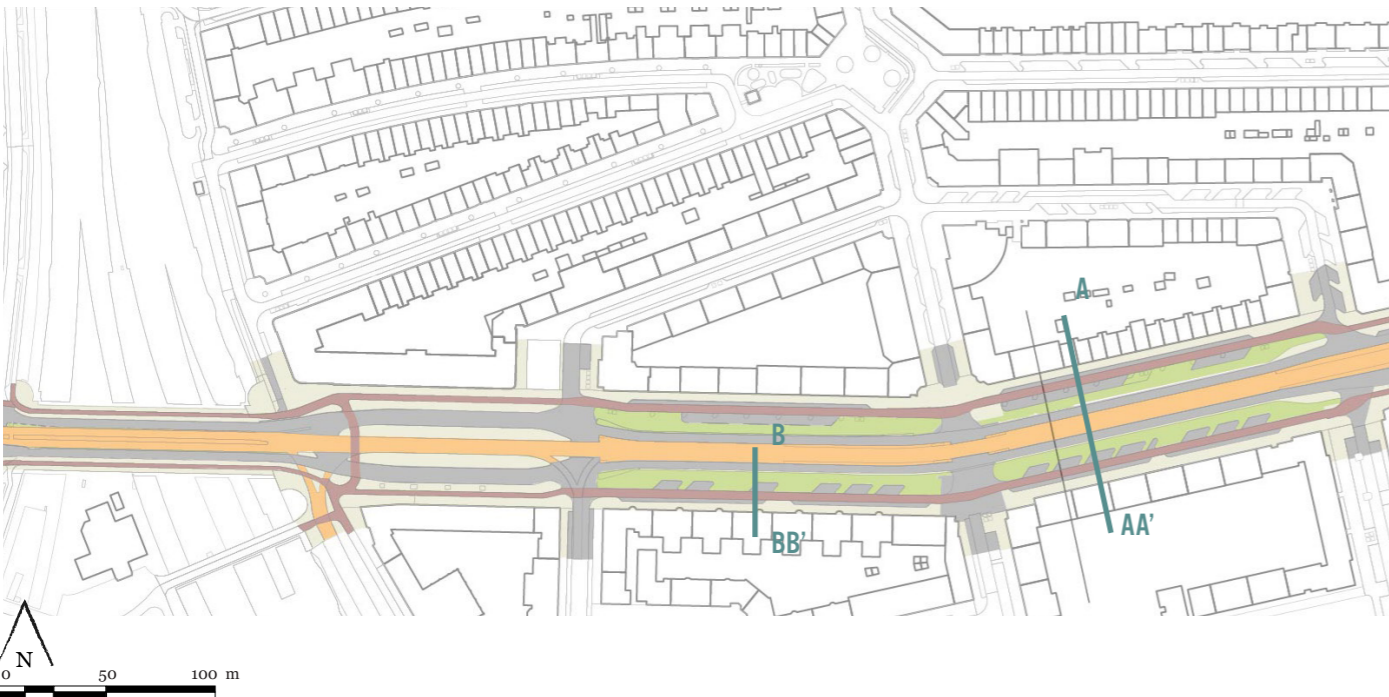


Figure 94: Design proposal for the Insulindeweg (image by author, 2020)

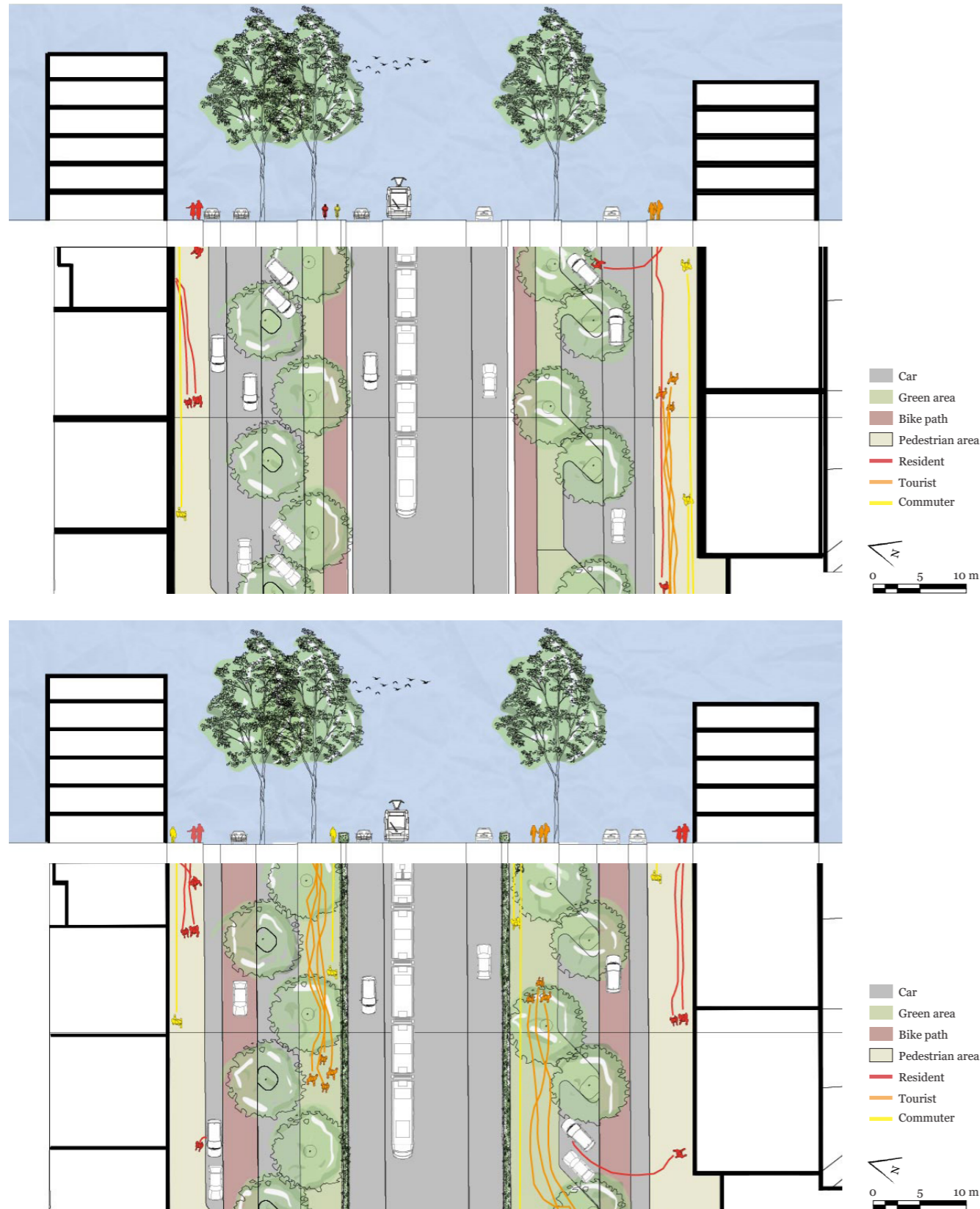


Figure 95: Section A-AA' of the current situatio (top) and design proposal (bottom) of the Insulindeweg, also showing the routes of different users (image by author, 2020)

Explanation of design

The most important decision that has been made for the design proposal of the Insulindeweg is to redesign the street profile by one major intervention. In the design proposal, the current bicycle path is moved to the parallel street next to the sidewalks, creating a “bikeroad” (“fietsstraat” in Dutch), where resident cars are ‘guests’. This means that, although the road is mainly for cyclists, cars are allowed, but have to move slowly. This creates a lot of space between these bikeroads and the road in the middle, which than will be transformed into a nice and greener walking route. To prevent one big narrow route, which seems to lead to nothing, every now and then a few parking places along the route are sacrificed to create small meeting places or other interesting destination points. This is mainly shown in the plans in Figure 93 and Figure 94, but can also be seen in the section B-BB’ in Figure 97. Figure 96 schematically shows this infrastructural change, which is applied on both sides of the road.

Apart from just making a more attractive and green route, this change actually creates a more clear route through the neighbourhood, guiding commuters and tourists to either the train station or the rest of the neighbourhood. Also, by creating

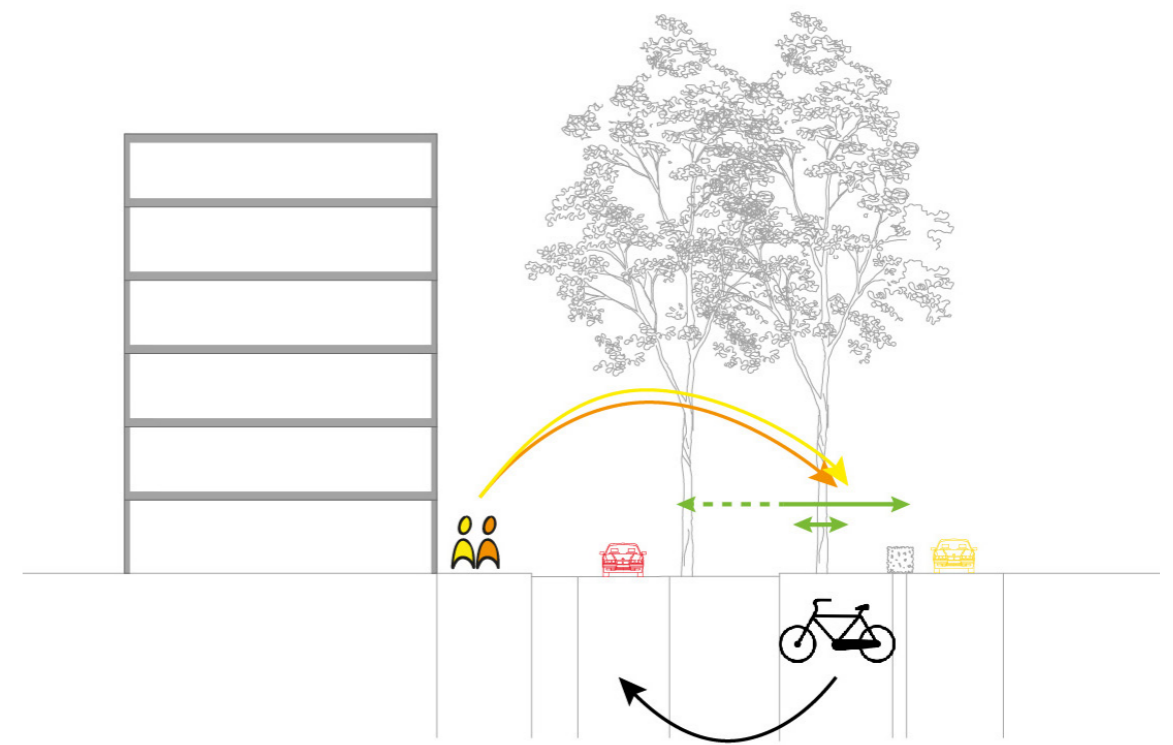


Figure 96: Scheme of infrastructural changes of the Insulindeweg (image by author, 2020)

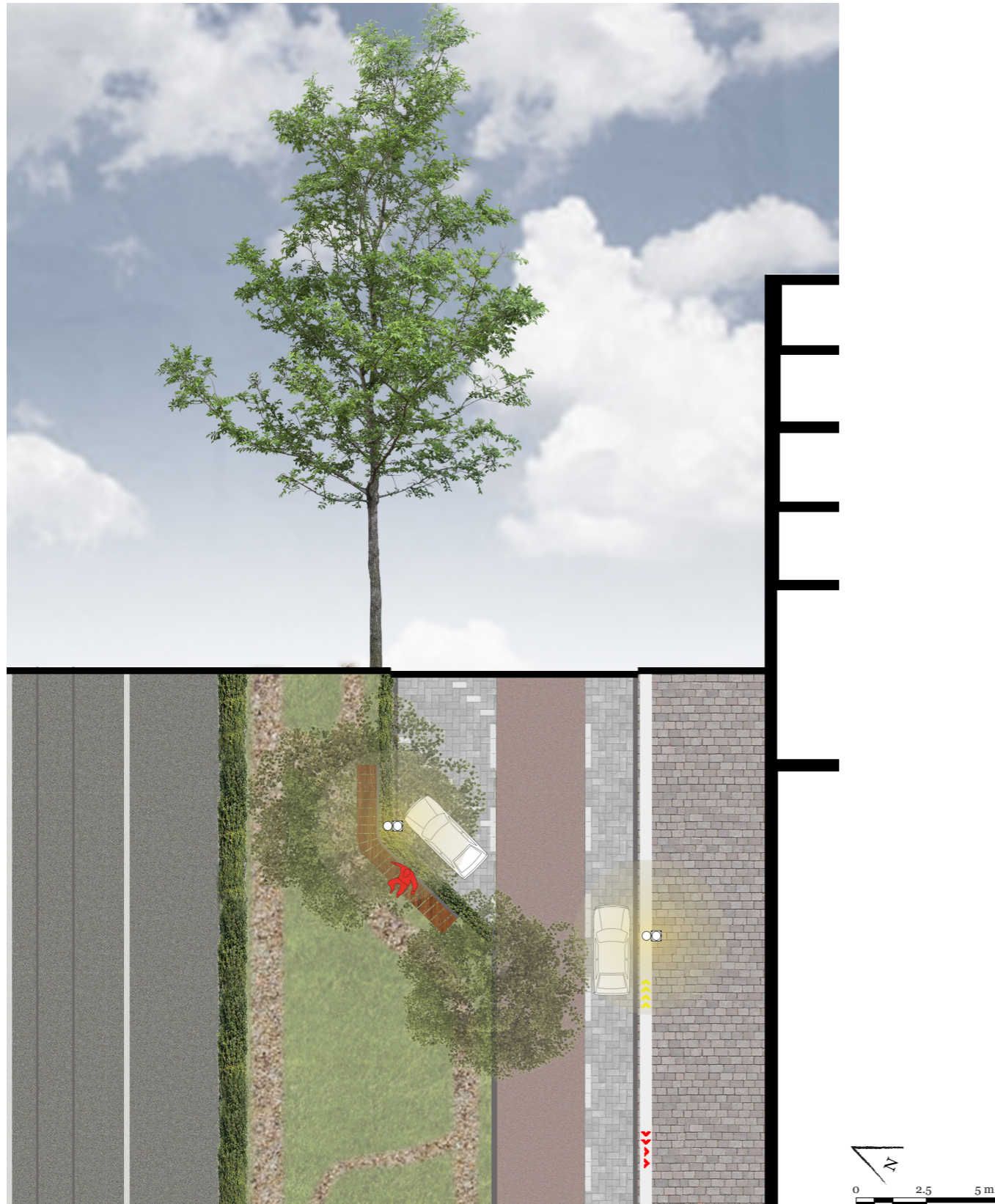


Figure 97: Section B-BB' designproposal Insulindeweg zoomed in (image by author, 2020)

this route, the pressure is taken off of the sidewalks, giving this space back to the residents.

For this new created route, the choice has been made to create different paths, for different users. Some people are more destination based, like commutes or residents who know where to go, and want the least amount of obstacles on their walk. Others, like visitors, tourists, or residents walking their dog, might like to enjoy the actual place, and would like to wander around more. (See Figure 97)

To also accommodate the more digitally involved people, preparations are made for future innovations in the world of navigation. Like discussed, some interventions are based on ideas that might in the future become true. One of these ideas is the connection of your mobile phone to a system in the sidewalks or on facades, which will show you your route. This way, you would not have to look at your phone all the time and can enjoy your surroundings. The only thing you have to do is connect your smartphone, tablet or smartwatch to the system and tell where you want to go, for example via GoogleMaps. The lightning lines in the sidewalk will follow you based on your GPS location and tell you where you have to go. This idea is also shown in the section and plan on the left page.



Figure 98: Impression of design proposal for the Insulindeweg (image by author, 2020)



In this first impression, a few of the proposed interventions are shown. This impression focusses on the newly created green route. It shows the location where some of the parking spaces are sacrificed to creating a less boring and straight line. In this case, the parking spaces are used to create a nice sitting area. To shield the people walking along the route or sitting down, hedges are placed along both side of the route. Also the two path are visible here, focussing on the one hand on a more straight line without many obstacles and on the other hand areas one can choose another option and walk by the extra attraction areas.



Figure 99: Location of the impression (image by author, 2020)



Figure 100: Impression of the design proposal for the Insulindeweg (image by author, 2020)



This second impression shows the end of the green route in a place this has to be interrupted because of a big infrastructural crossroad. Also the bike road is introduced here, showing the second part of the infrastructural change done in this street. Here the bike road divides into two parts, redirecting the cars to the main road and redirecting the cyclists to the already existing bike path. At this point, the green route and bikeroad are interrupted because of a big crossroad that cannot be ignored. On the other end of the crossroad, the green route and bikeroad will continue further along the street.





Figure 101: Impression of the design proposal for the Insulindeweg (image by author, 2020)



This last impression shows the previously mentioned crossroad, where the Insulindeweg and the other big road in the neighbourhood, the Molukkenstraat, meet and cross each other. In this location, the focus has been more on integrating digital interventions in the public spaces, with a first focus on safety. The increased use of smart phone use while walking in public spaces, makes people look down more. This often does not make them aware of a street sign or traffic lights. Here, a proposal has been made to integrate LED lights into the pavement, that are connected to the traffic lights above. This way, people still know when to stop or cross, even when they are looking down on their device.

Another idea, that has already been explained earlier, is to connect devices to a digital network, that can give real time traffic information, the quickest route, or the nearest facilities, based on your location and personal data. This way, public spaces become more personalized, without them becoming redundant.



4.3 Borneostraat

The Borneostraat is one of the main streets connecting the centre of the neighbourhood, the Javaplein, to the surrounding neighbourhoods in the city. Although this street also has a line for public transport, the overall size of the street and better accessibility make it less of a barrier than the previously explained Insulindeweg. Along the streets several smaller and bigger squares are situated, making it interesting for the creation of new “places” (see also Figure 105 on page 132 for the current situation). The exact location of the street within the neighbourhood is shown in Figure 103.

As explained in the vision, the Javaplein will function as a catalyst of more digital interventions. Therefore, the focus of the Borneostraat is also on a more digital lifestyle, both the practical and the social. Figure 102 shows the chosen use and roles for this location, again focussing on the digital lifestyle. The choice has been made to not choose one of a few roles, but to include all the defined roles, as it is predicted that all the groups will be of influence in his location.

The choice for a focus on digital use and interventions also has to do with the already existing facilities that can be found along the street, like bar and cinema

Type of use

		Traditional analogue	Practical digital	Social digital
ROLES	Resident			Posting on social media Whatsapp
	Tourist		Finding route, information, facilities	Posting on social media Keep in touch
	Commuter			
	Social meeter			
	Digital nomad		Working Using Wi-Fi	Contacting people / clients

Figure 102: Chosen behavioural scheme for the Borneostraat (image by author, 2020)

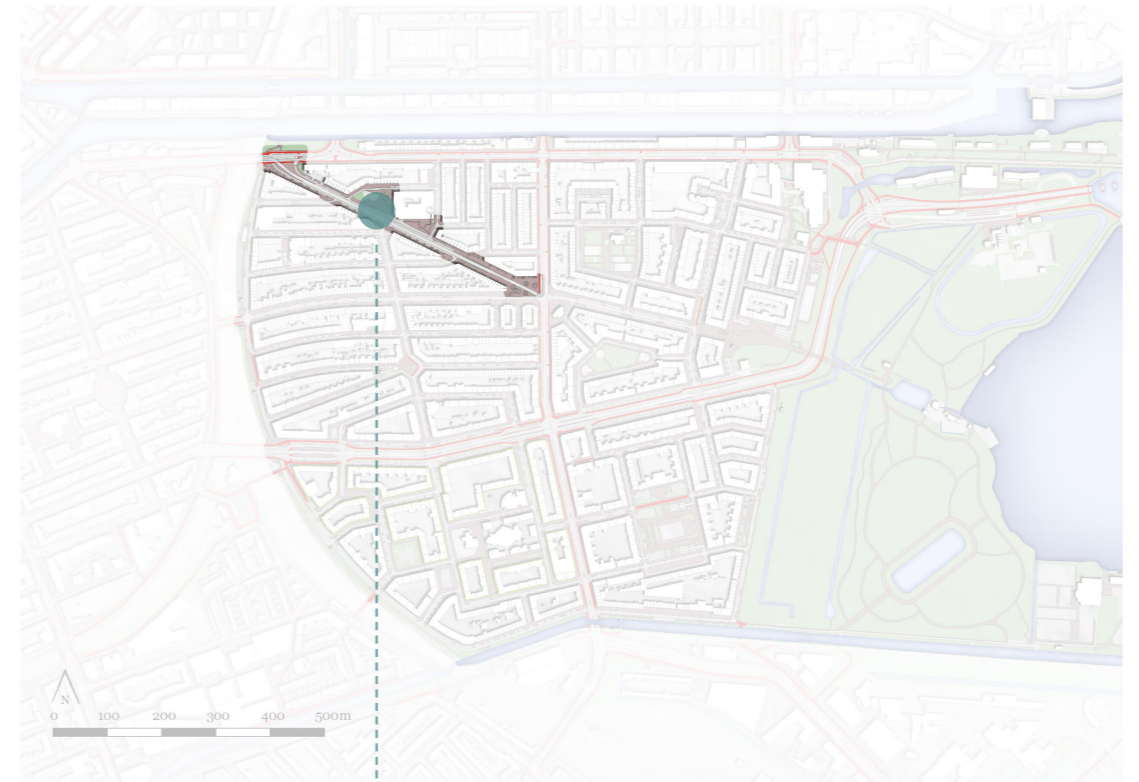


Figure 103: Location of the Borneostraat, Indische Buurt, Amsterdam (image by author, 2020)



Figure 104: Borneostraat, square in front of the StayOkay Hostel (image by author, 2020)



Figure 105: Current design of the Borneostraat (image by author, 2020)

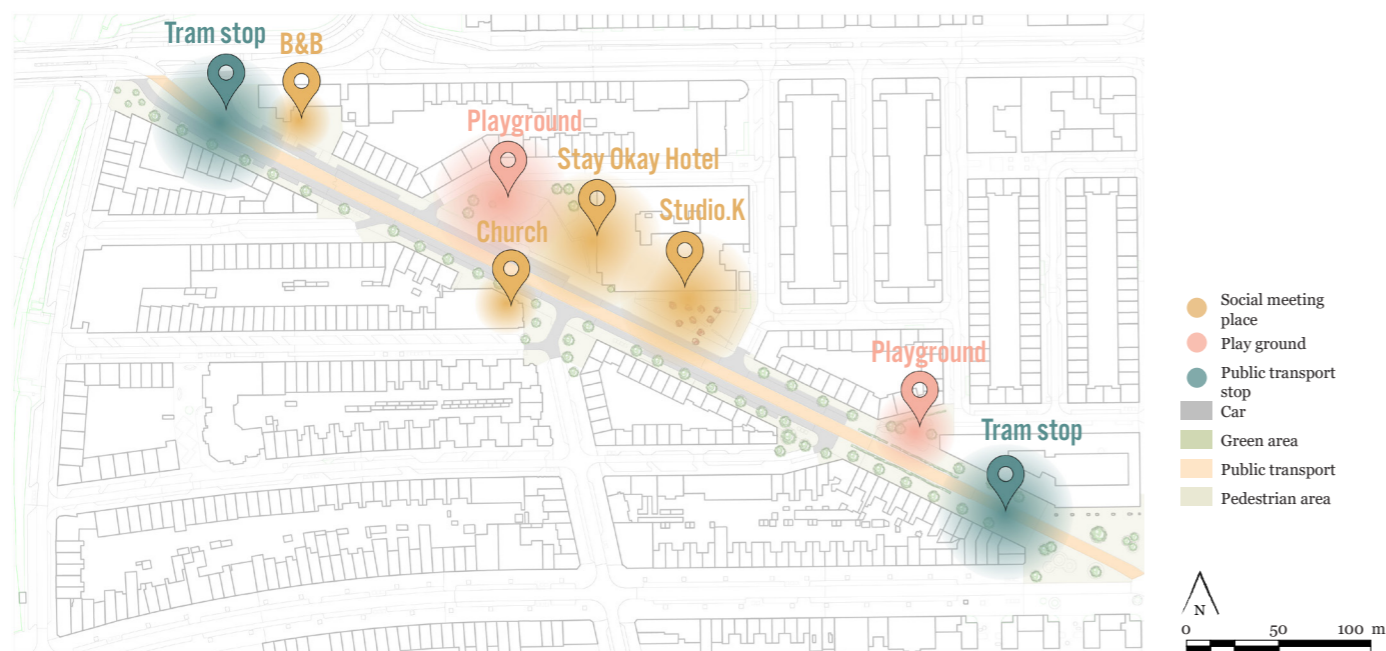


Figure 106: Current facilities along the Borneostraat (image by author, 2020)

Studio.K and the Stay Okay hostel, which mostly attracts younger people. It is already explained that this is the target group that is most likely to use digital devices, hence the digital lifestyle focus. The facilities along this street are also shown in Figure 106, showing the locations of some of the attraction points.

