AN AMBITIOUS MOBILITY STRATEGY IN UTRECHT: CITY PART MERWEDE

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May 2022

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Date of submission	May 10, 2022		

Abstract

Introduction

Decades ago, there was the prediction that at a certain moment in time the current way of transportation would reach its saturation point. It appears that this is that moment in most of the western world. Therefore, cities are using new development areas to insert a new system a transportation. Areas that are driven on shared mobility, digitalization and mixed uses of functions and services. Because this is a rather unknown field of research, this thesis will have an explorative form, in which the Merwede plan area will be investigated in the form of a case study. To add value to this research Paris will be included as an illustrative research case. Paris also has an ambitious mobility strategy, which is even already implemented in one area: the Place de la Bastille region.

Theory and methods

This thesis focuses on the feasibility of such an ambitious mobility strategy in Merwede; what conditions should be met according to existing literature, and are these conditions implemented in the plan making process? Most of the data was collected through desk research into the zoning – and engineering plans of the research areas. On top of that this study had complementary in-depth interviews as well as an observation study for shared mobility means. This thesis will be based on a conceptual framework, where the 'fifteen minute city', 'smart mobility', 'reasons to own a car' and 'urban commons management' are the foundation of the study.

Results and conclusion

Indicators from all the conditions that derived from literature were found in the plan making process of Merwede. For the urban commons management section, this study took Paris as an illustrative case, because to only conduct this on the plan making process of Utrecht would yield not sufficient results. The data collection also found out that there are some possible obstacles in this strategy. The biggest two are the fact that Merwede claims to be inclusive to everyone, but in reality, these claims are quite exaggerated. The other obstacle is that the large implementation of MaaS in Merwede could lead to negative side-effects, which are already observable in Dutch cities where shared mobility is present already. They lead to deprivation of the public space, because of vehicles parked in random spots.

Preface

The last months I have been working hard on this thesis in order to graduate from my master's program in spatial planning. In this research I have done a lot of literature review study, conducted interviews and made observations. This all resulted in the document that is now lying in front of you.

First and foremost, I would like to thank my supervisor, Mister Frits Verhees, for his pleasant guidance, professional knowledge, patience and support, while doing this study.
Secondly, I would like to thank all the people that participated in the interviews and the people that helped with making a connection with these people. This study would not be the same without them.

Lastly, I would like to thank my friends and family for motivating me writing this thesis.