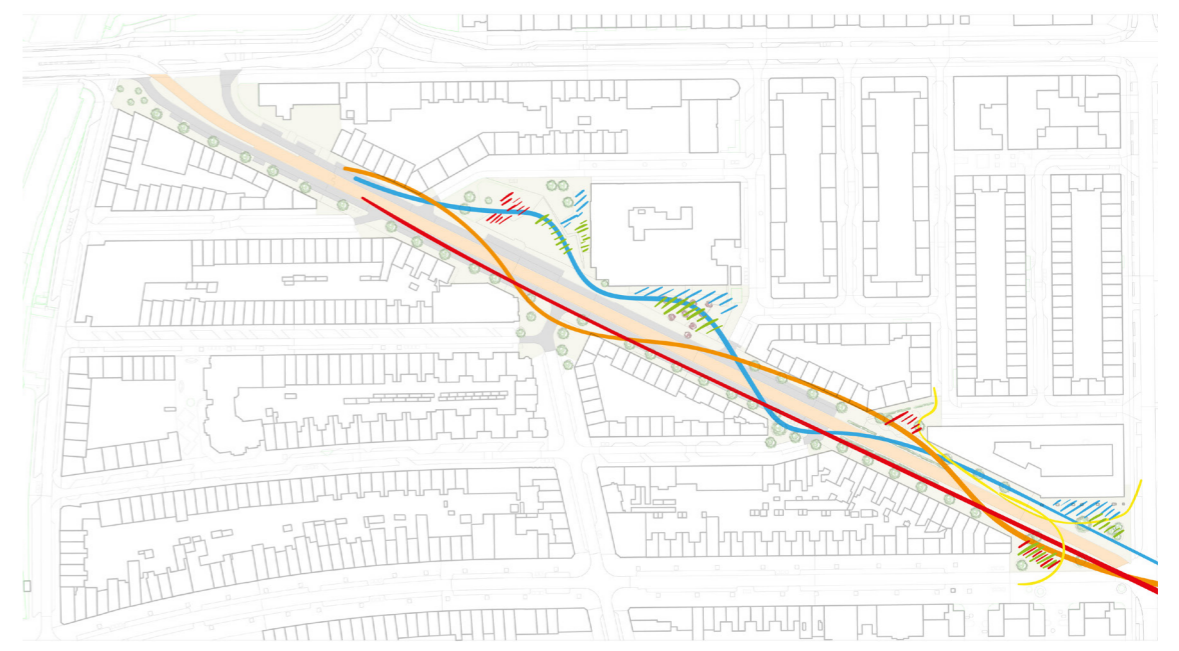


Figure 107: Possible different behavioural patterns through the Borneostraat (image by author, 2020)

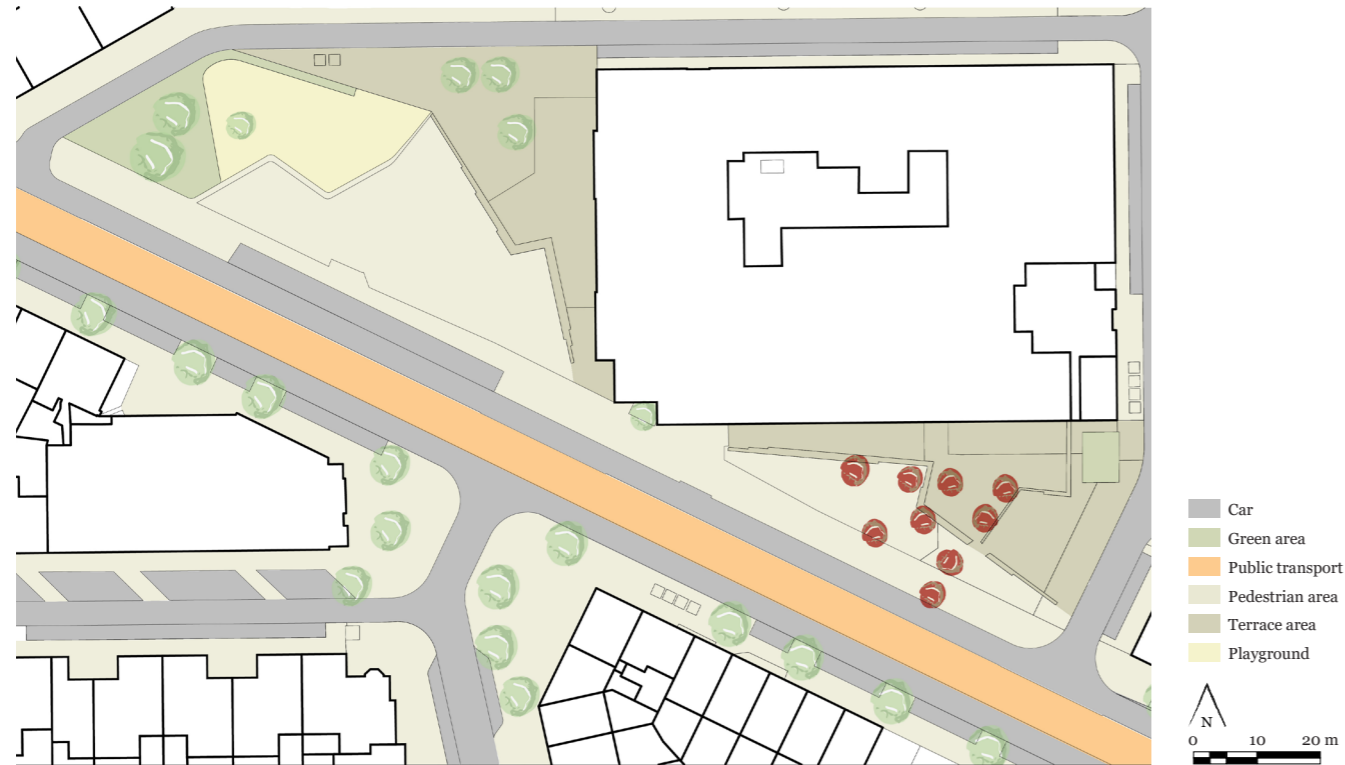


Figure 108: Current situation of the Timorplein (image by author, 2020)

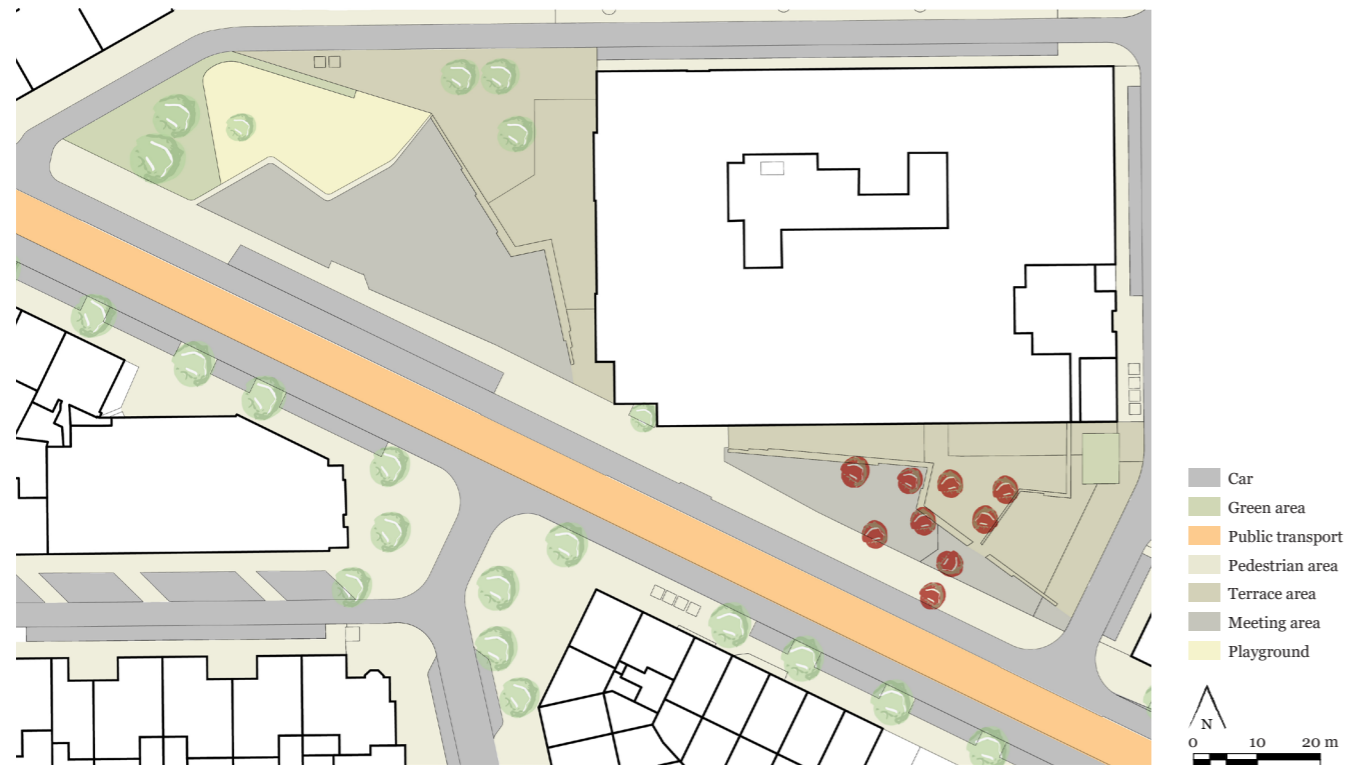


Figure 109: Proposal for the Timorplein (image by author, 2020)

Explanation of the design

Figure 107 shows the main principle of the focus for the redesign of the Borneostraat, which is more on digital interventions and to connect the Javaplein to the squares in front of Studio.K and the youth hostel. The location of all these different bigger and smaller squares, and the fact the street is not too wide, creates opportunities for dynamic routes through the street. These different routes, or behavioural patterns, are connected to the different roles of people, and are shown in the image below.

The existing design of the squares in front of Studio.K and the hostel already make a nice distinction between areas where to walk straight and areas where one can wander around more, by using different paving. So, for the commuter there is enough space to just walk straight ahead, while the tourist has the option to wander around. Therefore, in this locations, not a lot of big infrastructural changes are made, but the focus has been more on adding innovative solutions and interventions to the existing situation.

For this street, and especially the two bigger squares along side the street, the choice has been made to create different zones, which focus on a different use. The focus here is on the two more static user roles, the digital nomad and the social meeter, and zones are defined to accommodate their different needs. Some of the areas are more focussed on the using digital devices, while other areas are focussed on the more traditional use of public space. These different zones are shown in the map in Figure 110. For example, digital nomads can work outside, while able to charge their laptops (and occasionally talk to people working as well), while the social meeters can meet up with friends, without feeling the need to take their device and use those.

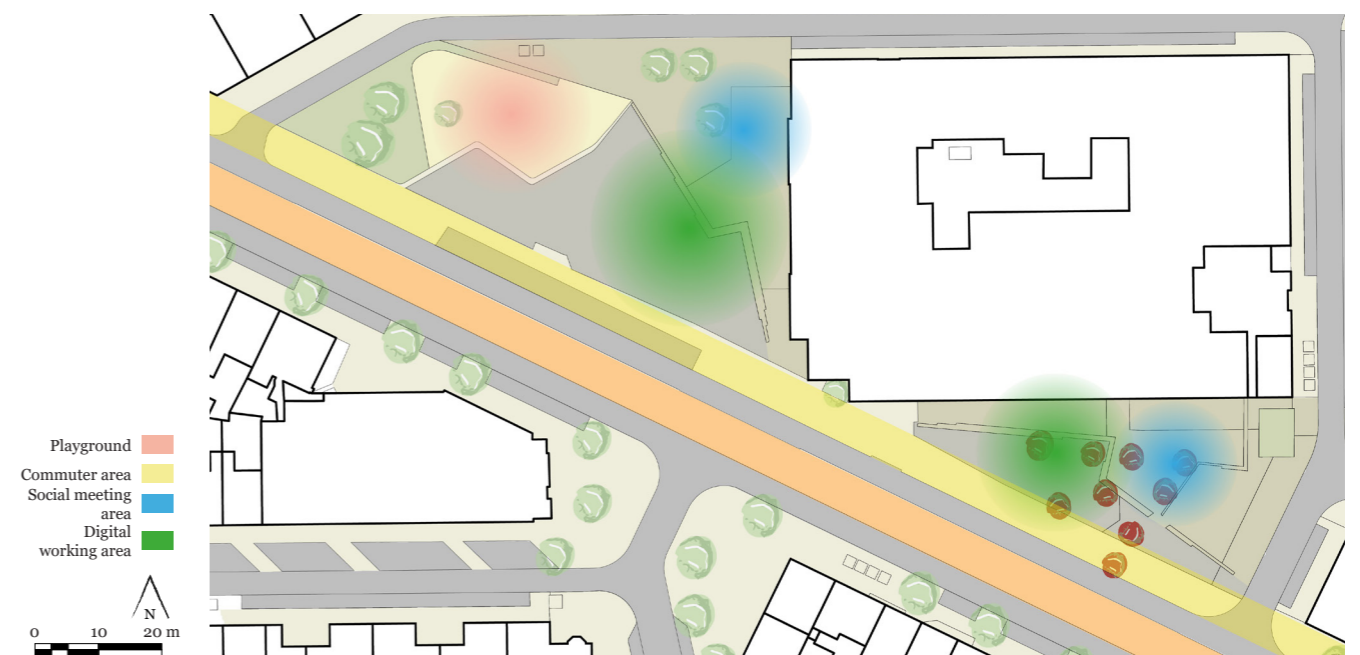


Figure 110: Proposal for the creation of different zones in the Timorplein (image by author, 2020)

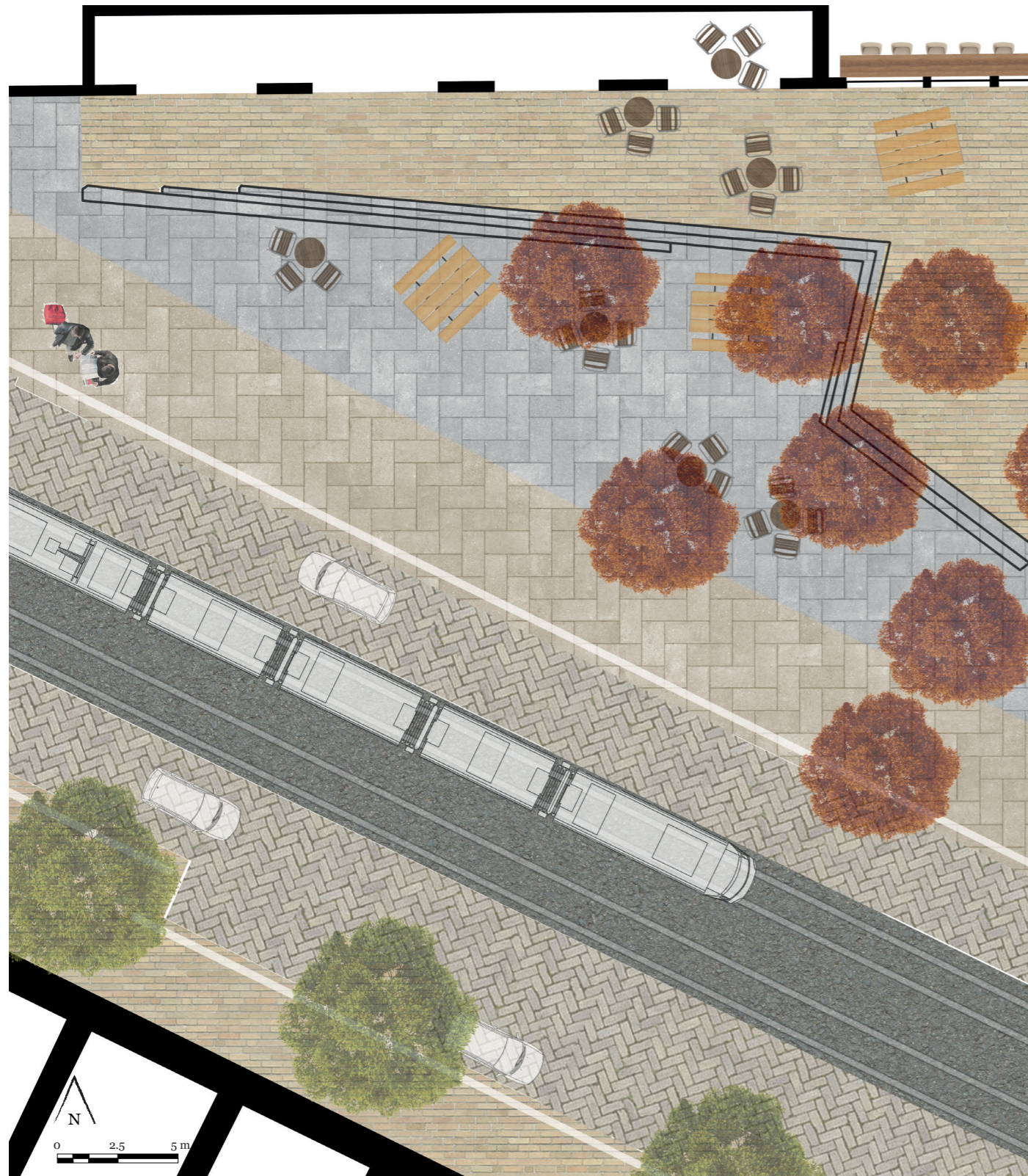


Figure 111: Design proposal for the Timorplein in front of Studio.K (image by author, 2020)



The map in Figure 111 shows the part of the Timorplein in front of Studio.K. Here the clear distinction between the different paving patterns, and the different user zones in more detail. For the digital working zone, working stations are placed in the square, where one can work and charge a laptop of other device, powered by solar energy. In other areas, benches, tables and other sitting areas are created to also accommodate people who want to meet up in person. The impression in Figure 113 on the next page shows what these design proposals could look like.

Another intervention that can be seen already in this map, is again the introduction of LED strips in the pavement along the road. This intervention is further explained on page 143.x

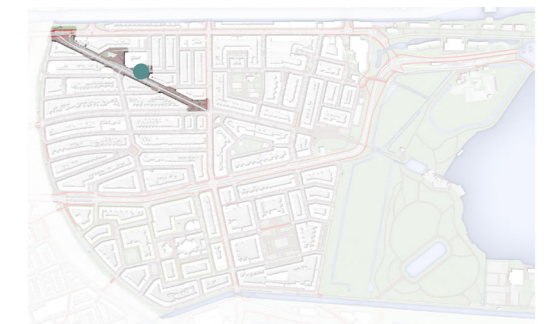


Figure 112: Location of image (image by author, 2020)



Figure 113: Impression of design proposal for the Timorplein, in front of Studio.K (image by author, 2020)



The impression on the left shows the Timorplein in front of Studio.K and corresponds with the previously explained map.

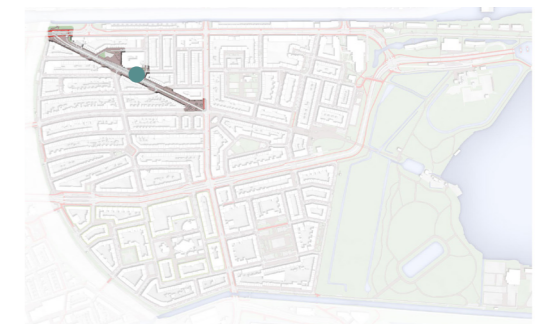


Figure 114: Location of image (image by author, 2020)



Figure 115: Impression of the design proposal for the Timoreplein, in front of the Stay Okay Hostel (image by author, 2020)



This second impression shows the other part of the Timoreplein along the Borneostraat, in front of the Stay Okay Hostel. For this part, the same ideas of creating zones is applied and will therefore not be explained again. However, in this impression, a digital signpost is introduced as well. This signpost stimulates people to use their mobile device and connect it to the system, so personal information can be shown when using the sign posts. For example, a tourist might like to know where the closest ATM or coffee place is, while a digital worker would like to know how many working spots are still left. These digital signposts can be found everywhere in the neighbourhood, accommodating people who like to use their phones.

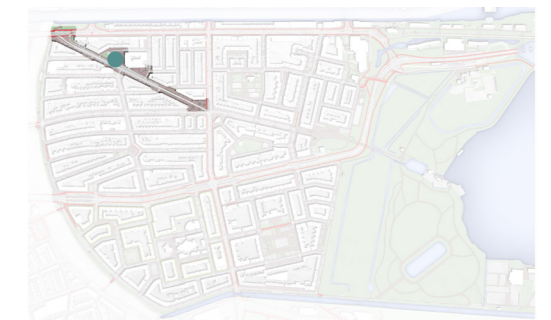


Figure 116: Location of image (image by author, 2020)

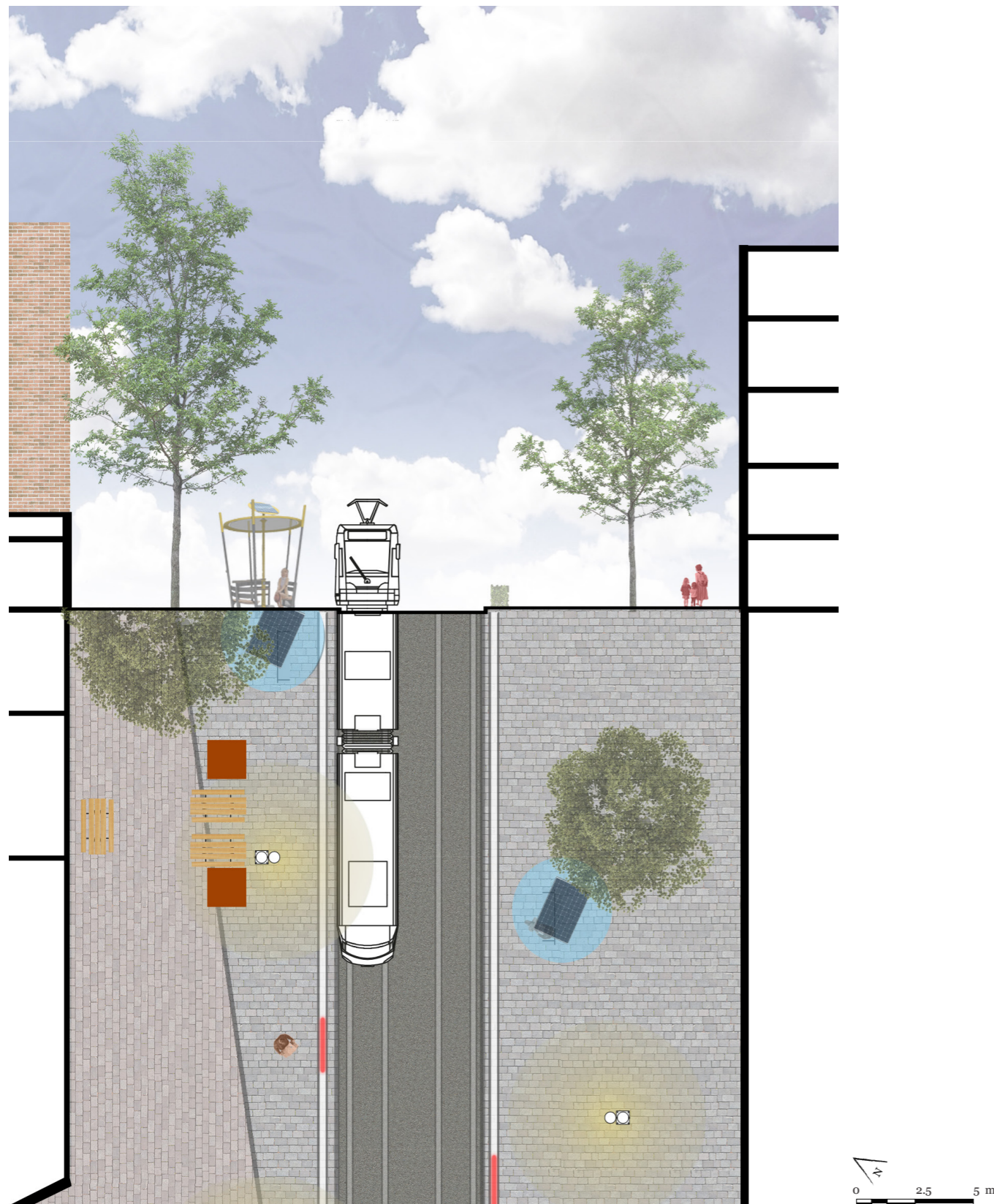


Figure 117: Section C-CC' of the design proposal for the Borneostraat zoomed in (image by author, 2020)

On the east side, the Borneostraat is connected to the Javaplein, the 'heart of the neighbourhood'. This part of the street is not accessible for cars anymore, making it an even quieter space. On the other hand, the sidewalks and tram line are along side each other, with a small step in between them, or some stone cones. This is all done to protect people from suddenly walking on the tramline while a tram might be approaching.

As mentioned earlier, one of the proposed interventions is to integrate LED light in the sidewalks, which might for example light up when a tram is approaching. Since people are more and more walking down the street with their headphones on, the sounds a tram makes when approaching might not be enough anymore to warn people. It might be that these strips have sensors in them or around, sensing when someone is walking down the street, and can give some red warning lights and even sounds, to warn people about the approaching tram. The idea is that this system can also be connected to the routing system explained as an intervention in paragraph 4.2.

The last proposed is again an intervention that is in its core quite a traditional intervention, but encourages people to actually take their device out of their pocket and use it. This is done by integrating scanning objects in the pavement or facades, that give people additional information about the location they are in. For example by integrating Augmented Reality applications into the neighbourhood to show what the neighbourhood looked like a century ago. The image in Figure 121 shows what this might look like.



Figure 118: Current design of the Borneostraat (image by author, 2020)



Figure 119: Design proposal of connection between the Javaplein and the Borneostraat (image by author, 2020)



The image in Figure 119 shows an impression of the design proposal for the part of the Borneostraat connecting to the Javastraat. Here the LED warning lights are visible, to replace the current stone pyramids. Also, a change has been made in the tram stops itself. The idea is to replace the current ones with stops that are completely powered by solar panels and where people are able to charge their device if needed. This energy can also be used to keep very up to date traffic information and real time information about the public transport routes and systems.

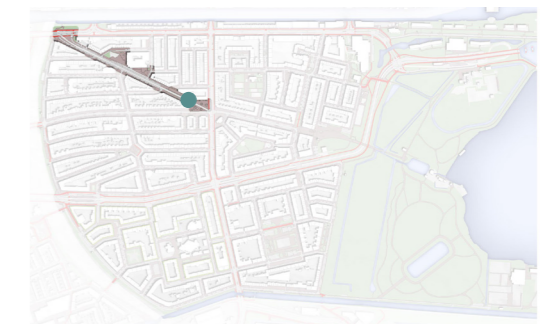


Figure 120: Location of image (image by author, 2020)



Figure 121: Impression of Augmented Reality information (image by author, based on Stadsarchief Amsterdam, 2020)



Figure 122: Location of image (image by author, 2020)

4.4 Javaplein

The Javaplein, and the Indische Buurt as a whole, has undergone a huge transformation in the past twenty years, as is also been described in chapter 3.3. With this transformation, the Javaplein became the 'heart of the neighbourhood', emphasizing its central location within the neighbourhood, with good accessibility both from inside and outside of the neighbourhood. For the future vision, this heart is defined as the 'digital heart' of the neighbourhood, working as a catalyst of the promotion of the digital lifestyle in certain places in the neighbourhood. Because it already functions as the heart of the neighbourhood, and houses a few facilities like a coffee shop (the coffee company) (See Figure 125) and a public library, which will very soon also have a free Wi-Fi connection, it is the ideal location for a digital focus use. The exact location is shown in Figure 124.

Although this location has all the potential to be a digital work place, the current use and traditional use of public space should not be forgotten. This square therefore also functions as a bridging square between the digital and the traditional use. Therefore, the location does not really have a specific target use of roles. It is a place where all kinds of people come together, and picking a target use of group would eliminate other uses.

Again for this location, not a lot of big infrastructural changes are made, but the focus is once again on integrating newly added innovations and interventions into the existing situation.

Type of use

		Traditional analogue	Practical digital	Social digital
ROLES	Resident	Walking		Posting on social media Whatsapp
	Tourist	Walking around	Finding route, information, facilities	Posting on social media Keep in touch
	Commuter	Walking A > B Using public transport		
	Social meeter	Meeting people		
	Digital nomad		Working Using Wi-Fi	Contacting people / clients

Figure 123: User scheme Javaplein (image by author, 2020))

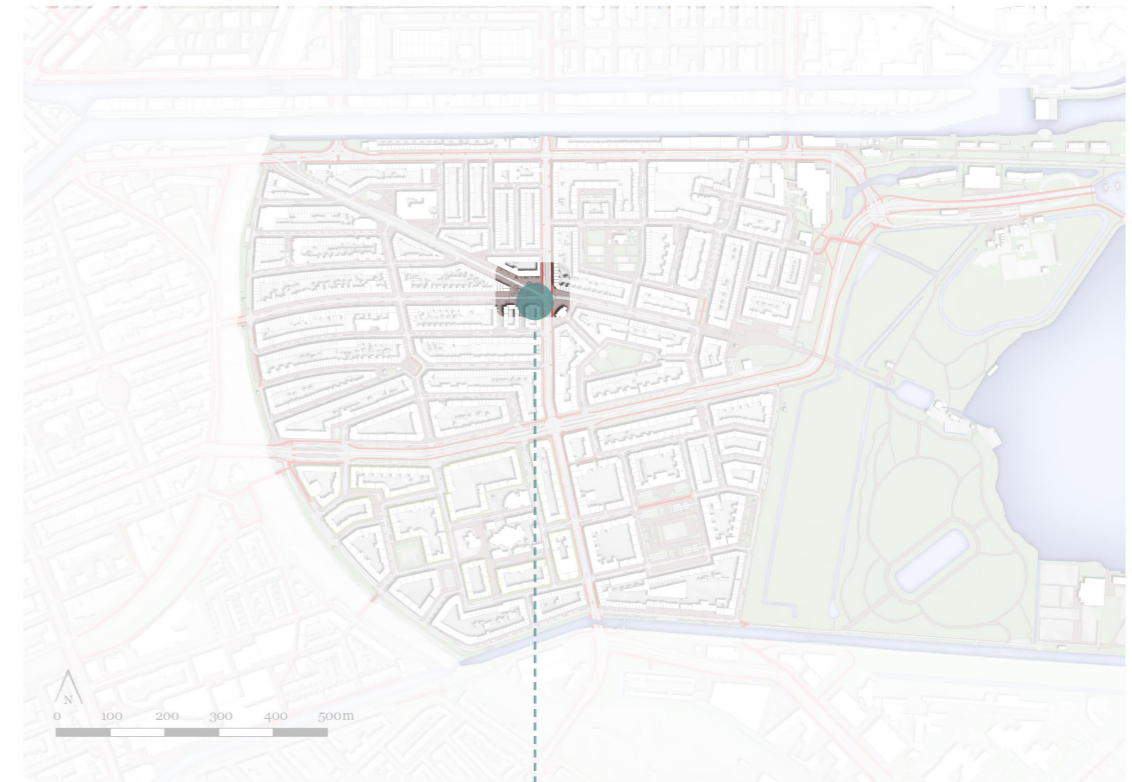


Figure 124: Location of the Javaplein in the Indische Buurt, Amsterdam (image by author, 2020)



Figure 125: Javaplein nowadays (image by author, 2020)



Figure 126: Current design of the Javastraat (image by author, 2020)

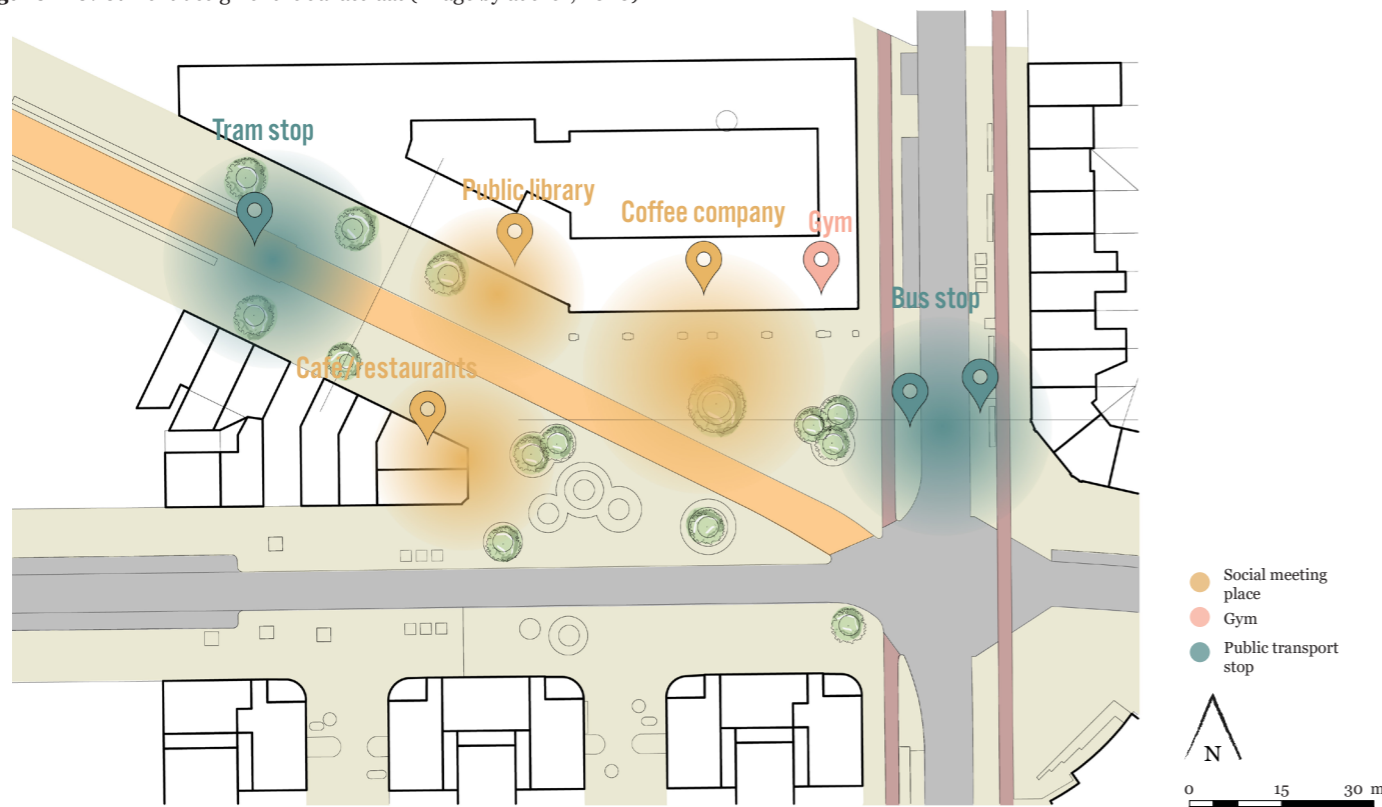


Figure 127: Current facilities along the javaplein (image by author, 2020)

Explanation of the design

As said before, the proposed interventions do not include major infrastructural changes. However, the idea of creating different zones, like also has been done on the Timorplein, explained in the previous section, will be carried on here as well. This brings more homogeneity in the design and actually connects the Borneostraat and the Javaplein to each other. Therefore, part of the Javaplein will receive a new paving pattern, indicating the terrace area in front of the Coffee Company and the Public Library (OBA). The rough location of this terrace is shown in Figure 129.

The Javaplein is split into two section by the tramline crossing the square. The northern part is more connected to the facilities along this square, the southern part is a bit more designed already to prevent it from being just an open square. In the current design of the Javaplein, concrete pyramids are used as a barrier between the sidewalks and the tram line, in the spots where there isn't a step down from the sidewalk, which is also shown in Figure 128. To make the square more cohesive and less interrupted with a hard barrier, the choice has been made to remove these pyramids and replace them for LED strips that warn people when a tram is approaching. This is connected to the same system as explained in the previous



Figure 128: Concrete pyramids as a barrier between the square and the tramline (image by author, 2020)



Figure 129: Design proposal of the Javaplein (image by author, 2020)



Figure 130: Section D-DD' of the design proposal for the Javaplein zoomed in (image by author, 2020)

chapter, again routing can be connected. This system might also make extra noise, although a tram does this as well. This is also shown in the map corresponding with section D-DD' in Figure 130.

This map also already shows a small part of the newly created terrace in front of the Coffee Company and library, where again the digital working tables are places, as well as other sitting area, for the social meeter.

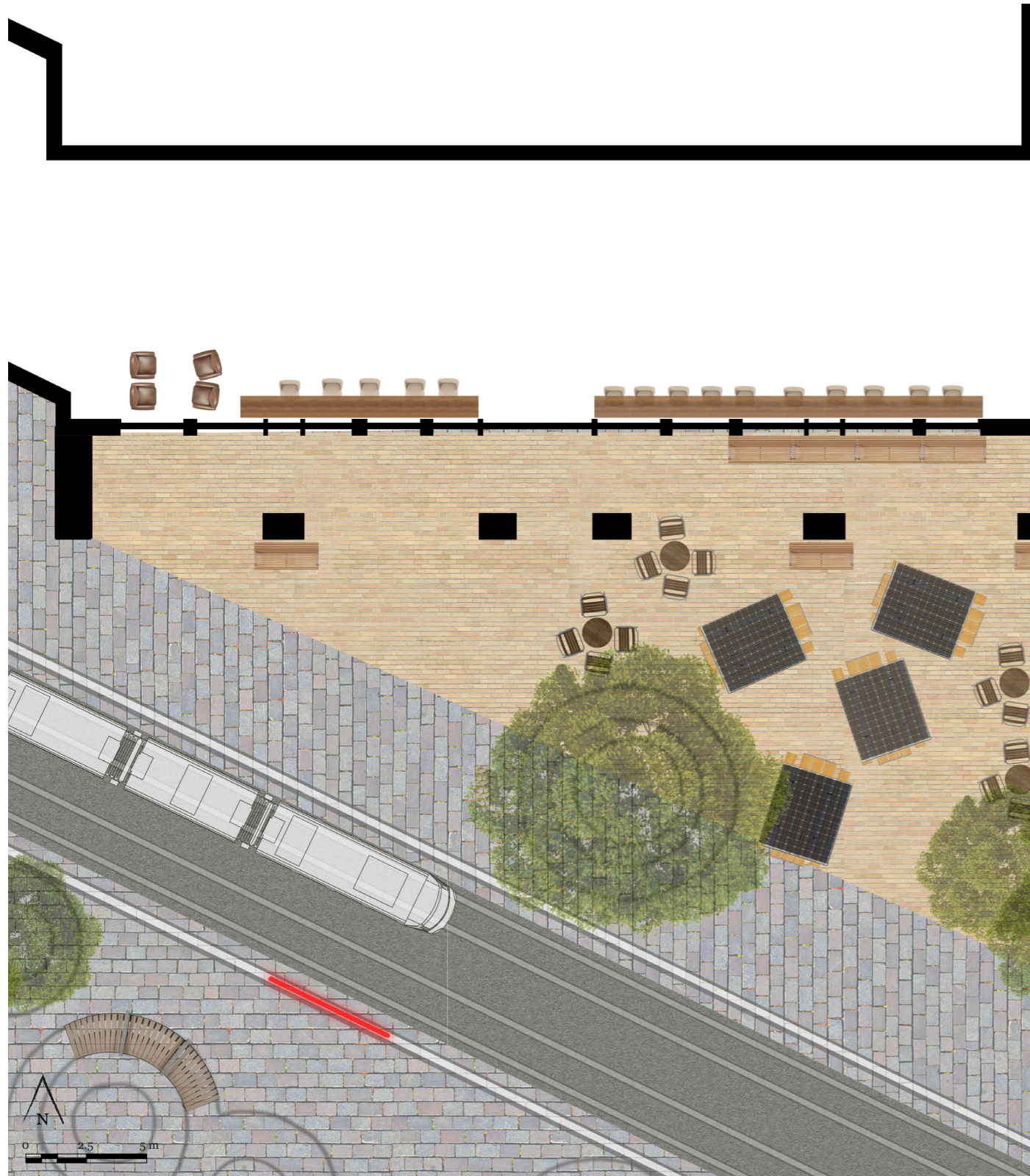


Figure 131: Design proposal for the Javaplein (image by author, 2020)



Figure 132: Location of the image (image by author, 2020)

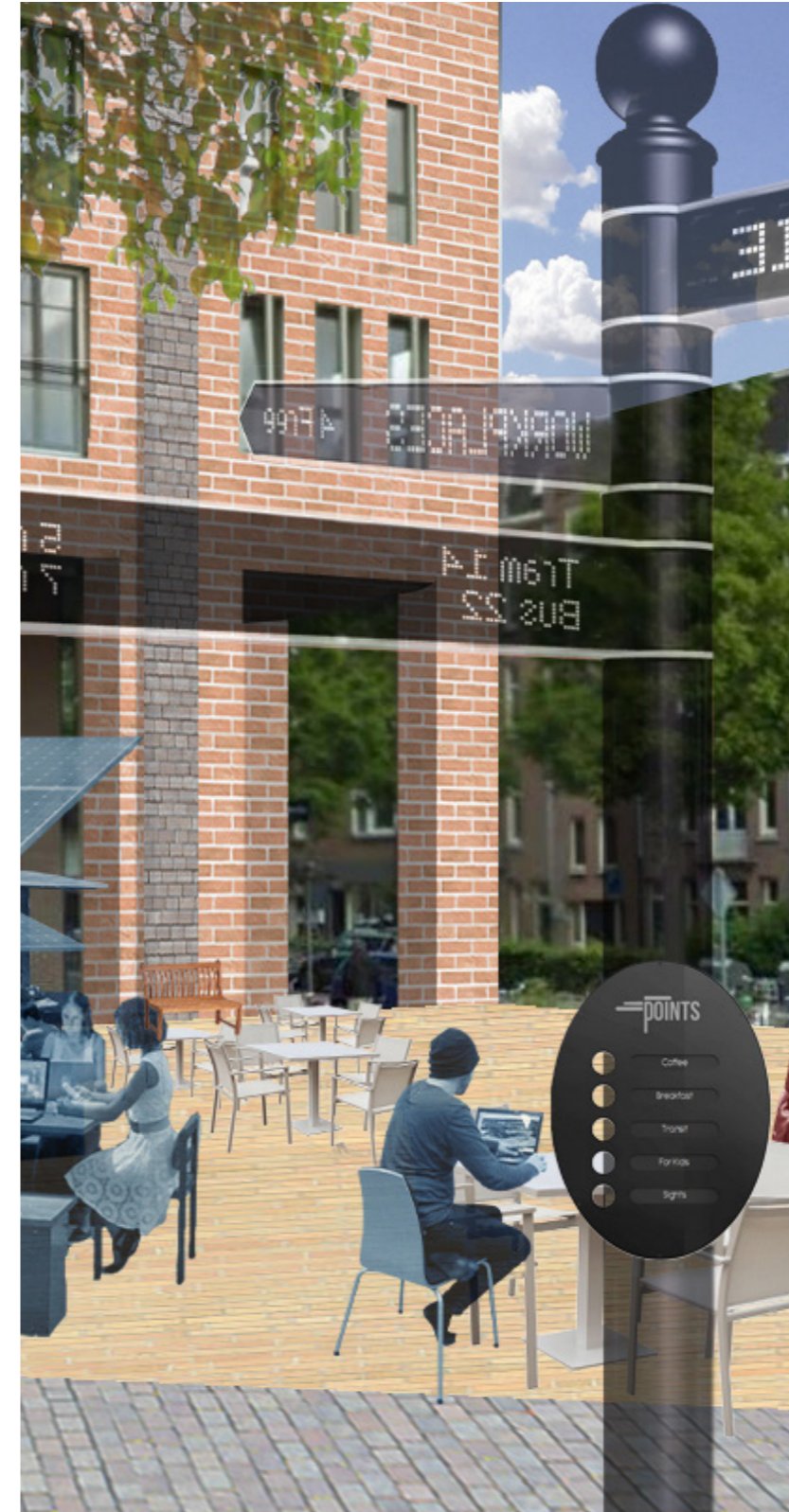
The plan on the left (Figure 131) shows the design proposal for the Javaplein, focussing of the northern part and the connection to the tramline. Here the digital working spots are again visible, as well as the other sitting areas. Some distinction between the working and non-working zones is made, although not as clear as in the Timorplein. This area is a bit more fluid, as it is a busier visited area, in which less restrictions are wanted.

The difference in pavement patterns do make a clear distinction between the terrace area and the walking area, along the tram line. Because this is such a busy place sometimes, this more clear distinction between where to walk and where to stand still or meet up might be just what the place needs, a bit more structure.

Again the LED light strips are visible, warning people for an approaching tram or guiding them in their way to another place.



Figure 133: Design proposal for the Javaplein (image by author, 2020)



In this impression, the digital working areas are clearly visible. But there are more proposed interventions that are shown here. Again the digital signpost is placed in this location as well, of which the idea has already been explained. But also another solar panel charging station is placed, along side the already existing stone bench. This spot is not necessarily to work at, since there is not a table to put a laptop or something on, but it is a place where one can charge their phone while waiting for someone or while reading a book.

It is important to mention that it now seems like people have to use their phones to be able to make use of these spaces. However, this is not the case. People are not forced to make use of the proposed interventions if they do not want to, and they can use the public space however they would like.

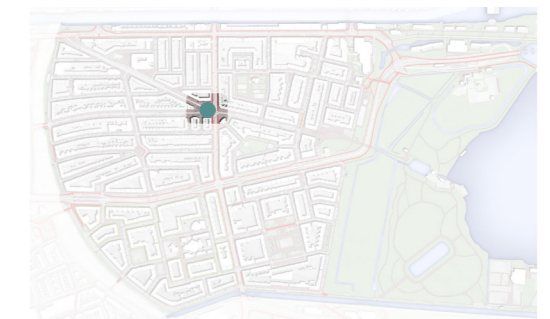


Figure 134: Location of the image (image by author, 2020)



Figure 135: Design proposal of connection between the Javaplein and the Borneostraat (image by author, 2020)



This second impression was also shown in the previous chapter (4.3 explaining the design proposal for the Borneostraat), as it is the connection between the Borneostraat and the Javaplein. Here the idea of using the LED light as a warning signal, instead of the concrete pillars becomes visible. To accommodate also the people who are not looking at their phone, maybe at some spots digital warning signs higher up, on eye level, should be placed as well. Although this is not shown in the impression, it is imaginable that the digital signposts are also connected to the tram line of other higher up objects can function as this.

The free Wi-Fi network that will be provided by the municipality from spring 2020, around the public library, might be the chance for people to work outside as well, like the boy on the left. This makes the whole place more dynamic and interesting to visit.

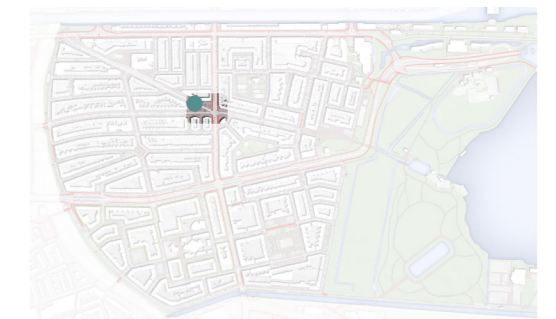


Figure 136: Location of the image (image by author, 2020)

4.5 Javastraat

The Javastraat consists of two parts, separated by the Javaplein. The west side of the street is characterized by shops and restaurants, the east side of the street forms the main connection from the neighbourhood to the Flevopark on the eastside of the neighbourhood, crossing the Javaplantsoen. It is characterized by residential buildings and parking along two sides, with narrow sidewalks. See Figure 139 for an impression. Figure 138 shows the exact location of the street within the neighbourhood.

In this street, the focus use is the traditional use of public space, where meeting (unknown) people is as important as going from one point to another. It is also the main connection to the Javaplantsoen, but not a very attractive one. Because of this traditional use, the target user groups are mainly tourists and residents. Residents because it is in the more residential part of the neighbourhood, and tourists because they will probably use this route to either visit the Javaplantsoen or the Flevopark.

Type of use



		Traditional analogue	Practical digital	Social digital
ROLES	Resident	 Walking		
	Tourist	 Walking around		

Figure 137: User scheme Javastraat (image by author, 2020)

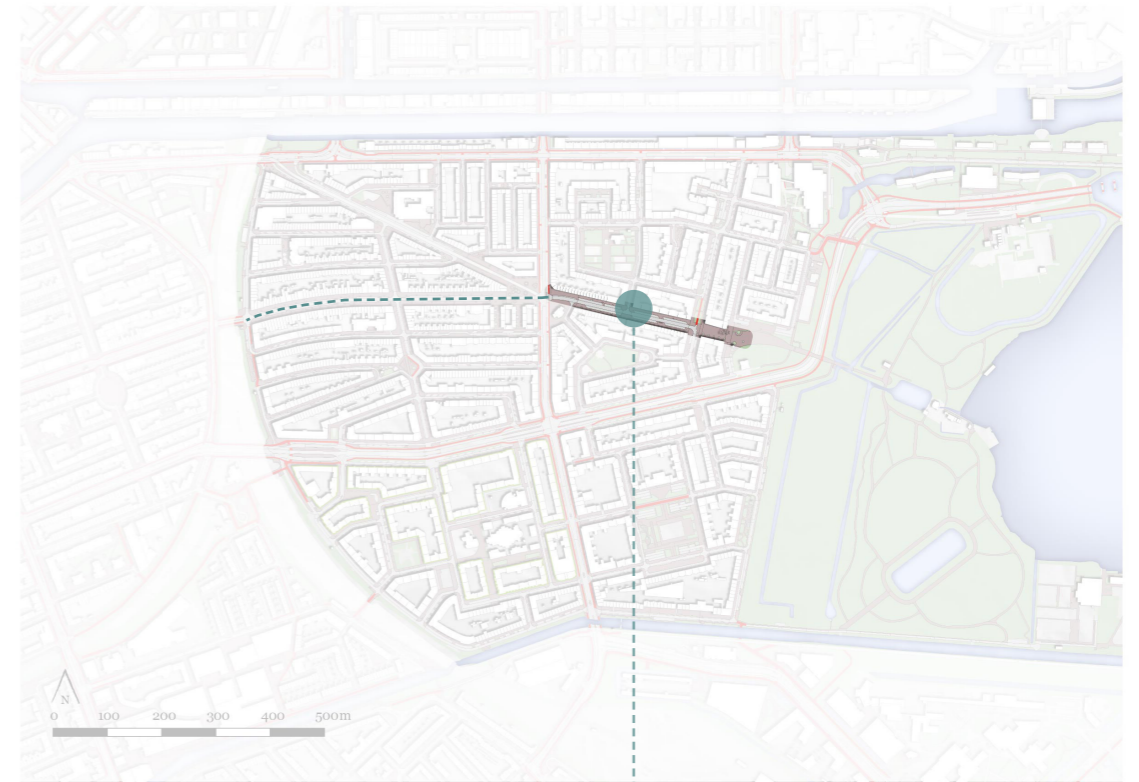


Figure 138: Location of the Javastraat, Indische Buurt, Amsterdam (image by author, 2020)



Figure 139: Javastraat nowadays (image by author, 2020)



Figure 140: Current design (top) and Design proposal (bottom) of the Javastraat (image by author, 2020)

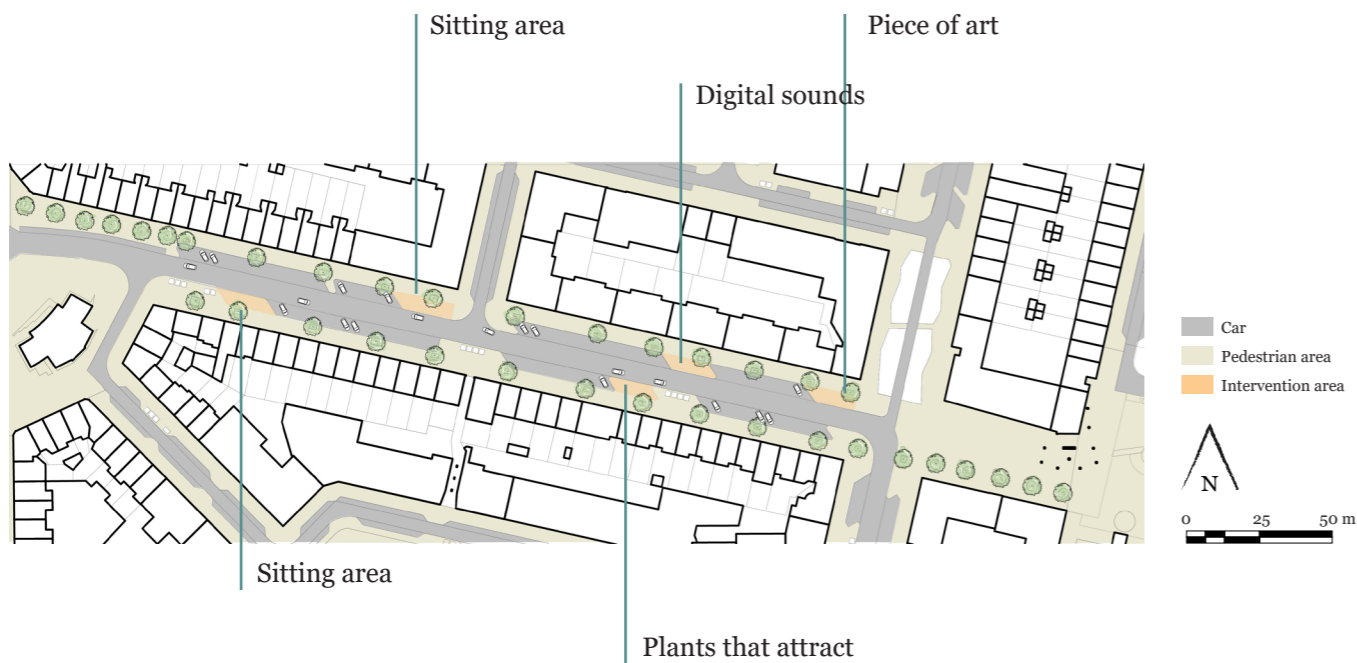


Figure 141: New "attractionpoints" in the Javastraat (image by author, 2020)

Explanation of the design proposal

The main idea of the redesign of the Javastraat is to create a few spots as attraction points for people, to nudge them into looking up from their mobile devices. This is done by replacing a few parking spots with something else. For example a meeting place with some benches and a table, or just some nice greenery that smells nice. In Figure 140 the current design and the design proposal is shown, together with options for these attraction points. These attraction point are basically smaller interventions that try to attract people to them and make the walk towards the Javaplantsoe and the Flevopark more attractive. But they also try to nudge people to look up from their screens and enjoy their surroundings. Distracting people from their phones might be done by sounds, produced by leaves or trees for example, or plants that smell nice and attract butterflies that move around.

Figure 142 shows a reference project realised in Toronto, Canada, temporary seating areas are created with the same dimensions of parking spots. For this, in the summer a few parking sport are sacrificed to create these sitting areas, and in the winter these benches are removed again. During the winter people will most likely not use the benches and tables, while in summer it is imaginable they are less

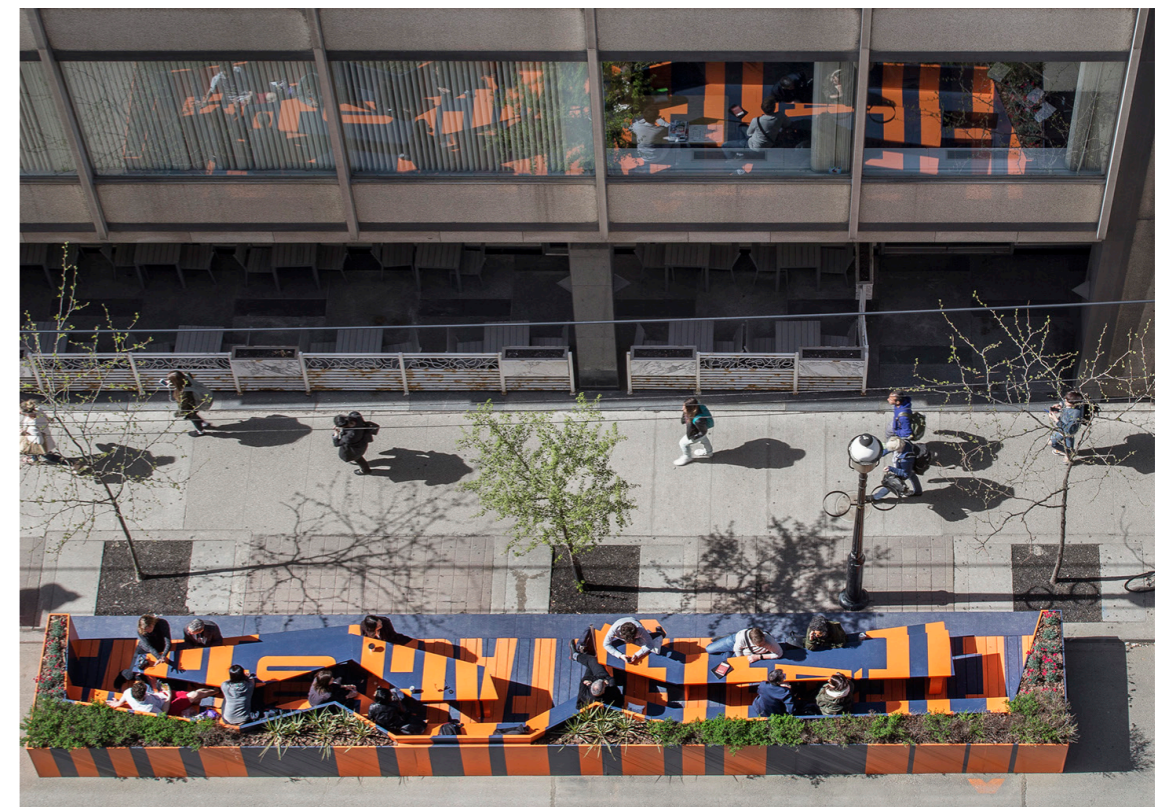


Figure 142: "Face to face", temporary public meeting places (PLANT Architect, 2019)

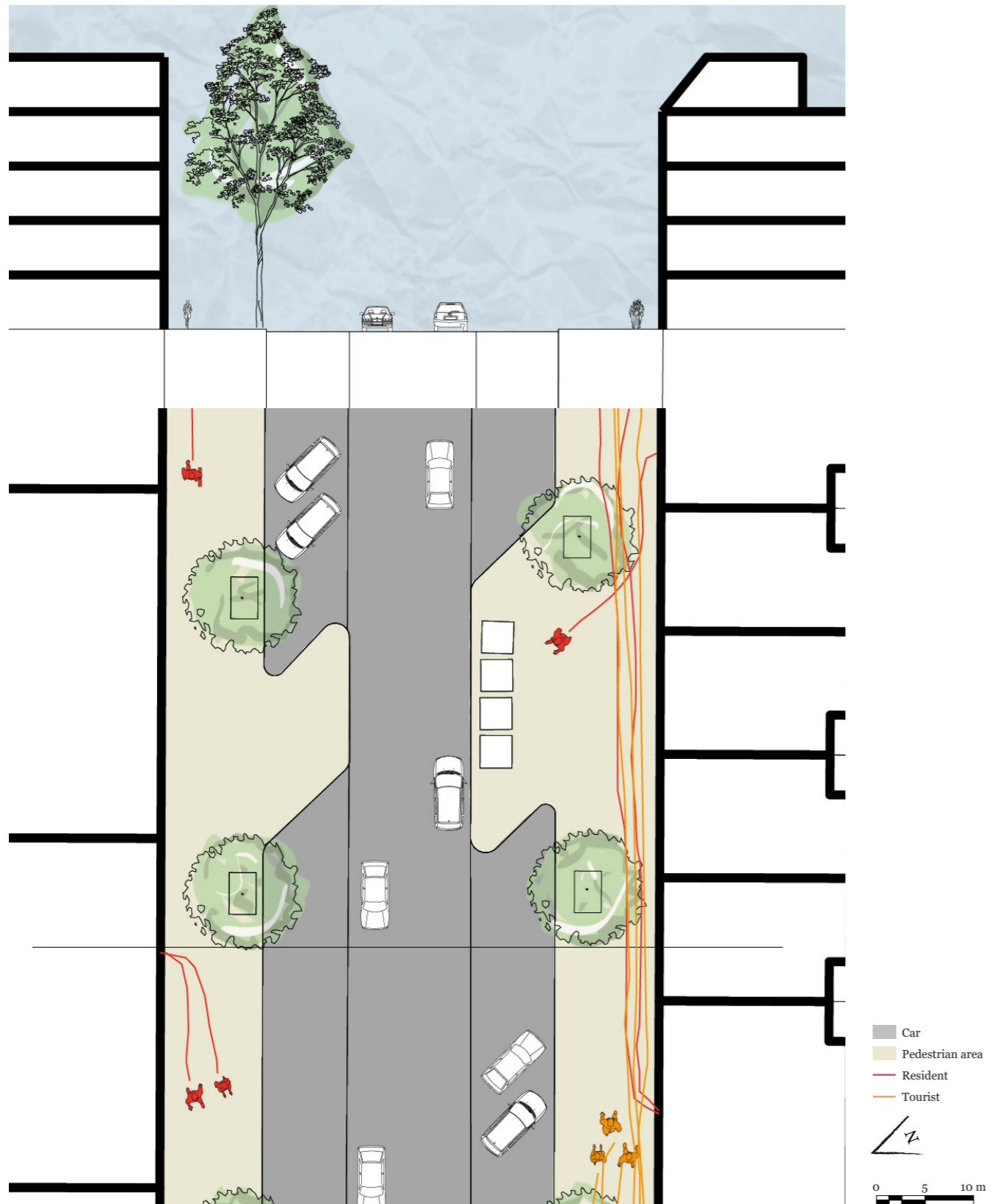


Figure 143: Section E-EE' of the current situation of the Javastraat, with predicted moving patterns (image by author, 2020)

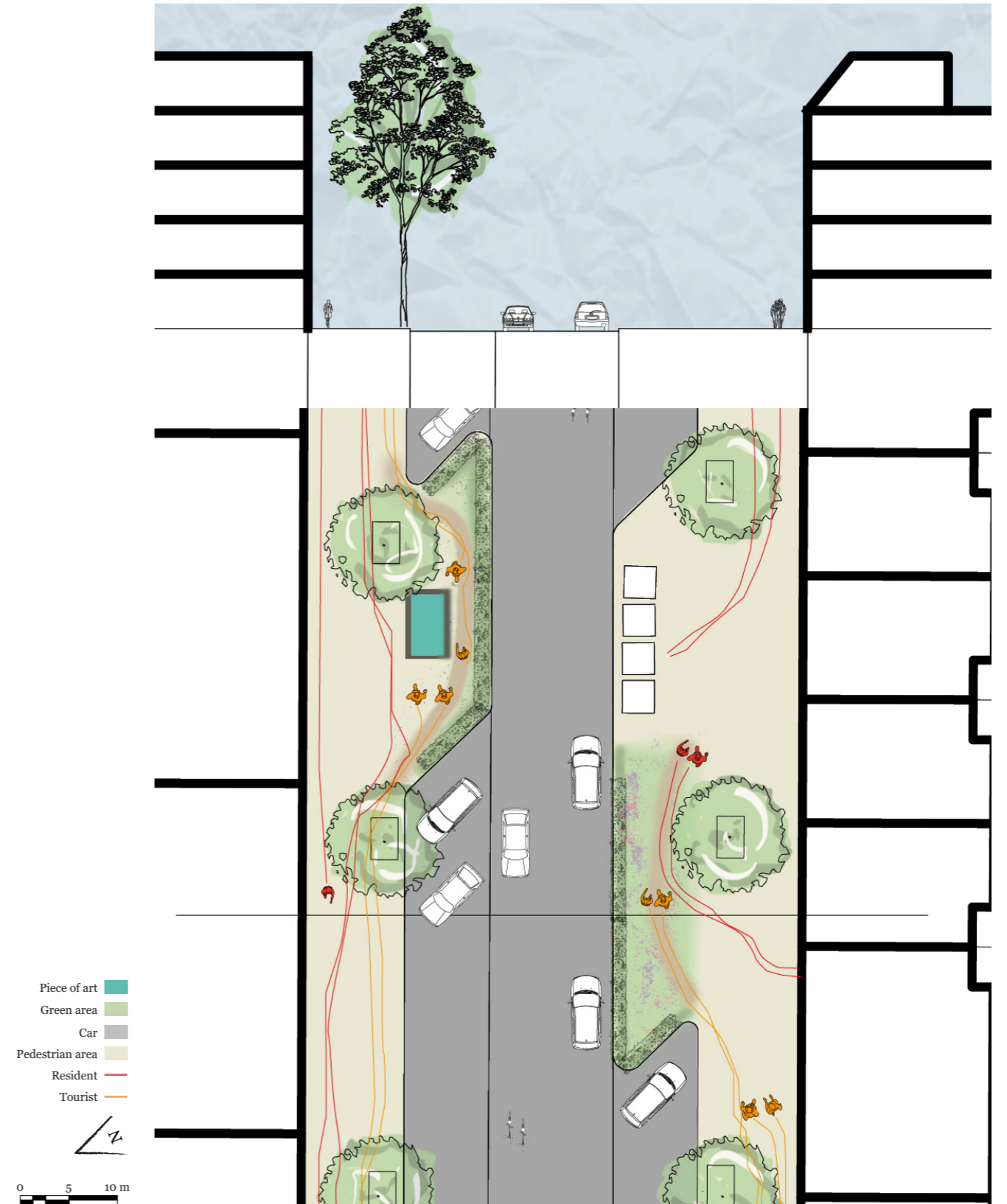


Figure 144: Section E-EE' of the design proposal (bottom) of the Javastraat, with predicted behavioural patterns (Image by author, 2020)

reluctant to walk a few extra meters towards their car or home.

Creating these attraction points also aims to make the street a bit more vibrant and used. This can be seen in the predicted behavioural patterns shown in the sections in Figure 143 and Figure 144. People who have a very specific destination in mind most probably will not be affected by these attraction points, however the people who are more wandering around, like tourists, might be interested in all the different “funny” objects in the street. On the other hand, these interventions might also play a role in creating new, temporary ‘meeting places’ because people come in contact with each other. For example while watching the piece of art, of caring for a flower garden. The inte

In the section below (Figure 145), the idea of turning parking spots into a meeting area is shown. In this case, the choice has been made to turn the parking spots into this meeting place permanent instead of temporarily, by adding a green hedge between the sitting area and the street. This makes the sitting area a bit more secluded, however, it also makes it not very flexible. A solution might be to design sitting areas, like benches, in which this greenery is integrated. This is for example the case in the reference project shown in Figure 142. Interventions therefore might also have some sort of community enhancement role.

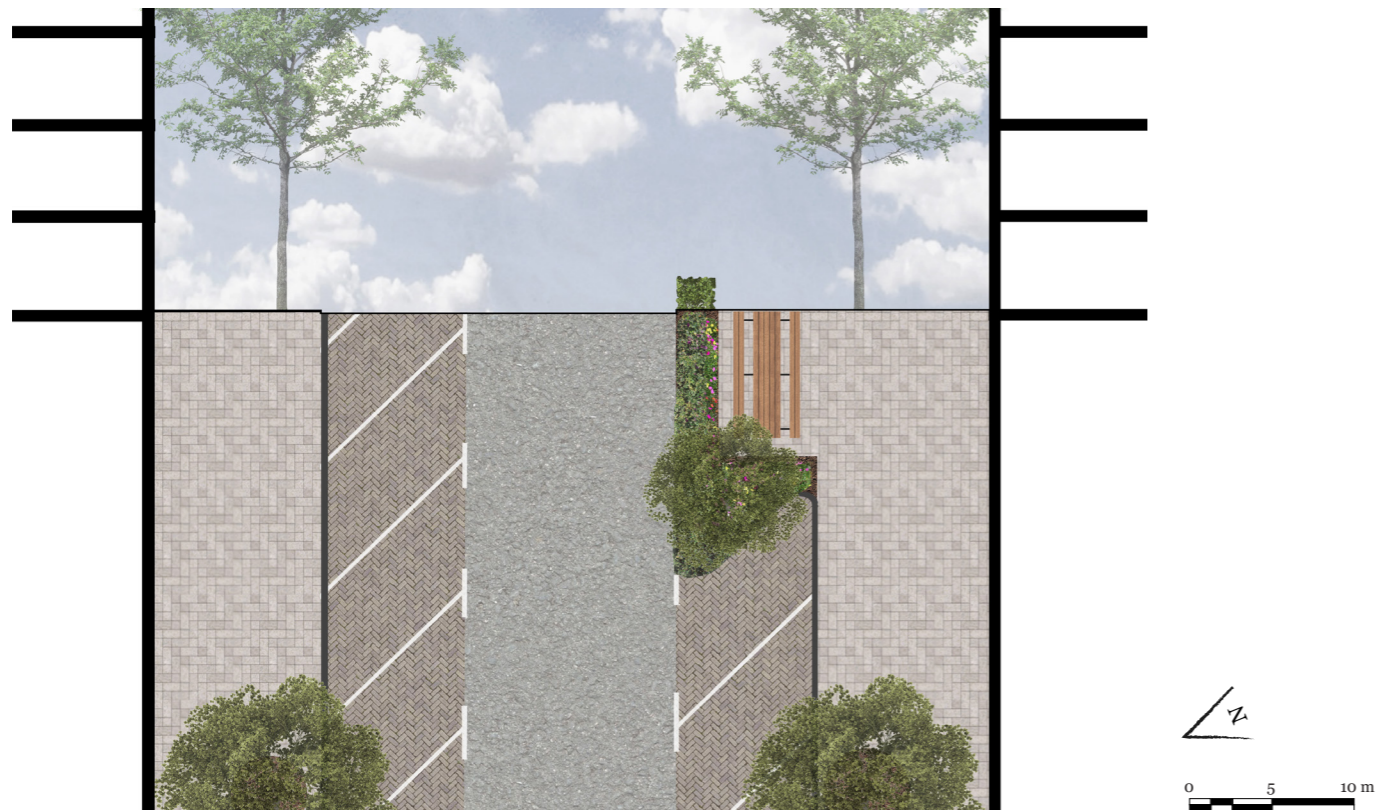


Figure 145: Section F-FF' of the design proposal of the Javastraat (Image by author, 2020)



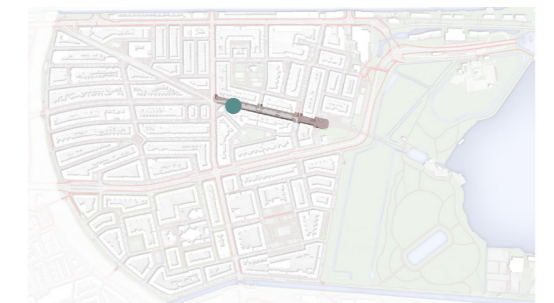
Figure 146: Javastraat seen from the entrance to the Javaplantsoen (image by author, 2020)



Figure 147: Impression of the design proposal for the Javastraat (image by author, 2020)



Figure 148: Location of image (image by author, 2020)



As explained, for the Javastraat the idea is to make some attraction points, attracting people towards the street, and distracting people from using their device. In the impression in Figure 147 some of these attraction points are shown. In the front a sitting area is created, where residents and neighbours can come together, sit down and have a chat. It is imaginable that this area is only a temporary area, that can be removed in the winter when not a lot of people would use such a place, and to make the sacrificed parking spots accessible again.

Further on in the street other attraction points are visible, like an interesting sculpture or piece of art. Maybe it makes a sound or produces movement of shadows, all to try to get people to look up from their device and maybe even discuss what they are seeing with others.

Even further on, another intervention is proposed, calling again on different senses, in this case smell. Here a flower garden is created, with nice smelling flowers and other plants, like lavender. Or plants that attract butterflies, to introduce new movement in the area. This intervention does not only tend to distract people when they are walking by, it also tries to bring people together, for example neighbours, who will tend the garden. It therefore also has a community aspect in it.

4.6 Javaplantsoen

The Javaplantsoen is the last and final intervention location that shall be explained. The Javaplantsoen forms the entrance gate to the Flevopark and therefore functions as both a square as well as a street. This makes it both a very interesting and difficult location to work with, since the location is indirectly split into two. The exact location of the Javaplantsoen can be found in Figure 150. Around the Javaplantsoen, a few schools are situated, together with some playground areas (see Figure 152). The area is only accessible for non-motorized vehicles, but cyclists are preferred to bike around the place. This is however, told from personal experience, not the case at all. Since it is one of the few accesspoints to the Flevopark, it is heavily used by bicycles and people tend to take the shortest routes to get from A to B. So the paved area, although mainly meant for pedestrians, is used a lot by cyclists as well. In the current design of the area, a digital playset was added recently, which is also shown in the photograph in Figure 153, probably with the idea to make the area a bit more attractive to use.

The area is however, a good location for housing local event, like a small festival or a market. Mainly because it is quite an open space without a lot of obstacles.

Type of use





		Traditional analogue	Practical digital	Social digital
R O I E S	Resident	 Walking		
	Tourist	 Walking around		
	Commuter	 Walking A > B		
	Social meeter	 Meeting people		

Figure 149: User scheme Javaplantsoen (image by author, 2020)



Figure 150: Location of the Javaplantsoen in the Indische Buurt, Amsterdam (image by author, 2020)



Figure 151: Javaplantsoen nowadays (own image)

Like the Javastraat, the focus of this location will be mainly on the more traditional use of public space. Use of digital device is not stimulated a lot, but nonetheless possible. Since it is both a street as a square, both roles of people are believed to make use of this space, in different ways. Commuting people probably bike through the square to get to their destination, while it is also used a lot by tourists and visitors to get to the Flevopark. The idea behind the design proposal is to create an extra local meeting place, where people can come together, without having to go all the way to the Flevopark to find a spot there. On the other hand, people crossing the square should not be ignored, and since it is imaginable that trying to keep them out of this place will not work, clarity in the square is most probably needed.



Figure 152: Current situation of the Javaplantsoen, with highlighted facilities (image by author, 2020)



Figure 153: Digital game in public space of the Javaplantsoen (image by author, 2020)



Figure 154: Section G-GG' with plan of the current situation of the Javaplantsoen (image by author, 2020)



Figure 155: Section G-GG' with plan of the design proposal for the Javaplantsoen (image by author, 2020)

Explanation of the design

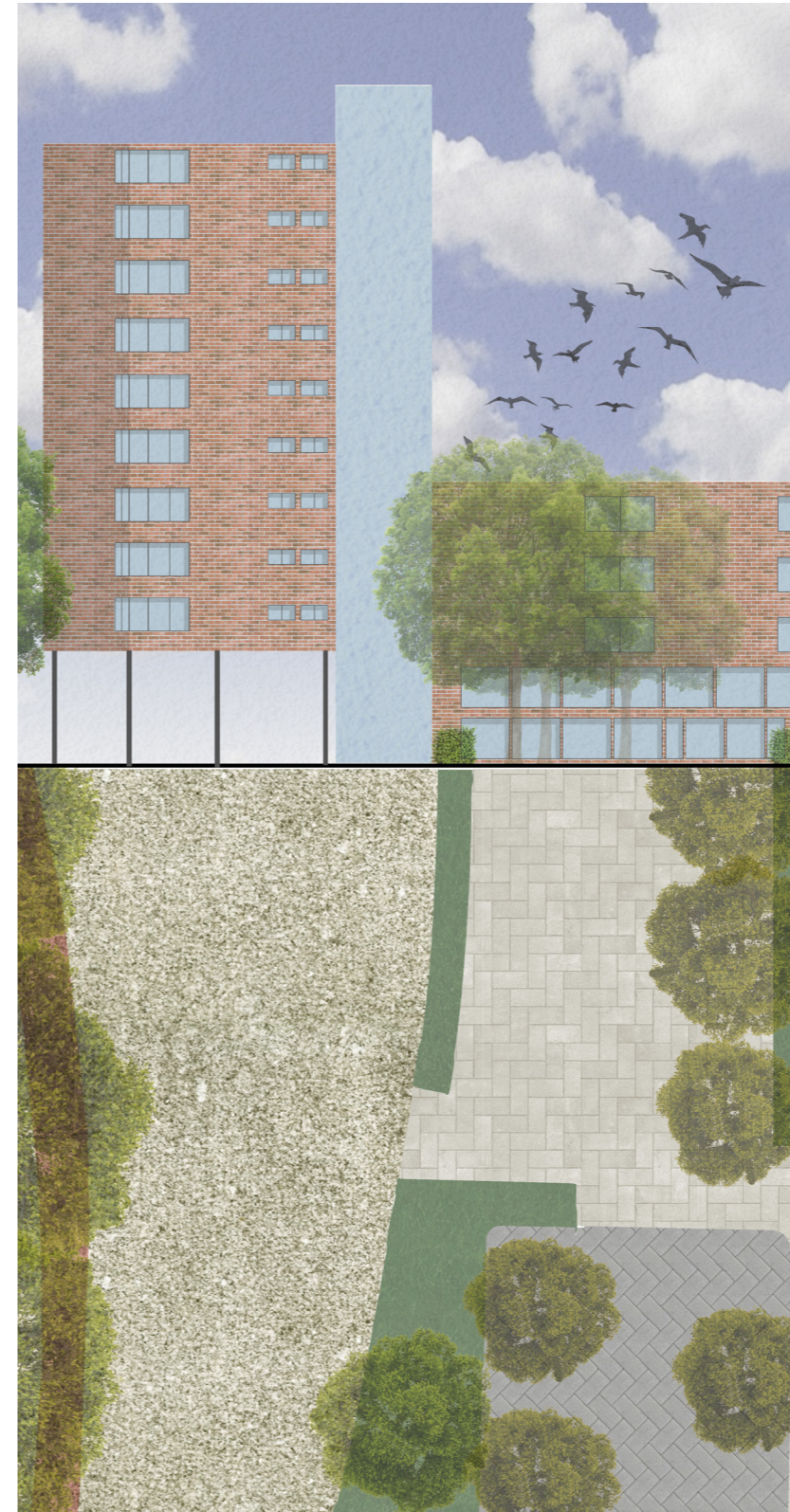
The idea of the design is to create a square where different groups can come together, meet up, walk around, or cross through, without getting in each other way, if this is not preferred. It should become a place residents come to hang out in the summer, walk their dog, or go to with their children. All of this without constantly using a mobile device, but to really enjoy being outside and making use of public space. No real design images have been created for this location yet.

To find a balance between people using the area as a crossing street and people using it as a meeting place, some clarity is needed. The municipality of Amsterdam already has the idea to replace the bicycle path leading to the entrance of the Flevopark from a very narrow slope with hard corners on the left side (see Figure 154), to the right, with a more accessible slope people can actually use with their bikes. In this design proposal, this idea of replacing this slope is taken over from the municipality, but an extra bike path is created through the area. Although this might not be the ideal situation the municipality want, they would like cyclists to bike around the area, this is most probably not going to happen. Introducing a bike path might help to prevent cyclists randomly crossing the square, causing a lot of chaos and annoyance.

- Car
- Pedestrian area
- Bike path
- Green area
- Bushes
- Sitting area
- Digital play object



Figure 156: Section G-G' design proposal zoomed in (Image by author, 2020)



To make the place more attractive to use, especially the green grass area, which is not seldom used, a bench and sitting area is creating in this green space. A bit of the grass area will be replaced by the same pavement that is used in the other area of the square. This makes it more clear this area can be used. The bench should be designed in such a way it is accessible from both side, so people can also sit on the grass side. Maybe even come tables of additional sitting areas should be added as well. By making the bench area accessible from both sides, the grass area becomes less redundant, like it is in the current situation.



Figure 157: Location of image (image by author, 2020)



Figure 158: Impression of design intervention Javaplantsoen (image by author, 2020)



In the impression on the left, the previously explained interventions are shown. The focus is, like mentioned, to find a balance between the use of the square as a street and as meeting place, by clearly defining a bike path and the addition of new furniture. Designing the bench in a curve creates a more secluded space next to the bike path, that stand out from the rest of the square, it gives the area a goal, instead of just being an open space.



Figure 159: Location of image (image by author, 2020)

4.7 Intervention matrix

Conclusions of the design proposal chapter

In the previous chapters, the five chosen intervention locations are explained as well as the proposed design interventions in each of these locations. With the selection of the interventions that were chosen in this thesis, an answer was tried to give to the question how a new synergy between a traditional use and the use of digital devices could be found on different scales and what it might look like. In this chapter the focus has been on the individual intervention locations, to find out what kind of interventions might contribute to this new synergy on a lower scale. It is important to mention that the explained interventions are not where the ideal or only solution, many more options could have been chosen as well. By doing so, an answer can be given on two of the sub research questions, that are also mentioned in second chapter of this thesis:

RQ 4: In what ways can the use of public spaces be influenced by urban interventions and how can urban design interventions influence the use of public space?

RQ 5: Which urban design interventions can create a new synergy in the Indische Buurt in Amsterdam?

What stands out the most is the possibilities of quite traditional intervention methods, like creating a bike path, or creating different zones by changing a pavement pattern. The more traditional urban design methods are often at the base of redesigning spaces and places, as was also the case in this project. This is mainly because cities are real things made out of brick, concrete, furniture and people, and digital innovations and interventions are an addition to this already existing structure.

Even proposals like creating warning light in the pavement pattern, are based on the original idea of putting a physical barrier between two areas. Often times, the digital interventions that are proposed in this these for the Indische Buurt, are replacing static, less modern options. The same applies to the replacement of the static tram and bus stops, by interactive ones where someone can charge their device while waiting for the tram or bus.

It is apparent that often times, interventions introduced in one place came back in other locations. One reason for this was to keep the coherence in the neighbourhood, although certain areas would have other focus points. This way, a synergy will be created also on a higher scale, in the whole neighbourhood. On the other hand, some of the proposed interventions, like the digital routing and

warning system would only work if applied to the whole neighbourhood. So maybe these interventions should also be appear in other locations, where the focus is more on the traditional use, even though this is not shown in this project at the moment.

The intervention matrix

As explained as well, all the individual locations have more or less a focus use and user roles to further define the character of the interventions. Like said, some of the interventions have a more traditional background, and some are more digital. But also, some interventions are based on the traditional use of public space and other are based on facilitating the new, digital uses of public space. Combining all these interventions in a way that suits the preferred character in a place, is, in this case, the solution to achieve a new synergy between traditional and digital uses.

Since all of the proposed interventions are based on the target use and roles, a large matrix has been created, to summarize all of this. This matrix could, in theory, also be used for implementation of the ideas presented in this thesis in other locations. The complete matrix can be found in Figure 160 on the next page.

The matrix that is proposed here is based on the proposed interventions that are explained in this thesis. Like mentioned before, this is only a small selection of the available options, so this intervention matrix is never finished. Some of the proposed interventions are already based on predictions of what the future might have in store for is, digitally. Interventions can be added or removed, based on the development of the digital world, technological breakthroughs or societal issues.

Should other cities or neighbourhoods want to use this matrix, all that has to be done is to follow five simple steps.

1. Pick a location to create a new synergy.
2. Pick a target role or roles.
3. Pick a preferred behaviour (traditional or digital).
4. Pick a preferred intervention category.
5. Pick the intervention(s) that suit the location.

Another option is to take this matrix as an example for the creation of a personal matrix. A different neighbourhood might have different people who make use of the place or a different urban character, creating other opportunities for intervention proposals. The main goal is to summarize the interventions that might be suitable in a specific area, neighbourhood or city, to in the end create a new synergy in the use of public space.

PREFERRED BEHAVIOUR

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	Traditional use	
Resident	<p>Traditional interventions</p> <ul style="list-style-type: none"> • Creating sitting areas • Clear walking and bicycle routes • Clear distinction between transportation and meeting spaces, by different paving • Changing pavement for different use • Attraction by natural smell, sound or movement 	<p>Digital interventions</p> <ul style="list-style-type: none"> • Digital playground • Attraction by digital sound of movement
Tourist	<p>Traditional interventions</p> <ul style="list-style-type: none"> • Creating meeting places/sitting area • Clear distinction between transportation and meeting spaces, by different paving • Attraction by natural smell, sound or movement 	<p>Digital interventions</p> <ul style="list-style-type: none"> • Attraction by digital sound of movement • Digital routing in street
Commuter	<p>Traditional interventions</p> <ul style="list-style-type: none"> • Clear walking and bicycle routes 	
Social meeter	<p>Traditional interventions</p> <ul style="list-style-type: none"> • Creating meeting places/sitting area • Clear distinction between transportation and meeting spaces, by different paving 	
Digital worker		

Digital use	
<p>Traditional interventions</p> <ul style="list-style-type: none"> • Adding scanning options for information in pavement/on facades 	<p>Digital interventions</p> <ul style="list-style-type: none"> • Real time traffic and route information in street/on facades • Warning signs on pavement (traffic lights, tram approaching)
<p>Traditional interventions</p> <ul style="list-style-type: none"> • Adding scanning options for information in pavement/on facades 	<p>Digital interventions</p> <ul style="list-style-type: none"> • Real time traffic and route information in street/on facades • Warning signs on pavement (traffic lights, tram approaching) • Digital signposts • Digital bus/tram stops or charging device
<p>Traditional interventions</p> <ul style="list-style-type: none"> • Adding scanning options for information in pavement/on facades 	<p>Digital interventions</p> <ul style="list-style-type: none"> • Real time traffic and route information in street/on facades • Digital bus/tram stops or charging device • Warning signs on pavement (traffic lights, tram approaching)
<p>Traditional interventions</p>	<p>Digital interventions</p> <ul style="list-style-type: none"> • Digital signpost for coffee or free work spots • Digital working and charging areas/stations

Figure 160: Intervention matrix for the Indische Buurt, Amsterdam (image by author, 2020)



5

**Conclusion &
reflection**

5.1 Conclusions

The previous chapter shows an elaborate research on the topics of public space, human behaviour, and the digital developments, and how all of this can be combined in urban design of public spaces. All of the chapters tried to contribute to answering the main research question of this thesis:

How can urban design interventions contribute to a new synergy between the traditional use of and the use of digital devices in urban public spaces in cities?

This main research question was answered through the sub research questions that are answered throughout the process and thesis. Also, to answer this question, one neighbourhood in Amsterdam was chosen as a case study, to analyse the challenges and test possible solutions. Parts of this research are based on hypothetical scenarios and future ideas of what the world might look like in ten, twenty, or fifty years. Especially the design proposals are based on these future ideas, resulting in proposals and interventions that are not the solution, but are only a representation of what this new found synergy could look like.

This new synergy can be found on different levels, on the small scale level of the street, but also on the higher scale level of the neighbourhood or even a city. Therefore, one of the main solutions that is presented in this thesis is to divide the neighbourhood into different zones, with different focus uses and types of user roles. By doing this, the different areas in the neighbourhood keep or get their own identity, making them more unique in the neighbourhood. Creating more diversity in a neighbourhood is not a bad idea and creates a lot of opportunities for a more lively neighbourhood.

All the design interventions that are proposed in this thesis are therefore based on the type of use and the user roles that are assigned to the different locations. Some of the proposed interventions are more traditional urban design interventions, others are innovative and digital proposals, all to create these new synergies in the neighbourhood, the chosen areas and the street.

Coming back to the research question, how can urban design interventions contribute to a new synergy? This is mainly one by combining several interventions, on different levels, all serving a different purpose. Creating a new synergy is mainly about finding a balance between the more static world of the city, and the more dynamic, and quickly developing digital world, that is quickly taking over our lives. It is about more about flexibility and adding to the existing, and not so much about completely restructuring the city.

A new synergy can only be found when the neighbourhood does not restrict people in their choice how to behave in public space. Every space in the neighbourhood or

city should facilitate the user to make their own choice regarding their behaviour in public space. Although, certain areas in the neighbourhood have their specific focus, this should not limit or prevent other uses, since it will probably lead to avoidance of the place all together.

The design interventions that are proposed in this thesis are an example of how digital innovations could be implemented into the existing urban design, while also restructuring the city with more classic and traditional methods. The real challenge is finding a balance between these different interventions on the different scales that can be found in the city, and facilitating as many behaviours as possible. The more traditional use should always be present in the city and the (re)design of cities, while the use of digital devices should be integrated into the existing.

5.2 Recommendations

Although this research is now finished, there is always room for improvement. When the outcomes of this research would be applied to real-world cases, the most important thing to do is to create an even better understanding of the needs and the wishes of the people making use of the public spaces. Every location is different, and interventions should apply to the specific needs of the people. This can be done by interviewing people in the street for example.

Also, doing a more thorough social media analysis is something that could be preformed to get a better understanding of a location. The possibilities of getting geo locations should be explored, but also value judgement of posts is an option. This means that posts are not just used for their location, but also to form an understanding whether a location is perceived good or bad, by filtering on certain keywords.

When editing and writing parts of the reflection (see paragraph 5.3) I came across a new idea for future research. When I was writing the societal and scientific relevance par, especially the part about 'smart cities', I realised that part of the problem is the lack of human scale in a lot of research and design, when talking about bigger interventions that redesigning a street or even a neighbourhood. With the introduction of smart cities, the human scale is even more important to keep in mind, and I feel like this is often forgotten. When incorporating the needs of the actual users of the city, within a bigger system, like the smart city movement, systems and cities could become even more efficient. Therefore I think it is crucial to look at the effects of implementing smart city systems on the use of public space, with a similar focus as is shown in this thesis. I feel like this could be the next step in research, and really contribute to a sustainable development of cities in the future.

5.3 Reflection

Societal relevance

New technological innovations in cities have always enabled citizens to organize themselves spatially and socially into new and different publics (de Waal, 2014). Understanding how this works and how the new, fast digital developments affect us as human beings and our use of public space is important to understand how we have to deal with these changes. For instance, the municipality of Amsterdam announced in 2016 their plan to provide a free Wi-Fi network in the city (AD, 2016), something that came true mid-November of 2019. Making it for us citizens and visitors even more attractive to use digital devices.

Public spaces in cities are necessary for a society to survive. It enables us to move from one place to another, meet and interact with people, or just do something recreational. Thus, it will never be that the need for public spaces disappears. We, as humans, need physical contact every once in a while. However, I believe that the fast development of digital technologies that have been introduced into our lives in the past decades, has changed our perception of public spaces and the way we use these. Understanding the impact public space has on our lives, and how these new technologies are affecting our use, is a key element if we want to keep living in our cities, and keep public spaces relevant.

I believe that the digitalization trend has created new needs, and therefore new uses of public space by society. Understanding these changing needs is the first step to come to solutions and a new balance in the use of public spaces. Being aware of the impact digitalization has on our lives and our use of the city should grow, since it will probably help in accepting certain spatial problems we could face in the future. Therefore, this graduation project is not necessarily about a specific problem with a very concrete design solution, but more about the creation of awareness of this topic and the challenges cities might face.

Scientific Relevance

Both 'public space' and 'digitalization' have been topics of research for many years, by different researchers, in many different fields. However, to me there seemed to be a lack of research on combining these topics, and especially focussing on the more human aspects. There is a lack of research on how digital devices, that have taken over the world, are changing how people behave in the city, changing the use of public spaces, and the spatial consequences of this change. Digital technologies are developing fast and sometimes it feels like every day a new ground breaking technology is presented to us (maybe this is even true). In the field of urbanism,

these developments are mainly visible in the research on ‘smart cities’.

In the past decades, a lot of focus has been on the research and development of ‘smart-cities’. In my understanding of this movement, the focus is mainly on using information technologies and collected data to make processes within the city more efficient. This is mainly focussed on managing assets, services and resources, for example traffic and transportation systems, energy consumption or connection to citizens. Although this is a very relevant topic related to the latest digitalization processes, I believe that an important aspect within this process is forgotten about: people, how people behave in a city, and how this behaviour is influenced by all these new technologies. Cities would not exist without people using them, so how people behave, has a really big impact on the spaces in the city.

In the coming years, thinking about smart cities and realising these smart cities is something that should continue. As is the research on what public space actually is, and how the ideas might be changing due to the introduction of digital devices in daily life. But, most importantly, I think both researches could benefit from the knowledge that is gained in the other field. Smart cities should incorporate more the traditional ideas of what public space is and how it is used, to come to even better integrated solutions. On the other hand, the research on how to define public space cannot ignore the introduction of digital technologies anymore. Public space is not the same as it was a hundred years ago, or even as it was ten years ago.

Advantages and limitations of chosen methodology

For this master thesis, one neighbourhood in Amsterdam was chosen as a study location, because it was a representation of a lot of different urban characters that can be found in Amsterdam. This is both an advantage as well as a limitation of the research. Because only one location had to be researched, the analysis could go more into depth and could be done more thoroughly. On the other hand is having only one neighbourhood in a city as big as Amsterdam a limitation because this is just one neighbourhood and there are a lot of differences to be found within the city.

One of the main design advantages of only having one location is that also the design focus is completely on this neighbourhood, and a more cohesive vision and design proposal is formulated. Though the design and intervention proposals might seem very location-based, the goal of this project is to reflect on the proposed interventions and transform them into more general interventions that could be implemented in other locations as well.

I think the biggest limitation of the project is the fact that some of the data and knowledge required during the process could quite be biased. Especially the observations are completely based on personal opinions. Doing analyses and conducting other research always has some form of bias, because you, the researcher or designer, makes the decisions, in what to research and how to value the outcomes of this research. I think this is inevitable and is better to be aware of it than not. I

hope I have limited the biased conclusions and decision to a minimum, but, like I said, methods like observations are never completely neutral.

Data collection problems and solutions

In the beginning of this research, the idea was to not only spatially analyse the location, but also to perform empirical research by observing people in public space and conducting short interviews with the users. However, when the time was finally there to perform the research, it was almost autumn, and there were a lot less people in the street that I would have liked to. So, this idea of empirical research was transformed a bit into observing specific locations that seemed busy according to certain analyses, like the social media analysis.

During the research phase of the project one of the main ideas was to use social media data for the spatial analysis of the chosen location. With the use of python, a programming tool, the idea was to download geographical data of certain posts or messages and map these on the map, to show social media bubbles or hubs in the neighbourhood. However, privacy laws and restriction with these companies made it nearly impossible to download this data to use for analysis. This was of course a bit of a setback, since the other option for this specific data collection was to manually collect the data. This could be done by manually looking and counting publicly accessible posts, since not every person on these platforms puts their account on private.

Generalisation of results

One of the goals of this graduation project is to translate the proposed interventions into general interventions that could, in theory, be applied in other neighbourhoods or even cities in the country. This is possible because the interventions are mainly based on more general uses and users, that are present in every city. This was the final step in the design and research of this graduation project and is further explained in chapter 4.7.

I believe it is even desirable to apply the results of this research into other locations or cities, because it is a topic every city or town has to deal with. Of course the generalisation of the results might also result in a list of very general options, of which policy-makers or designers might just pick a few and use these, like a tool box of interventions. This is of course not the idea of the generalisation. In order for the interventions to make a difference, a good understanding and analysis of the neighbourhood or city is needed. This is mainly because these interventions are connected to certain preferred uses and users. If these uses and users are not defined per location, the interventions would most probably not be working the way they are intended to work, or might even result in opposite behaviour.

Therefore, the result of this graduation project is not only a redesign of the

Indische Buurt, but almost like a method on how to apply the design results in other places, in such a way they are successful.

Ethical considerations

This graduation project could potentially have to deal with a lot of ethical issues and dilemmas, because it is about people, their behaviour, and their personal data. Especially when judgement is passed on these topics, ethical considerations are always close by. In this case, it is about the judgement of behaviour and data, because conducting analyses on the collected data is always partly judgemental.

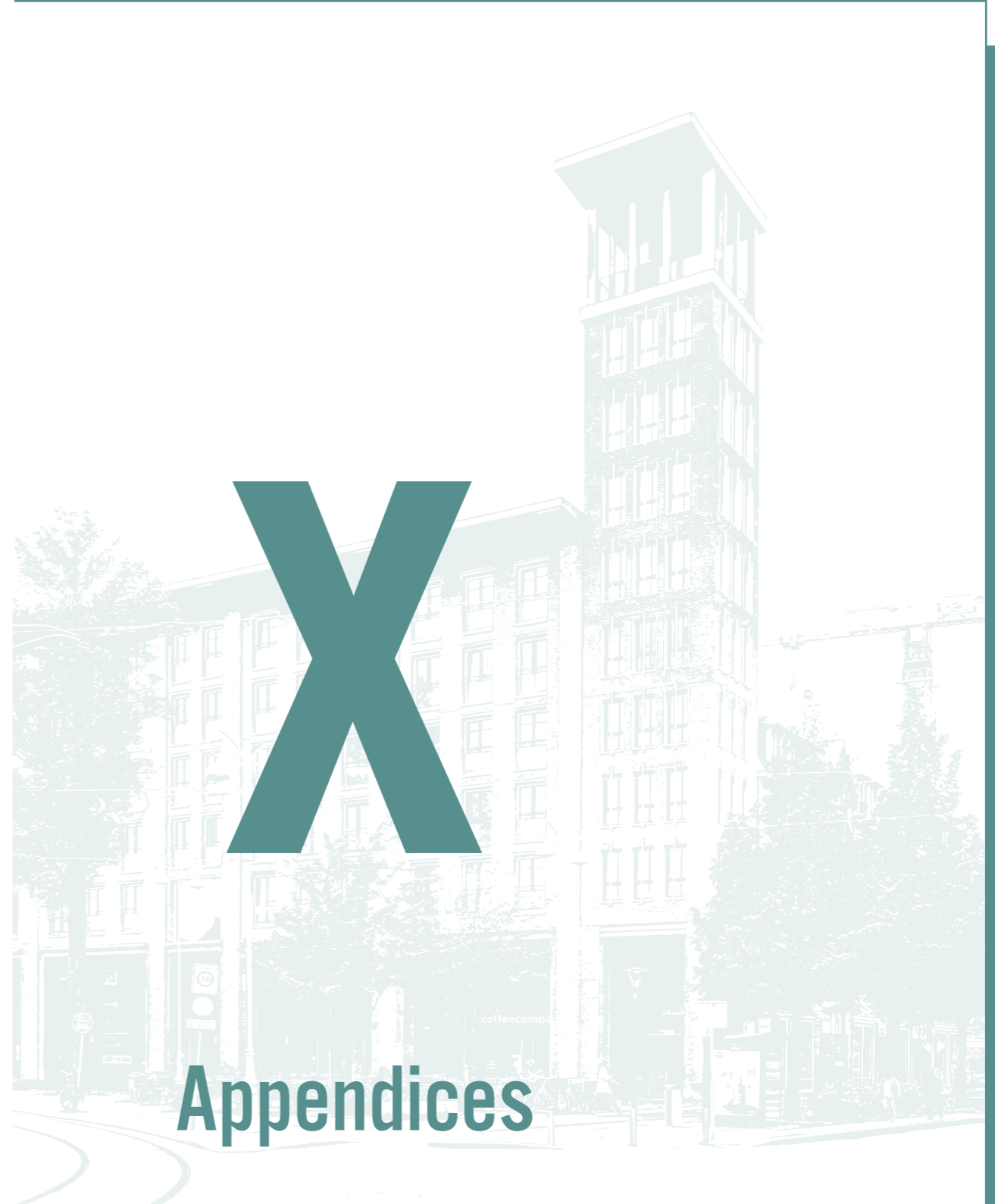
During the research, one of the biggest difficulties was the availability, or inaccessibility of the geolocations of the social media data. Although I think a lot of people will agree with me that online privacy is a good thing to have. Which also brings with it the ethical considerations within this field. The question whether it is ethically accountable for to analyse others personal social media posts, is a question I have asked myself a lot of times. I could however justify it for myself since I was not looking at the content itself, and judging the content, but merely looking at the locations where the picture or post was taken and count these.

However, as one of my recommendations is to do more analysis based on the social media, to get a better value judgement of the chosen locations, the ethical considerations are very important. In this case, every time the consideration has to be made what is intruding on someone's privacy and what is not. Especially is one really want to value the collected data, for example to analyse on certain keywords, like nice, good, bad, etc. the question becomes very relevant. I think that as long as the persons behind the posts remain anonymous and the data is not saved afterwards, it is to a certain extent justifiable to use this data. However, strict rules should be followed to not intrude in someone's personal life of privacy. Luckily, nowadays, there are tools and programs that can be used to analyse all of this data automatically, so everything can be done anonymous and unbiased.

The second thing someone could have ethical questions about is using the idea of nudging and whether companies, designers, or policy-makers should use this idea or not. Especially when nudging is about influences people without them even knowing it, is the ethically questionable if we should want this in our society or not. Whole researches have been written about the ethical considerations of the application if these tools, although mainly in the commercial fields. The question for the integration of nudging interventions by urban designers is whether it can be justified that we, as urban designers, might try to change the behaviour of people, for a, according to us, better, healthier, or more accepted way of life.

I don't believe there is one answer to this question, and that some people might have a different opinion. However, I do think that it is justified to a certain point, to nudge people 'in the right direction'. Especially when other elements, like safety are involved. In the case of this project specifically, the idea behind the nudging

interventions is the creation of awareness about this specific behaviour. I think the most important argument why nudging is justifiable in certain situation is the idea behind it. When a nudging interventions, in urban design or in other fields, is created to nudge people into making a decision another party benefits from, it is another story. The interventions in this project are not about forcing people to change their behaviour, and no other party is benefiting from certain behaviour, they are merely to make people think about their current behaviour.



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ii Theory paper

Online People, Offline Cities

How digital communication affects public space as a physical meeting place

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Abstract

Public space plays an important role in the interaction between people. In this paper, public space is seen as a freely accessible space for everyone which stimulates interaction between people. Public space should act as an interface for communication and interaction between people, even though it is also believed that real public spaces do not exist as such anymore. Rather, every public space has its own dynamic between public and private, which is constantly changing. The introduction of digital communication technologies is, potentially, becoming more important in the interaction between people, taking over the role of public space as a meeting place. This paper seeks a balance between physical and virtual interaction between people and the impact it has on the perception of public spaces. It gives an overview of the research conducted on defining public space and the role communication and interaction plays within it. Later on, it explains the development of communication tools and the impact the use of personal, mobile, digital communication tools have on the creation of personal bubbles in public spaces. The paper finishes with the conclusion that public spaces are slightly losing their function as a meeting place, but rather become a freely accessible place filled with personal bubbles.

Keywords: Social interaction, physical vs. digital communication, use of public space, public space as interface, mobile interfaces.

Introduction

The introduction of digital communication technologies has created one of the biggest global trends of the 21st century: people are 'living' increasingly more online, anywhere and everywhere. (Deloitte, 2017) Nowadays, in 2019, most people, especially in the Western world, cannot imagine a life without their constant digital connection to each other. However, already in the early 2000s, when smartphones were not invented yet, researchers like Eva Eriksson and her colleagues (2007) talked how the connectedness of people through these devices increase, which ultimately led to a lack of communication between people.

On the other hand, it has been said that "People cannot directly communicate with one another." (De Souza e Silva & Frith, 2012, p. 1) With this sentence, Adriana de Souza e Silva and Jordan Frith try to show the very difficult nature of understanding each other through communication. Since people cannot see or read each other's mind, over the years, humans have developed tools to communicate these thoughts as good as they possibly can. The pace in which these tools were developed has increased rapidly since the start of the Second Industrial Revolutions, also known as the Technological Revolution, in the late 1800s and early 1900s. (Niller, 2019) The introduction of the telephone made 'direct' communication over large distances possible. Later, the introduction of the cell phone made it that people were not bound to a specific space anymore to make a call. The internet, most recently combined with the cell phone to a smartphone, made having access to information everywhere available, slowly integrating this connectedness to a virtual world into daily life.

These development have had an impact on urban life as well. Where people used to meet up to have a conversation, this gradually shifted to calling, emailing and texting. All of these examples are indirect forms of communication, a lot of times happening when surrounded by other people, which means having direct interaction. What is created is a network of virtual and digital connections, instead of physical contact between people. This paper highlights the importance of public spaces in the communication and interaction between people. Public spaces are regarded as one of the most important elements of the city, because of their ability to bring people together. Some researchers, like Jane Jacobs (1961) and Richard Sennett (1977), even state that without proper public spaces there will be no public life.

Objectives and structure of the paper

The research done in this paper is part of a larger graduation project researching how to prepare cities for future changes in the use of public space due to the increased use of these digital communication devices. The balance between the digital and physical world is the main topic of this paper, with a focus on communication and interaction in public spaces. Public spaces are regarded as the ultimate physical space in the city for interaction and communication between people. Since this paper is part of a larger graduation project in urban planning and design, the

focus will be on the spatial of public space within the city, like the street, parks and squares. While sometimes also places like a cafe, a shopping mall, or a public library are regarded as public spaces, in this research these places are not taken into consideration while defining public space.

The first part of this paper focuses on public space, attempting to get an understanding of this notion by exploring several different views on defining public space. The focus will, once again, be on interaction and communication in these places. Here, the notion of interfaces is first introduced, showing how public space can act as an interface in the communication between people. In the second part of this paper, the focus will shift towards digital communication, how this developed, and how this has influenced the 'classic' use of public space. Again the notion of interfaces is introduced, only this time focussing on the digital communication technologies that are being used as interfaces in public space. In the graduation project, the focus lays on mobile, personal digital communication devices, thus when talking about these digital communication technologies, these mobile personal devices are what is meant by them.

Public space

Public vs Private

Defining public space has been the topic of (academic) debate and research for years in many different research fields. Every field has its own ideas, holding different criteria. Very strictly spoken, public space can be seen as the areas and civil structures, like bridges and tunnels, that are being maintained by the (public) government. (Meyer, 2006) However, this is a very governance-based way of looking at public space, and it should thus be argued that there is more that defines public space than just these regulations. It does however seem like researchers in different fields roughly agree on the idea that public space can be seen as a place that is of, for and by people (Van Melik, 2010), freely accessible by everyone (Hajer & Reijndorp, 2001) and free of charge (Eriksson, Hansen, & Lykke-Olesen, 2007).

When talking about public and public space, it is unavoidable to at one point talk about its opposite: private and private space. It is inevitable not to mention the debate between public and private space since it is one of the main topics in Western urbanist thinking since the nineteenth century. (de Sola Morales, 1992). Hajer and Reijndorp (2001) indeed state that "public is the opposite of private" (p. 11) and thus public space is the opposite of private space. Then again, it should be noted that there is a debate going on, whether this hard distinction between public and private should be made at all whilst trying to define space.

Although Ted Kilian (1998) profusely states that he does not believe public and private spaces exist as such anymore, he does believe that 'public' and 'private' are two very real and relevant terms. This is based on the idea that "privacy – the power of exclusion" (Kilian, 1998, p. 124) and "publicity – the power of access" (Kilian, 1998, p. 124) are the main values in defining private and public. Both values play out in defining space and thus publicity and privacy both exist as part of all spaces.

Hence, this suggests that public and private spaces do not exist as such, but that every space finds a different balance between the two core values. To Kilian, there is a duality between the “real physical space and the socially constructed publicity or privacy” (Kilian, 1998, p. 124). Ignoring the duality would doom “any definition of public space to insufficiency” (Kilian, 1998, p. 124).

Also, Manuel de Solà-Morales is questioning whether the words public or private should be used at all when defining space: “Hence, if all urban space is more or less public (and all public space is more or less of or for private interests), what would be the specificity of what we conventionally call ‘public spaces?’” (De Solà-Morales, 2013)

Maybe trying to define exactly what public space is, is not something that should be tried at all anymore. A short research on how to define public space leads to thousands of books, papers, essays, and opinions, going back to the ancient Greeks, 3000 years ago. (De Solà-Morales, 2013) But although Kilian does not believe in public and private spaces, he does acknowledge that these spaces are meaningless without social interaction. The balance between public and private, and publicity and privacy, is what ultimately defines a space. It thus might be wiser to focus on the one aspect that does seem to be agreed on in understanding public space: people. Without people, public spaces would not exist, Kilian’s values of publicity and privacy only exist because they are people’s values, and according to numerous renowned researchers, like Jane Jacobs and Richard Sennett, public space was (or still is) mostly a place for (impersonal) contact between people. (Jacobs, 1961; Sennett, 1977)

Looking back at the definition of public space that was formulated in the beginning of this part, it becomes noticeable that, although the definition is based on different research fields, they have in common that they take people as a central element in the definition. People are what defines a space, whether it is public, private, or something in between, and people have used, and will always use, public spaces as places for interaction with other people.

Public space as interface

A lot of researchers thus believe that public space is mainly a place for exchange between people and impersonal contact. (Carr, Francis, Rivlin, & Stone, 1992; Sennett, 1977; Jacobs, 1961) For other researchers, like Hajer and Reijndorp (2001) the definition of public space is more strict, as it is just a freely accessible space. However, they do acknowledge the part of interaction between people, but give this another name: the public domain. This public domain is, in essence, a place where interaction between different social groups is possible and actually happening. According to them, not every public space is a public domain, as not every freely accessible space matches this requirement of facilitating interaction. However, in their opinion, a coffee shop, public library, or cafe could also be seen as a public domain, since they facilitate interaction between people and are accessible free of charge. As the focus and scope of this research are on spatial public space,

these kinds of public domains are not regarded as such.

Although Hajer and Reijndorp make a clear distinction between the notions of public space and public domain, other researchers explain public space within the ideas of the notion of the public domain. Therefore, and because the word ‘space’ is easier associated with the spatial focus of urbanism, in the continuation of this paper, the word public space will be used. Though, from now on, the ideas behind the notion of the public domain are recognized and integrated into the understanding of public space.

It is clear that public space is one of the most important elements in the ‘classic’ city, for meeting up, interaction, and communication with other people. According to Eriksson, Hansen and Lykke-Olesen (2007) “public space is an amazing physical and social interface between people” (p. 32), once again elaborating on the social aspect of public space.

An interface can broadly be seen as something that stands between two other things or systems, helping with the communication and interaction between the two. (De Souza e Silva & Frith, 2012) It can thus be concluded that people and their need for communication and interaction is the key element in defining what a public space is, not necessarily as a physical space, but as an experienced space. Public space, therefore, should be a place where people come together, interact with each other, or just pass by each other.

Since talking about public space as a place for interaction, or as the ultimate place to meet strangers, friends, or family, defining public space as an interface might actually be the right thing to do. It combines the ideas of the notion of ‘public domain’ as described by Hajer and Reijndorp (2001), while still using the more spatial associated sound of ‘public space’. In this new light of public space functioning as an interface between people, the conclusion might be that, although, not every public space functions as an interface, it should be the goal to become one. This is where (urban) designers, policy-makers and decision-makers come into play. In order to maintain the quality of public spaces and their traditional use, this idea of public space acting as an interface should be the ultimate goal. When redeveloping and redesigning public space, this idea of public space functioning as an interface should be the ultimate goal.

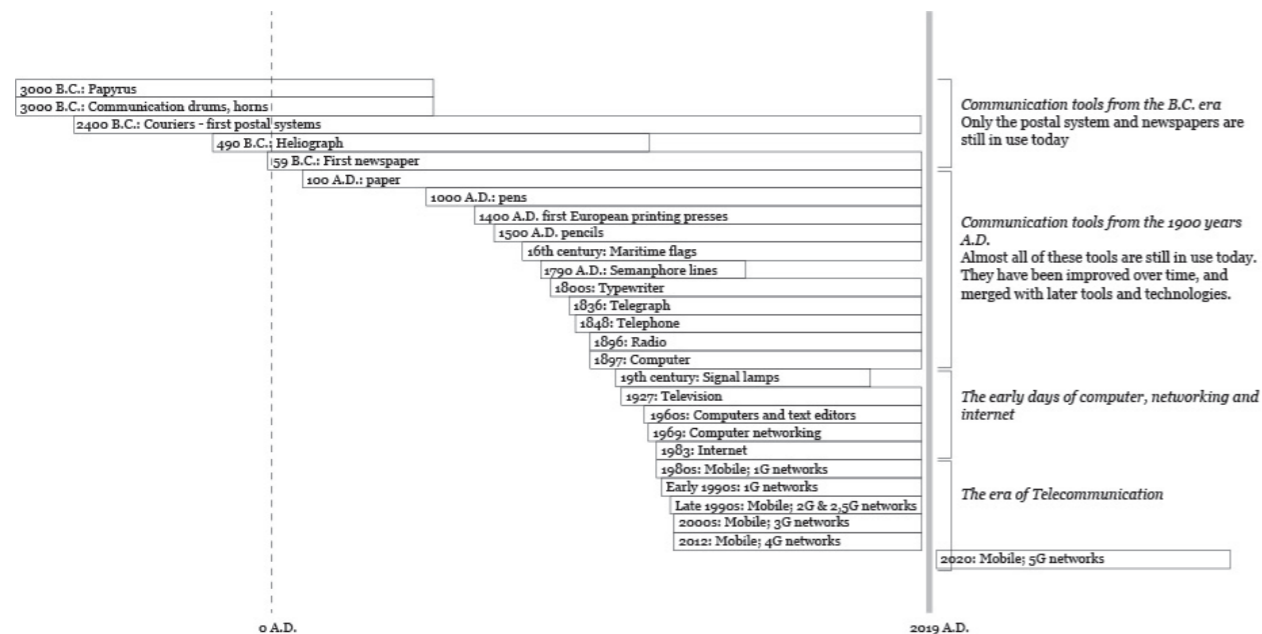
Digital interaction and communication

Development of (digital) communication technologies

Talking so much about interaction and communication does raise the question of how exactly people communicate with each other. Over the years, the humankind has developed numerous ingenious tools to communicate with each other. (Munoz, n.d.) When talking about interaction and communication in public space, understanding how these tools have developed is the first step to understand the use of public space. Some of the tools that were developed over a thousand years ago are still in use today, also see figure 1. However, where the development of a

new communication tool used to take hundreds of years, nowadays it seems like almost every week there is a new invention in the field of (digital) communication. In this sentence, the word digital is deliberately put in between brackets, since it has become impossible to talk about communication without acknowledging the massive influence the digital developments have had, especially in the last twenty years or so. When asked now, people will probably mention the smartphone, mobile phone, tablet, and laptop as main devices for communication.

The figure below, figure 1, gives an overview of the development of the main tools for communication in time. Putting the developments on a timeline indirectly draws the eye towards the lowest part, the developments of the last century. Mainly because of the many new developments in a relatively short time, compared to before. Also, the figure implies that the introduction of the internet marks the beginning of 'The Era of Telecommunication'. According to the Oxford Dictionary (n.d.) telecommunication is defined as "communication over a distance by cable, telegraph, telephone, or broadcasting". It thus could be argued that the era of telecommunication already started way earlier, when the telegraph was invented in the 1840s. However, the introduction of the internet in the 1980s made this communication over long distances a lot easier and accessible, which resulted in an increased use over time, and ultimately was integrated into daily life, making it impossible to imagine a life without. So, the real era of telecommunication really started with the introduction of the internet. It made communication over large distances even easier, and in the end, resulted in the main tool for communication. Nowadays, digital communication technologies are the products or devices that have been developed based on these tools and are integrated in daily life. Earlier a few of these products were already mentioned, like smartphones, tablets and



laptops, but also smartwatches, electronic advertisement stands or GPS-trackers can be considered as such. (Sarokin, n.d.) As mentioned in the introduction of this paper, the decision has been made to only focus on mobile, personal, digital communication technologies, like mobile phones, smartphones, tablets and laptops.

Digital interaction in public space

These digital communication devices are more and more used in daily life. Probably, most people cannot remember how a day without their smartphone or tablet would look like. So we are increasingly living more online, and this connectedness through these devices creates a lack of communication between people. The reason for this is that devices, like mobile phones, mp3-players and later smartphones are designed for single-use and therefore creating personal bubbles or spheres around the person using it. (Eriksson, Hansen, & Lykke-Olesen, 2007) However, as established in the first part of this paper, the core idea of public spaces is communication and interaction as well. So the question arises how the introduction of these personal devices is influencing the use of the physical public spaces in the city.

To recap, public space was seen as an interface, a tool to help with the communication and interaction between, in this case, people. The notion of public space is therefore often seen as being interactive, social, democratic, and self-organizing. (Eriksson, Hansen, & Lykke-Olesen, 2007) However, access to media and personal devices is changing this social nature of public space (Hatuka & Toch, 2016), and the use of these (personal and mobile) digital devices in public space often creates the opposite of this notion. There is no, or less, physical interaction between people, which can thus be seen as anti-social, in a place that is built upon physical interaction. Although people are physically present in the public space, they do not participate in urban life. Paul Goldberger (2013), for example, argues that using a mobile phone while walking down the street, eliminates this person from participating in street life.

The lines between the physical and virtual spaces are blurring, due to the introduction of these digital devices in daily life. (Hatuka & Toch, 2016) More often than not, the virtual world is the world mentally lived in, whilst physically being present in the 'real' world. Already twenty years ago, in the early 2000s, several researchers noticed that the use of mobile phones enabled people to communicate beyond their physical surroundings. One of these researchers was Vincente Rafael who observed the following: "Even when they [people] are part of a socially defined group – say, commuters or mourners – cell phones users are always somewhere else, receiving and transmitting messages from beyond their physical location." (Rafael, 2003 In: Hatuka & Toch, 2016, p.2194) Noticing this made it clear that people are not always mentally present when in a physical place and that people are able to be at several places at the same time.

The blurry line between the physical and virtual world has since become more blurry or, one might say, almost non-existent. Where the mobile phone was just being used for temporary distraction by calls and text messages, the introduction of the smartphone, making the use of internet available everywhere, changed the whole

dynamic once again. Nowadays, social media, internet access and the expectation to always be reachable, forces people to act within their own bubble constantly, even though being physically present in a 'public' space.

Digital communication technologies as mobile interface in public space

Earlier in this paper, public space acting as an interface was described to be the ultimate goal for public spaces. However, it should be argued that public space is not the only interface for communication between people anymore. The introduction of digital communication technologies has created new forms of interfaces, that are being used in public space. As said, interfaces are a tool to help communication between two other things, and thus the personal, mobile digital communication devices that have been mentioned earlier should be regarded as such as well. Or, as De Souza e Silva and Frith (2012) deliberately call them, mobile interfaces.

Where De Souza e Silva and Frith (2012) talk about the influence of mobile interfaces in public space, Hatuka and Toch (2016) come to the conclusion that the introduction of individual technological devices creates a new sort territory, the 'Portable private-personal territory' (PPPT) (p.2203). Again, what is meant here is that an individual is able to extend their personal space, similar to the introduction of the personal bubbles or spheres mentioned by Eriksson and her colleagues (2007), and De Souza e Silva and Frith (2012). All these different ideas and new terms, like the PPPT, personal spheres, and bubbles, are just terms that try to explain the same phenomenon: the privatization of public space. Maybe it should be concluded that, if all that is done is creating personal spheres within the public, real public spaces do not exist any longer.

Discussion and conclusion

Communication and interaction in public space, both physically and digitally, have been the main topic of this research paper. It was stated that with the introduction of digital communication devices, the traditional use of public space is changing and that the dynamics of public space are shifting constantly. Public space can roughly be seen as a space that is freely accessible for everyone. On the other hand, it was mentioned that real public and private, the opposite of public, spaces do not exist as such anymore, but that every space is created with its own dynamic between the two notions. Also, people are what makes a space used, and interaction and communication between people is one of the key elements of public spaces. The introduction of digital communication technologies, also called mobile interfaces, has once again changed the dynamics in public spaces, and will probably continue to do so in the future. Public space is becoming more and more a freely accessible place, filled with personal bubbles, or in other words, public spaces are less and less acting as an interface for communication between people, but rather becoming a physical place where mobile interfaces are used.

It is understood that there is not one definition of public space and that every person or has its own opinion on what it means to be in public. However, this is not

a paper completely dedicated to defining public space as such, but merely using the notion of public space to show the important role it plays in the interaction between people.

Recommendations for further research

The research in this paper was conducted as part of a bigger graduation project on how to prepare cities for future changes in public spaces, caused by the use of digital communication technologies in public space. It was used to gain knowledge on how to define public space and the role of communication and interaction in these spaces. It is understood that, in order for cities to keep the quality of their public spaces up to date, understanding how public spaces are used is key. The next step should be to figure out that the spatial implication of this changed use is. With this knowledge, a strategy could be developed on how to maintain the quality of public space in the future, with predicted, but still unknown, changes.



iii spatial analysis Amsterdam

Here, a complete overview of the spatial analysis of Amsterdam can be found

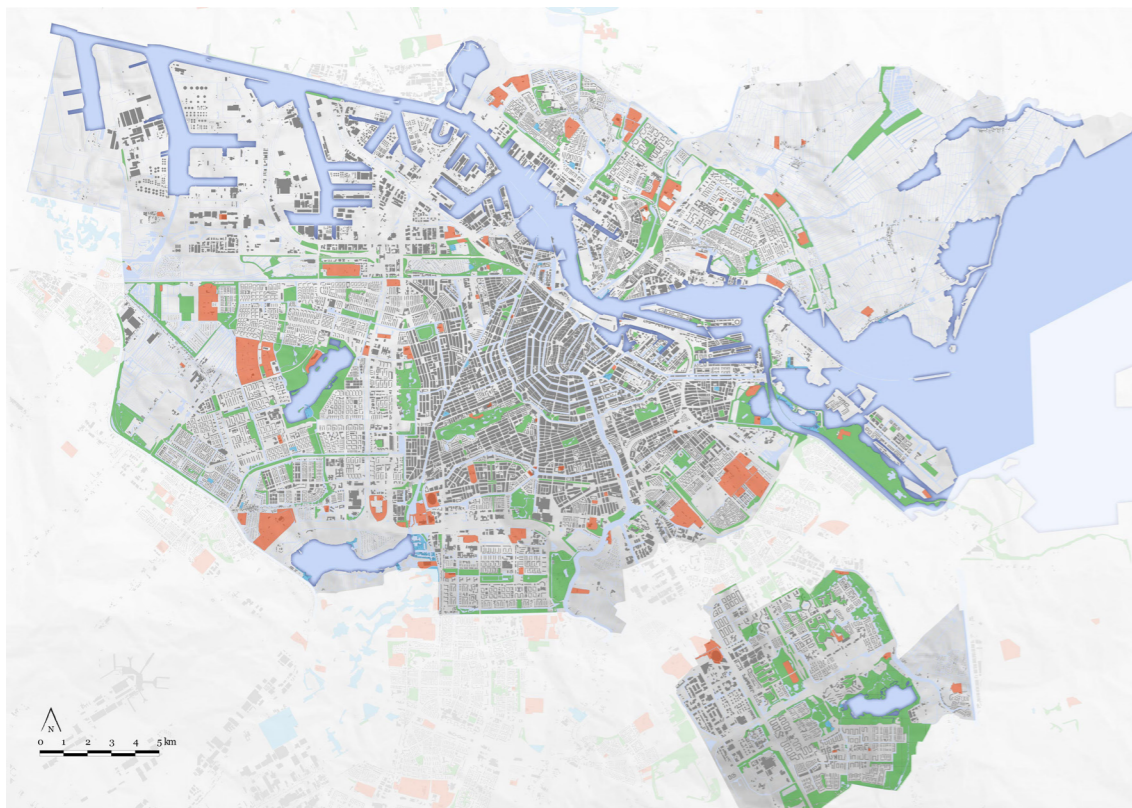


Figure 161: Meeting places, Amsterdam

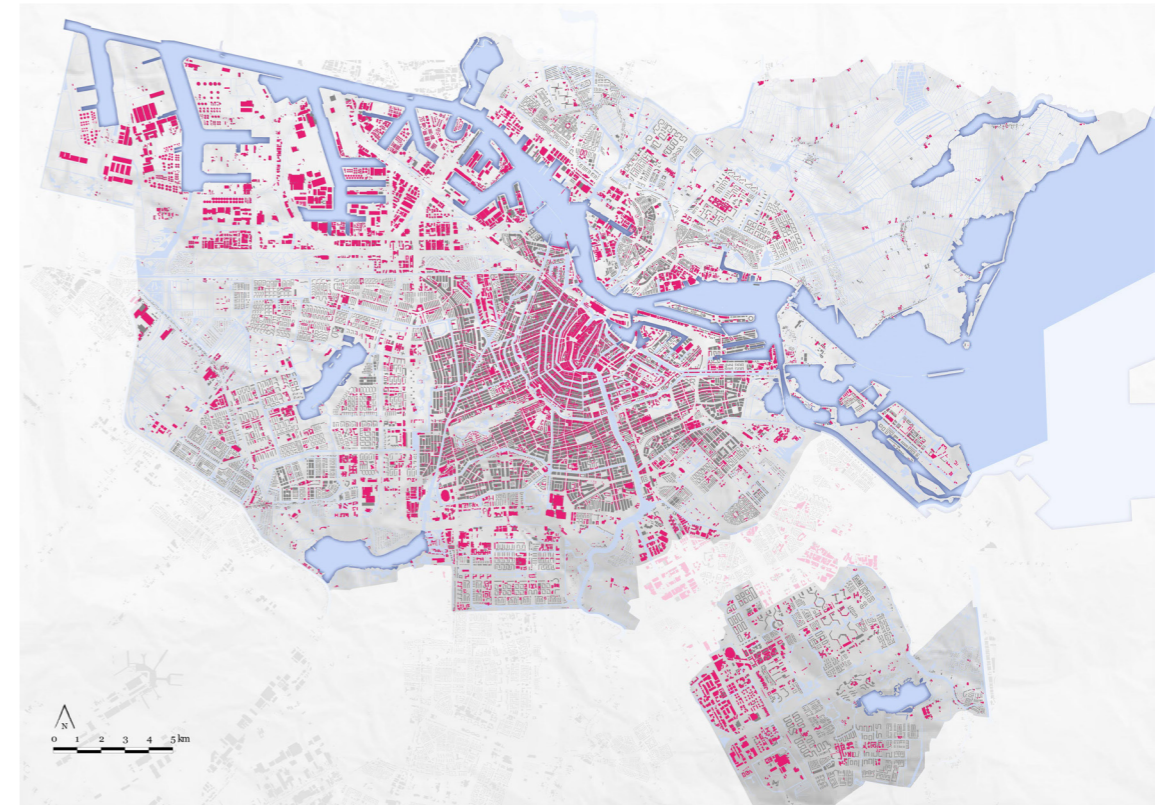


Figure 162: Non-residential buildings Amsterdam,

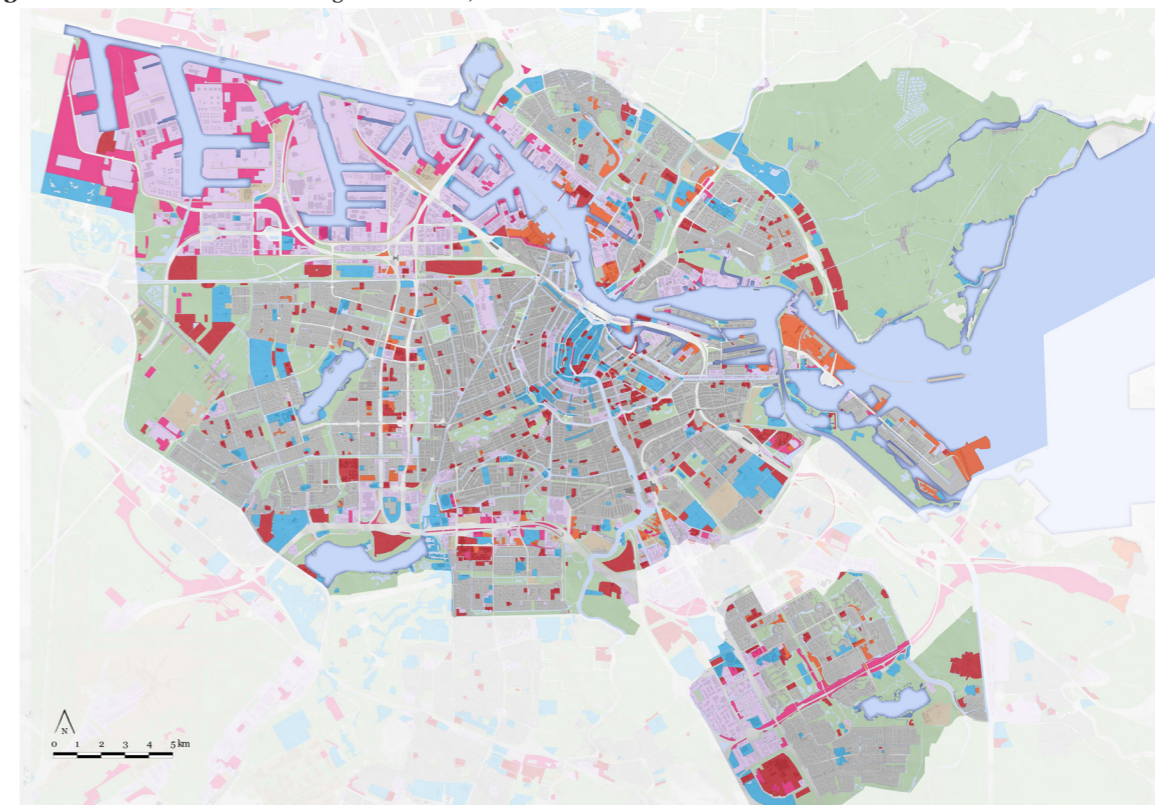


Figure 163: Land-use, Amsterdam



Figure 164: Space syntax: Segment Integration R4000, Amsterdam

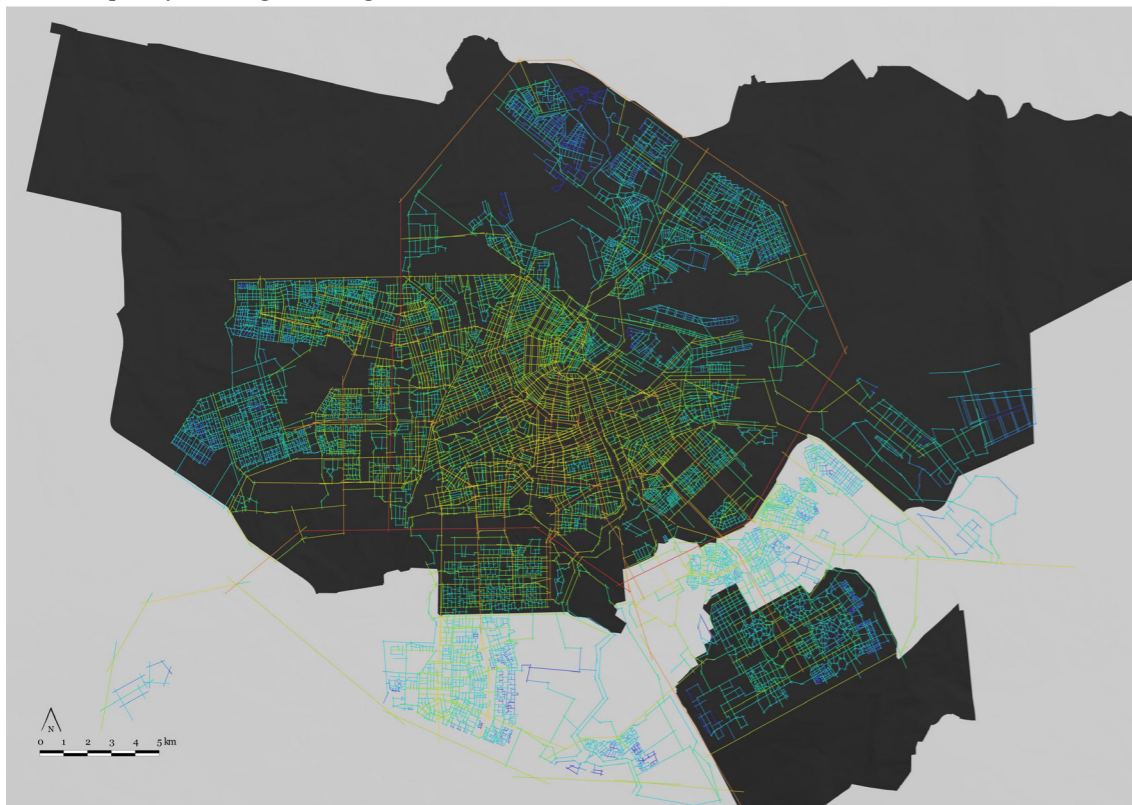


Figure 165: Space syntax: Segment integration analysis R400

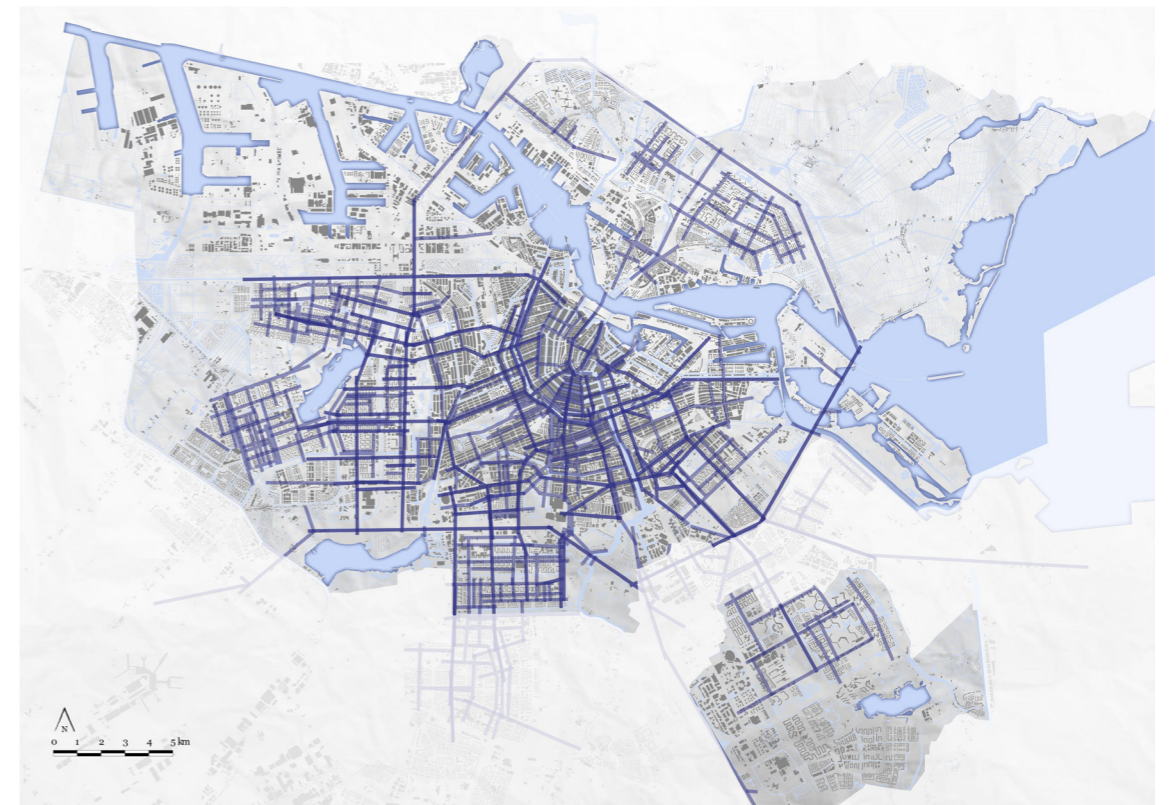


Figure 166: Main streets according to space syntax analysis, Amsterdam



Figure 167: Space syntax: Axial analysis R-HH, Amsterdam

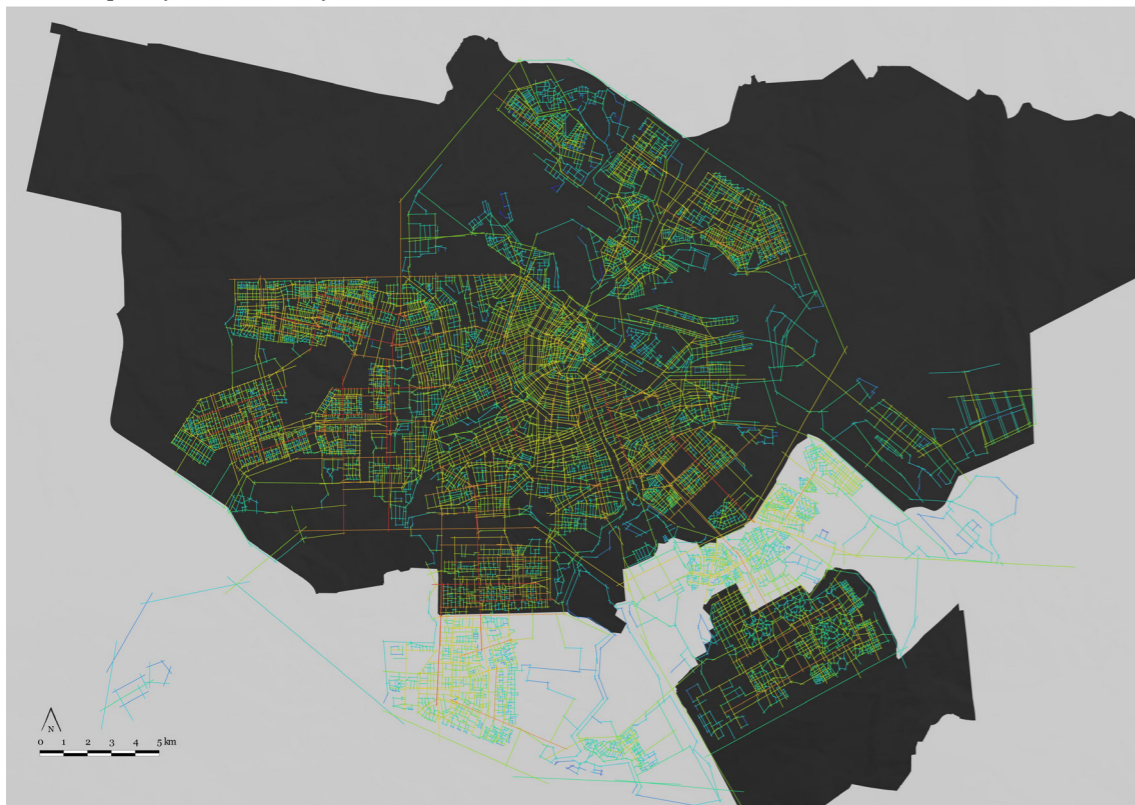


Figure 168: Space syntax: Axial analysis R-3

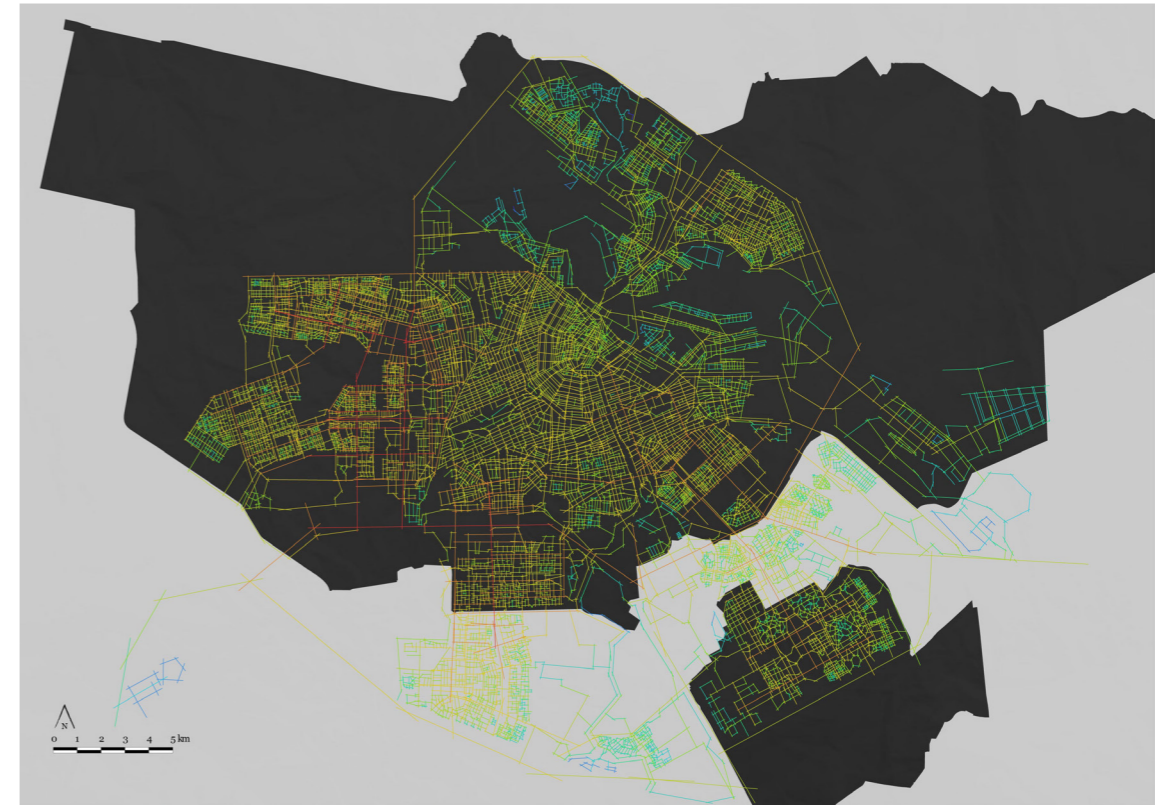


Figure 169: Space syntax: axial analysis R-7

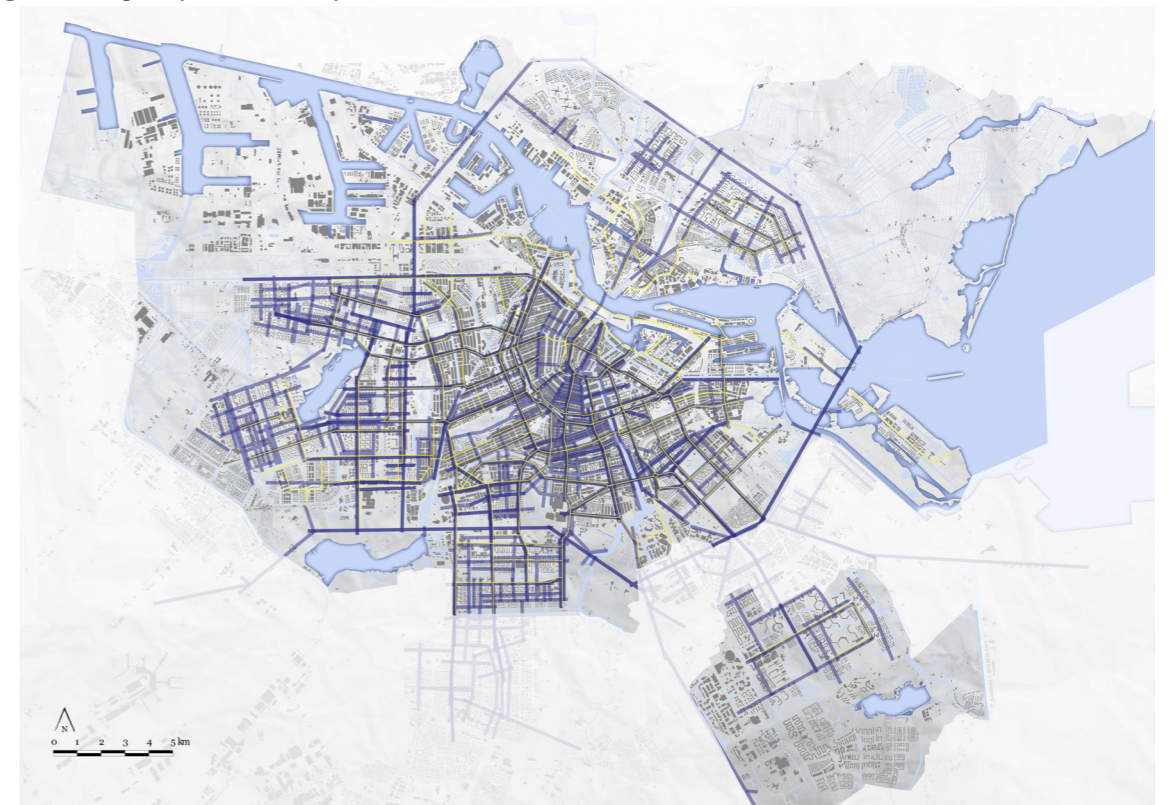


Figure 170: Main streets space syntax vs main city streets, Amsterdam

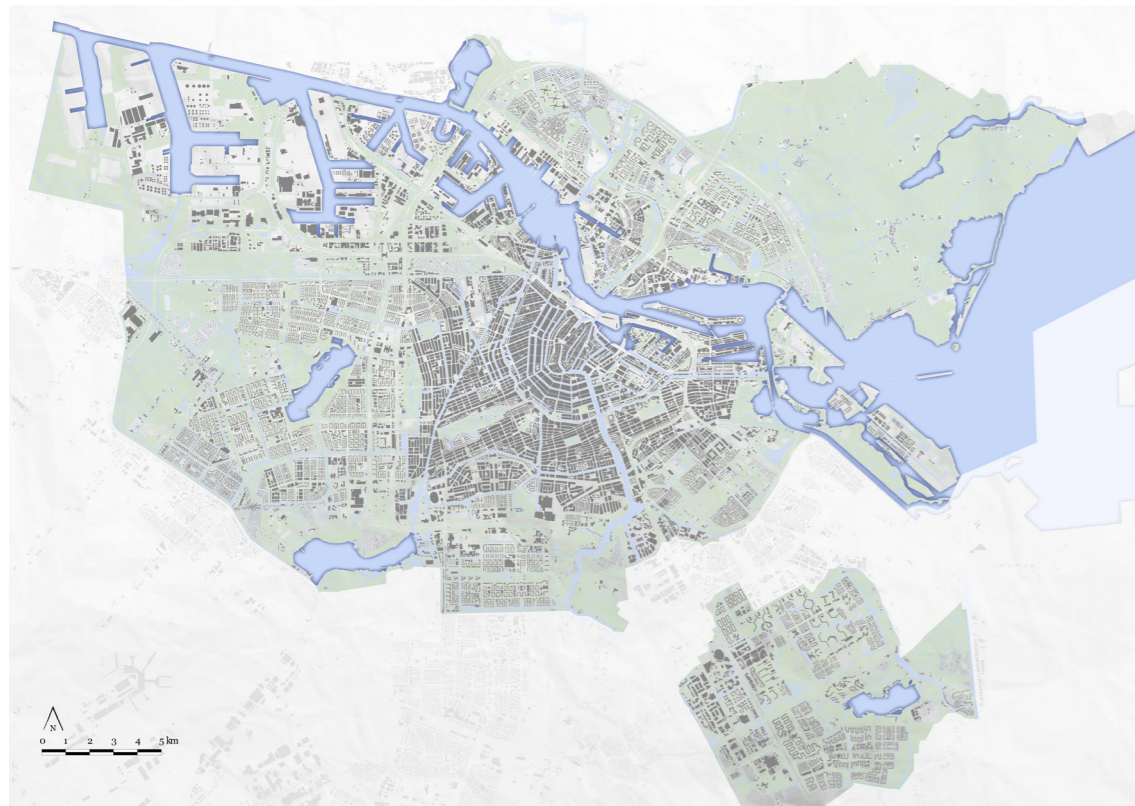


Figure 171: Figure 27: Amsterdam: urban fabric (made by author)

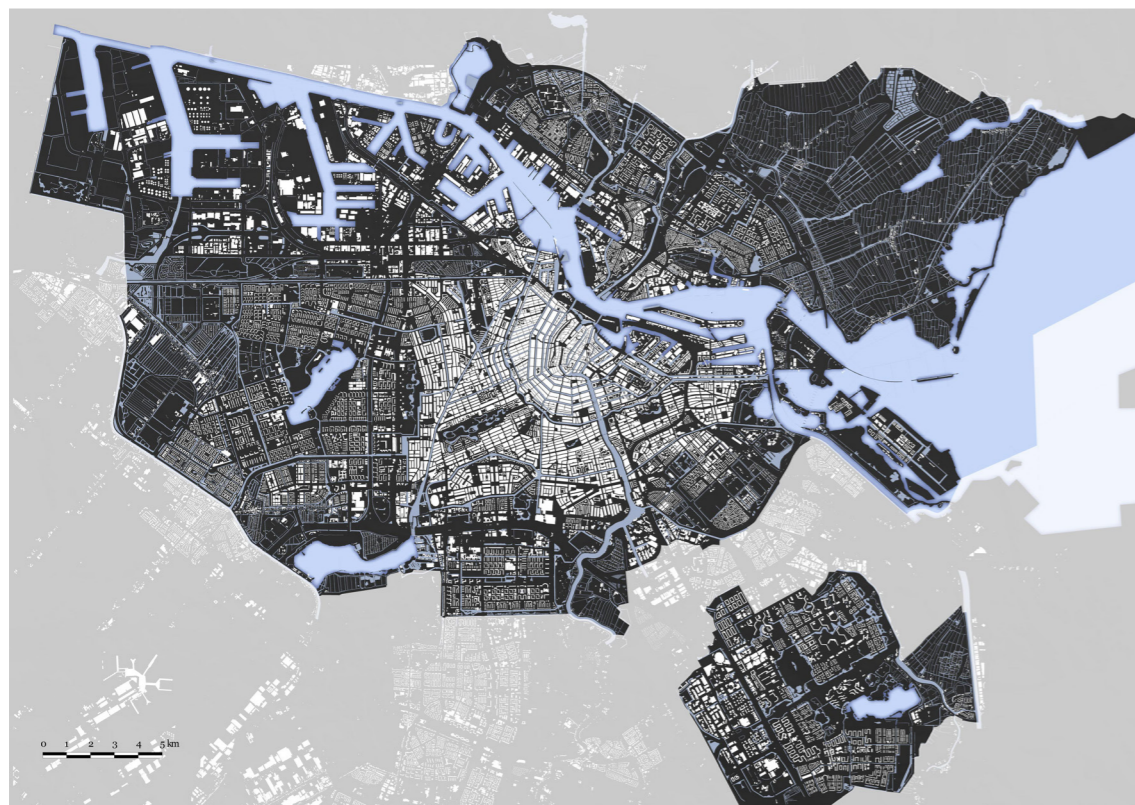


Figure 172: Amsterdam, open space

- Retail
- Horeca
- Buildings
- Activities
- Healthcare, education and religion
- Water
- Offices
- Green space
- Enterprises
- Public transport and parking
- Other

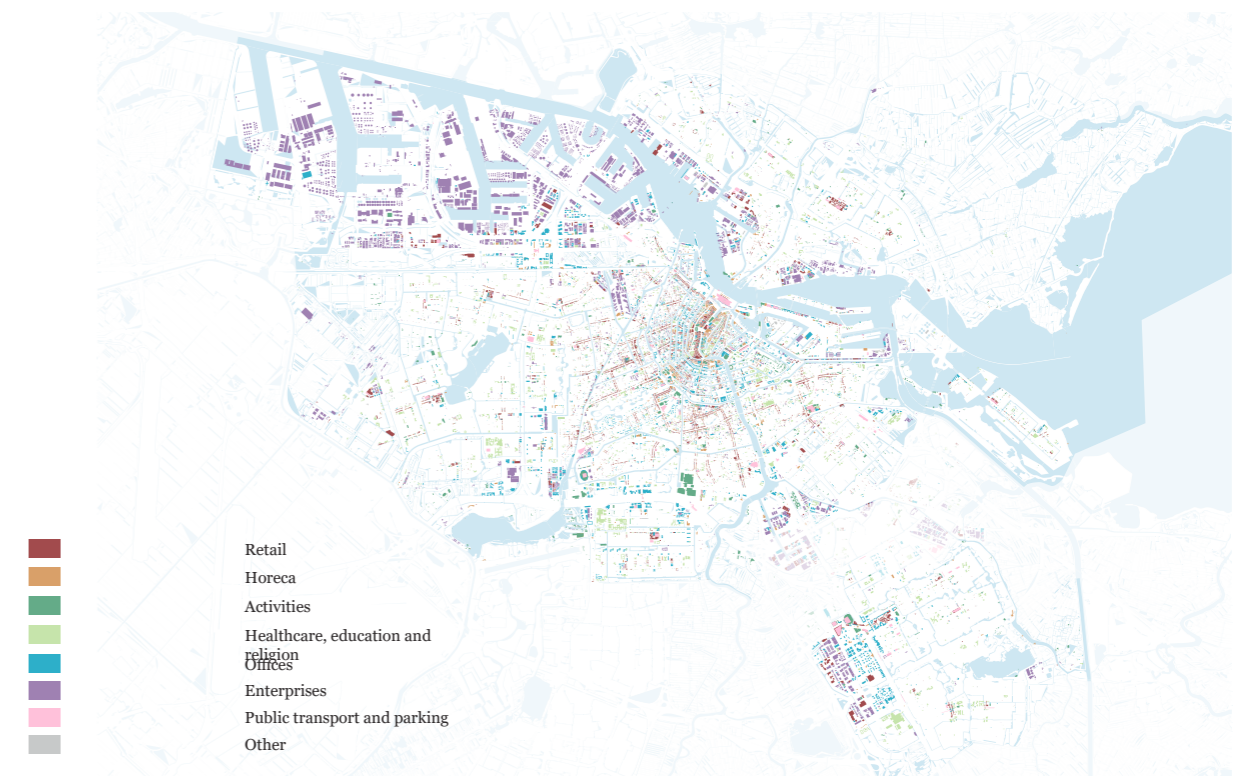


Figure 173: Figure 29: Amsterdam: non-residential functions (made by author)

- Education/healthcare
- Business
- Recreational
- Greenspace
- Water
- Living
- Other
- Development area residential
- Development area non-residential

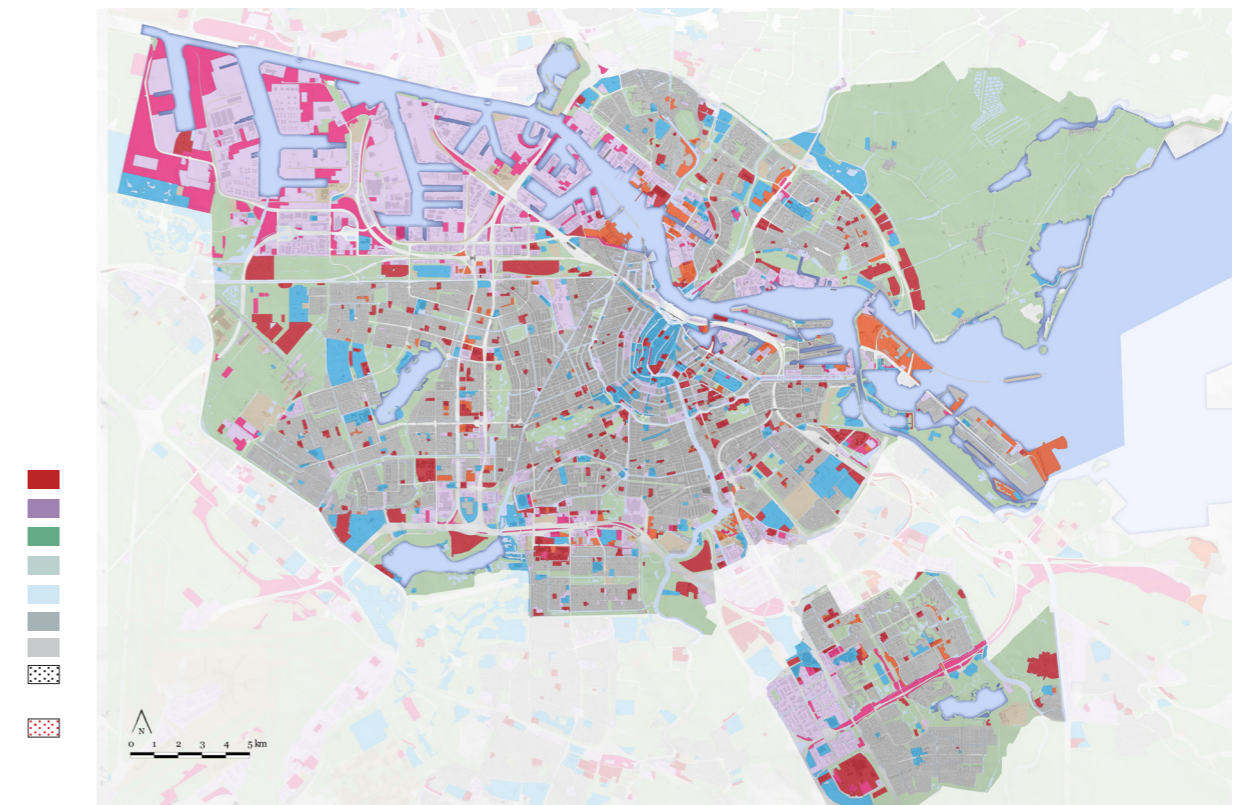


Figure 174: Land-use, Amsterdam

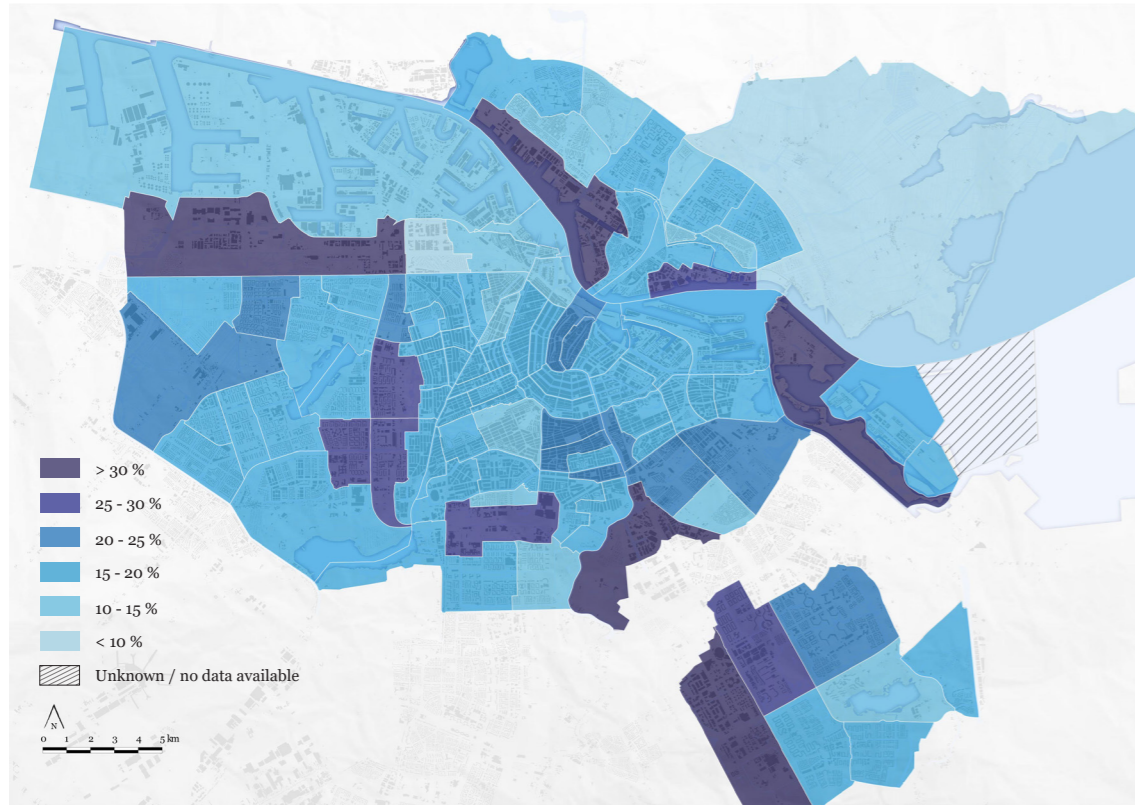


Figure 175: Percentage 12-26-year olds per neighbourhood

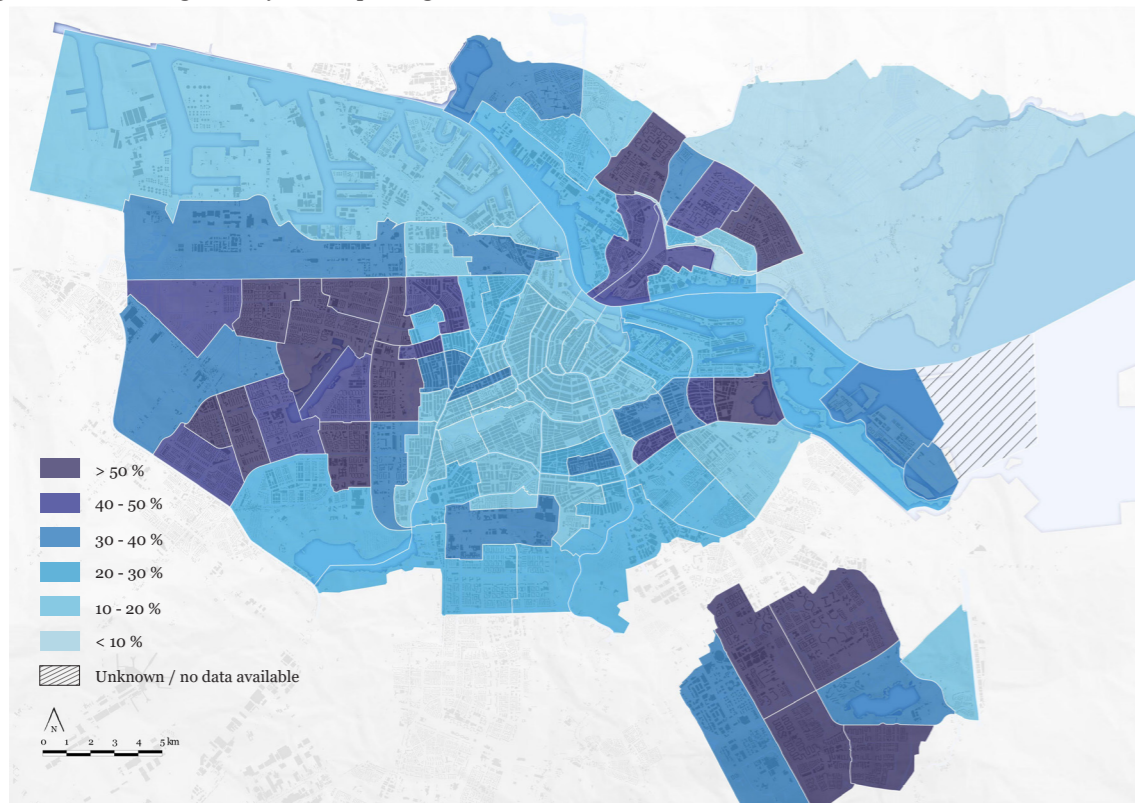


Figure 176: Percentage of people with a non-western migration background per neighbourhood

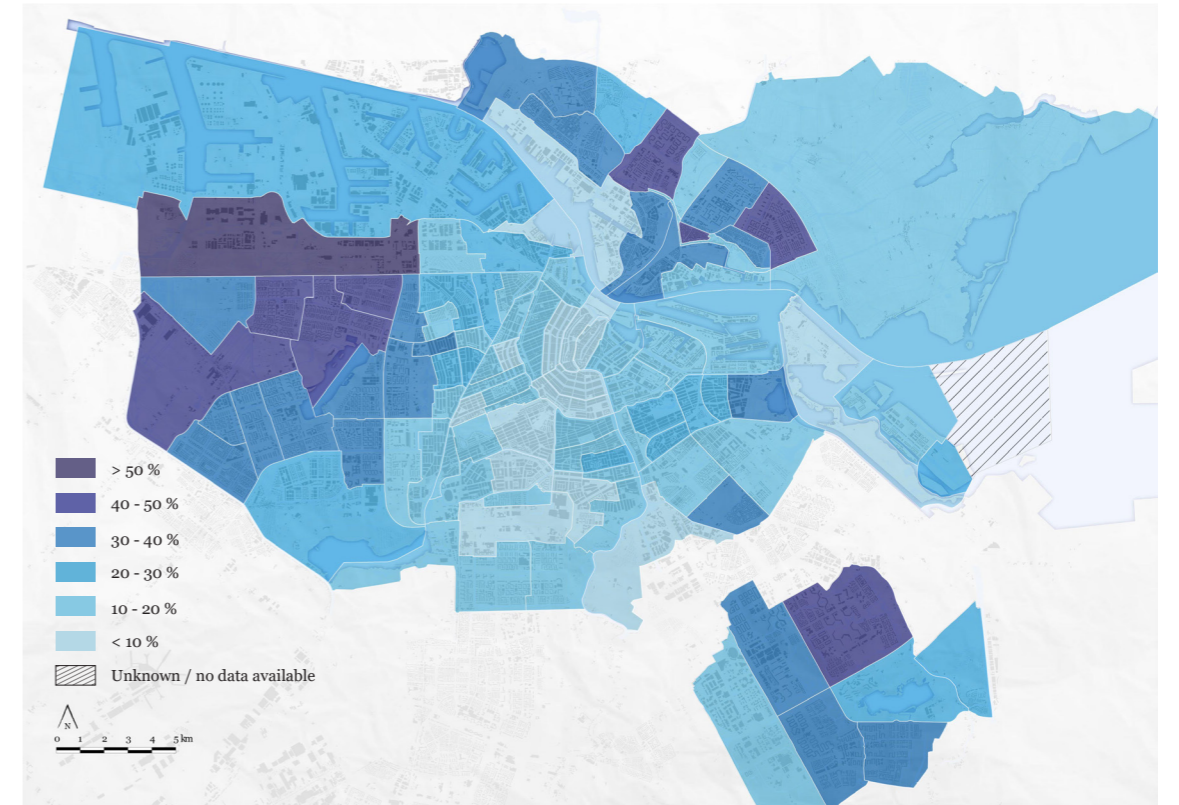


Figure 177: Percentage of people with a lower education per neighbourhood

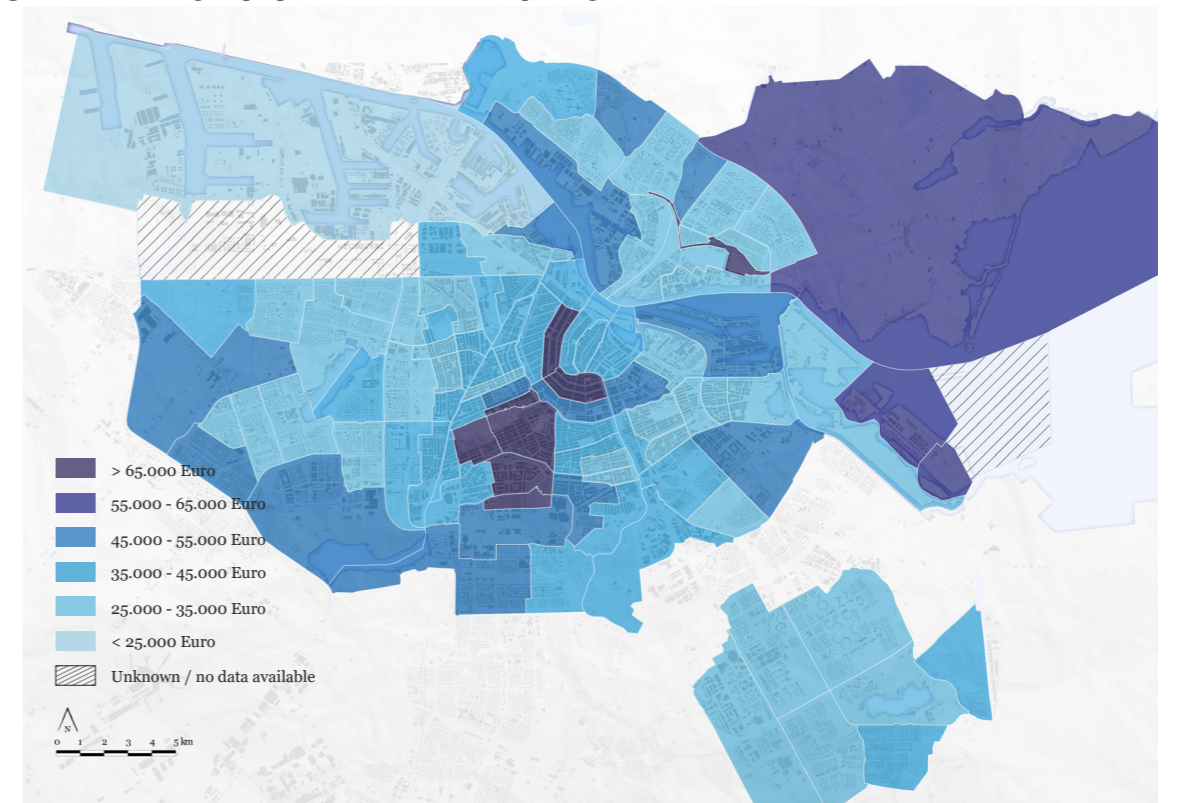


Figure 178: Average amount of spendable income per household per neighbourhood

iv Analysis of Indische Buurt



Figure 179: Main streets Indische Buurt, according to GoogleMaps analysis



Figure 180: One way roads, Indische Buurt, Amsterdam (image by author, 2020)



Figure 181: Public transport lines and stops, Indische Buurt, Amsterdam (image by author, 2020)

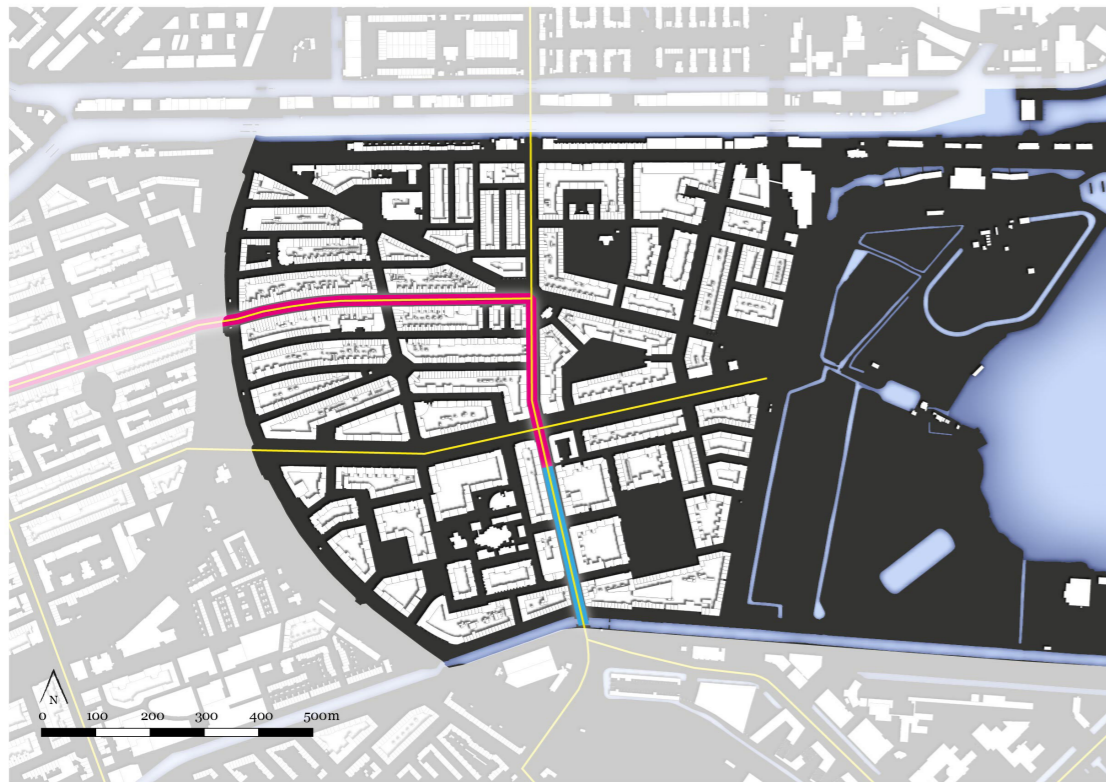


Figure 182: Mainstreets and city streets, Indische Buurt (image by author, 2020, based on Gemeente Amsterdam (n.d.))

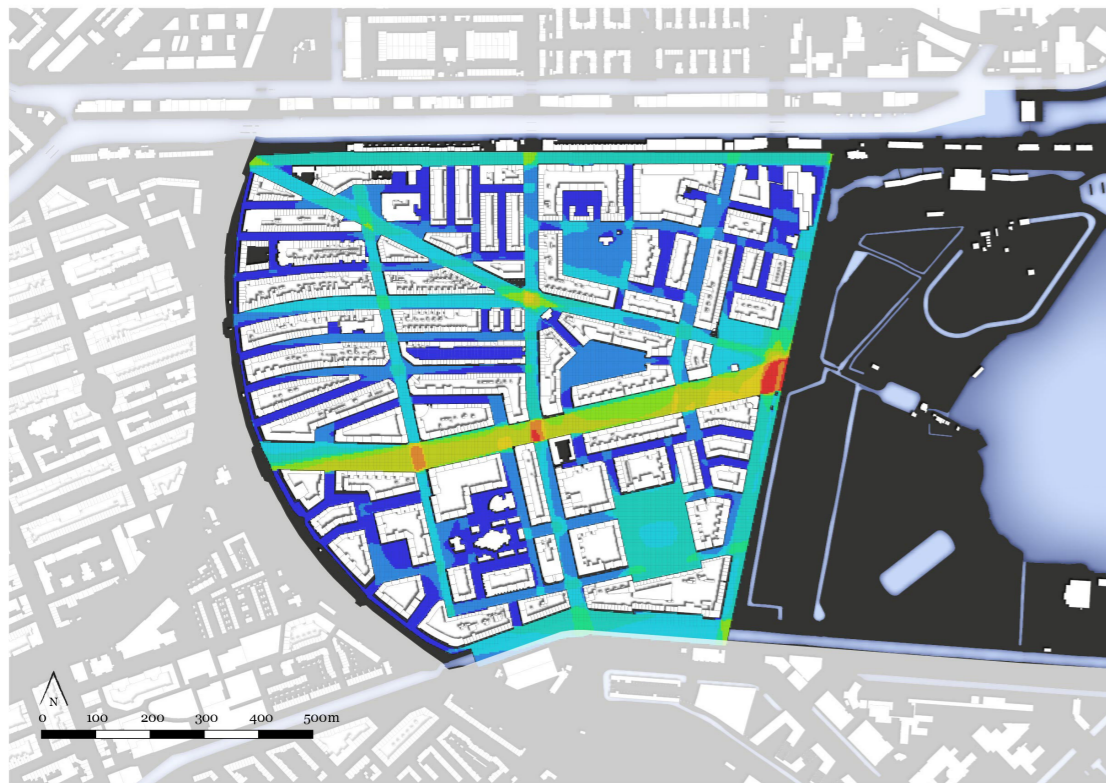


Figure 183: Space syntax: visibility of places, Indische Buurt (image by author, 2020)



Figure 184: SSpace syntax: Segment integration Analysis R-4000 (image by author, 2020)



Figure 185: Space syntax: Segment integration analysis R-400 (image by author, 2020)



Figure 186: Space syntax: Segment integration analysis R-2000 (image by author, 2020)



Figure 187: Space syntax: Axial analysis R-7 (image by author, 2020)



Figure 188: Space syntax: Axial analysis R-3 (image by author, 2020)



Figure 189: Space syntax: Axial analysis R-HH (image by author, 2020)

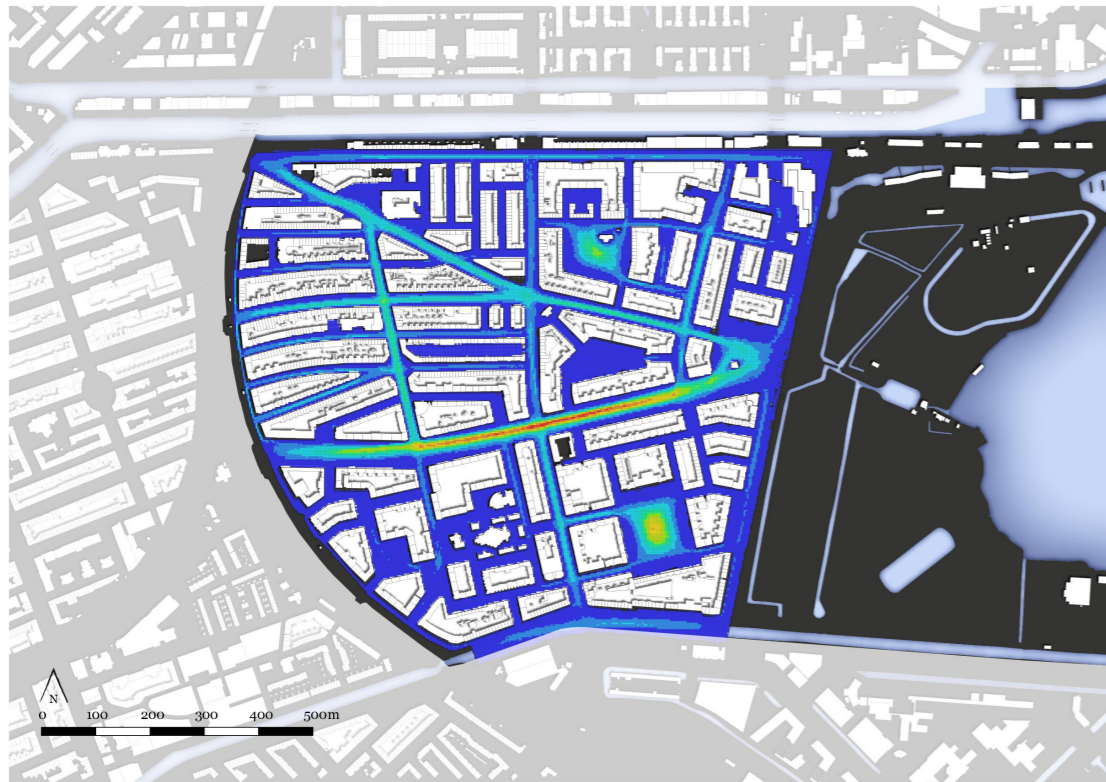


Figure 190: Space syntax: Agent analysis 50.000 agents (image by author, 2020)

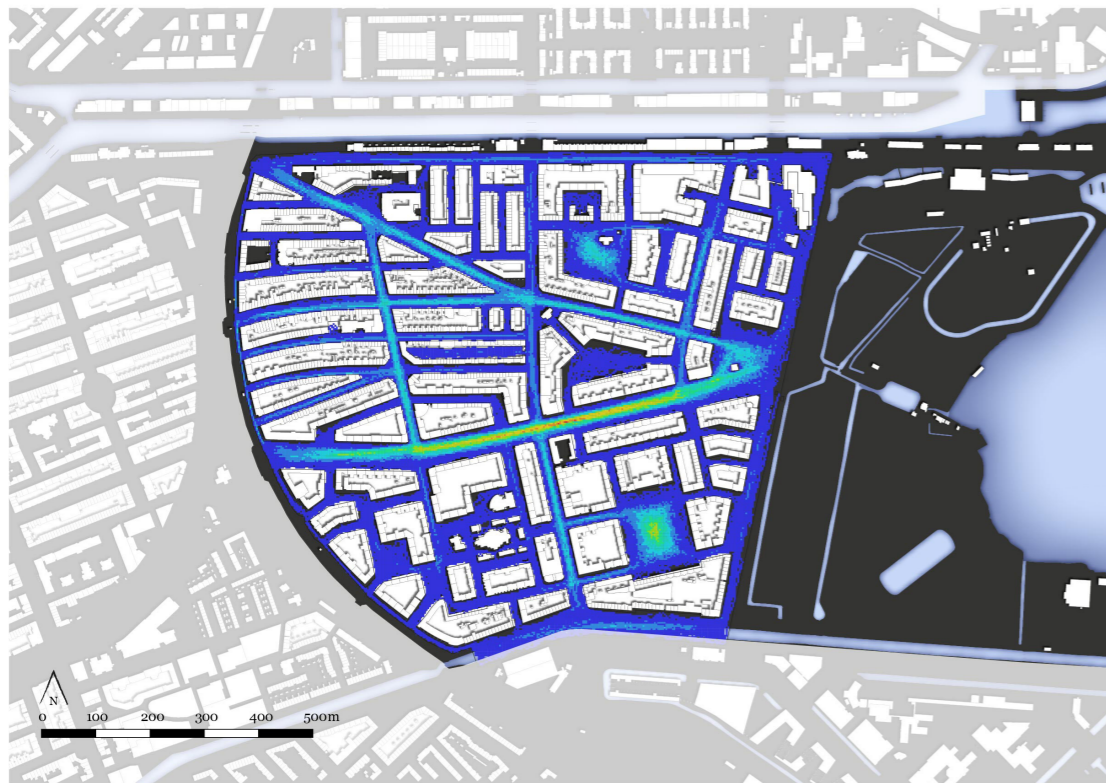


Figure 191: Space syntax: Agent analysis 5.000 agents (image by author, 2020)

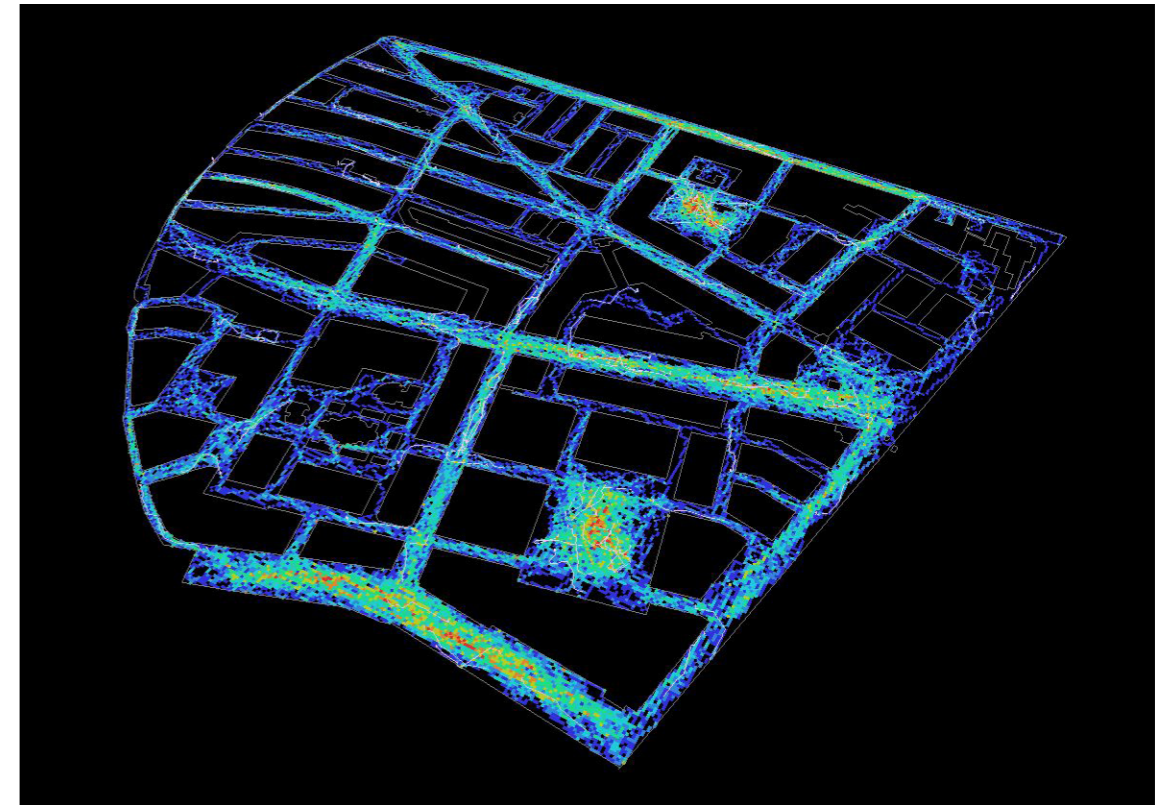


Figure 192: Space syntax: Agent behaviour analysis, 100 agents for 10 minutes (image by author, 2020)

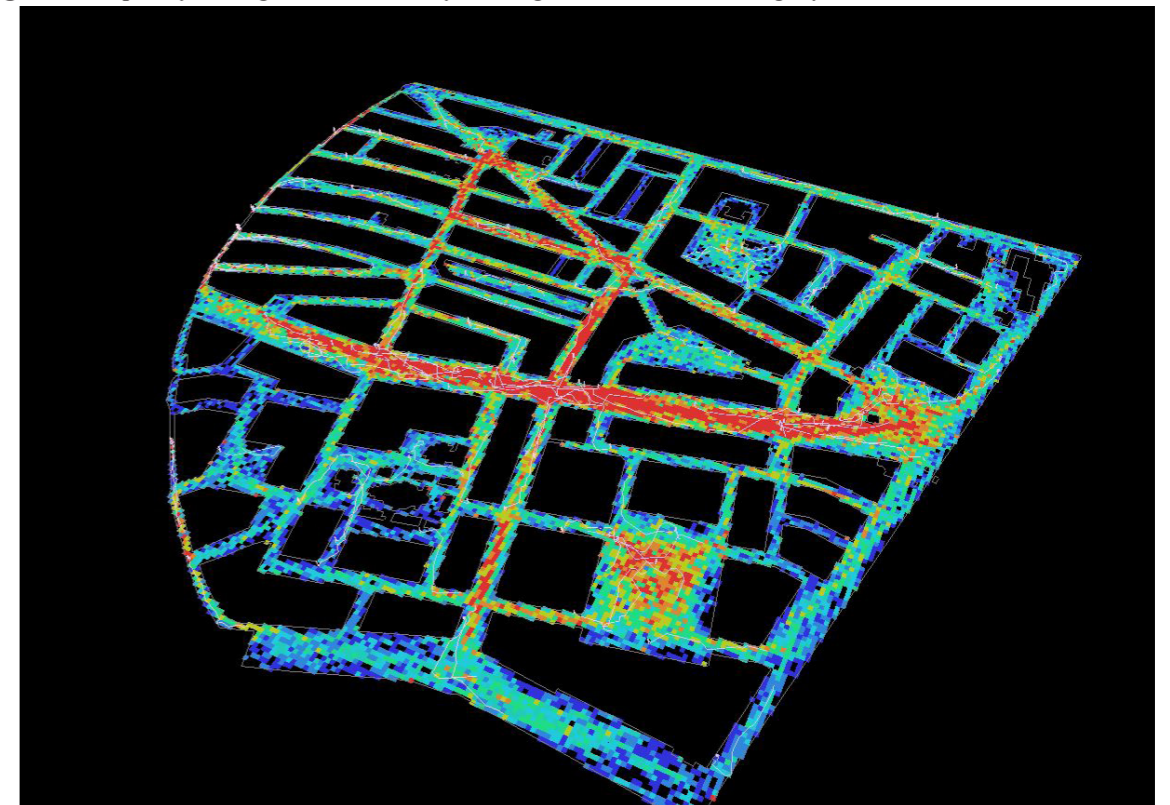


Figure 193: Space syntax: Agent behaviour analysis (image by author, 2020)



Figure 194: Population density per part (IOS Amsterdam, n.d., edit by author)



Figure 195: Percentage 12-26 year-olds per part (IOS Amsterdam, n.d., edit by author)



Figure 196: Percentage of residents with a non-western migration background (IOS Amsterdam, n.d., edit by author)



Figure 197: Percentage of residents with lower education per part (IOS Amsterdam, n.d., edit by author)

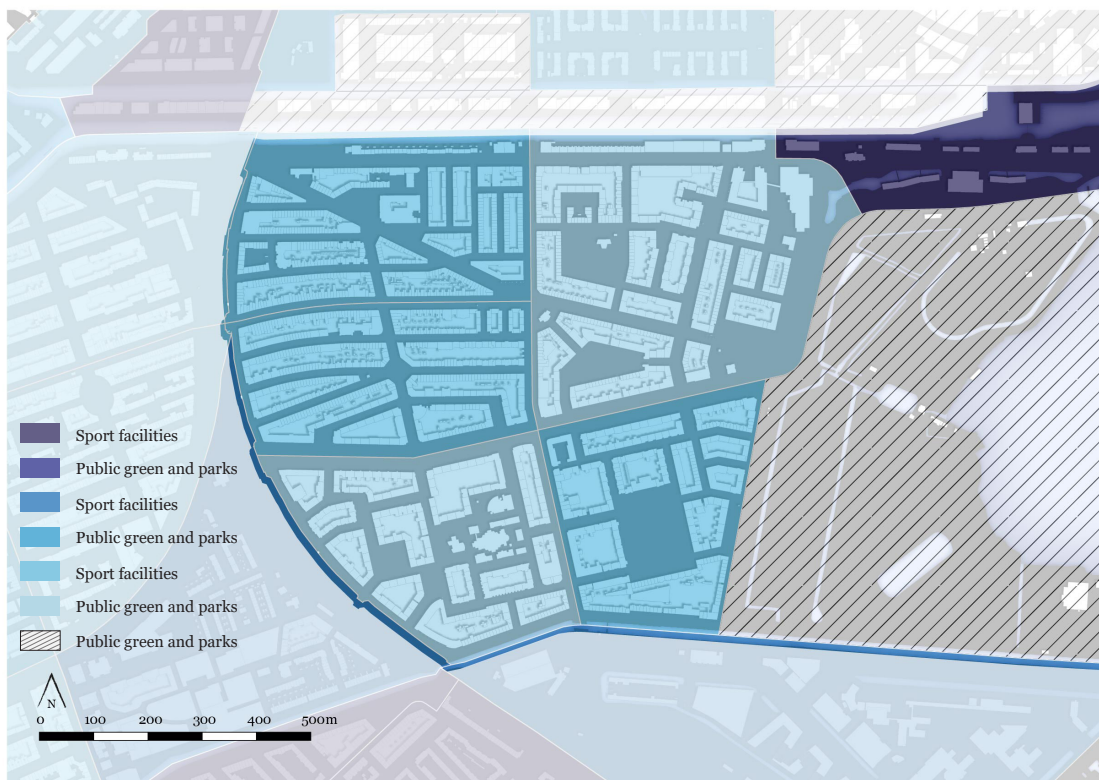


Figure 198: Average amount of spendable income per household per part (IOS Amsterdam, n.d., edit by author)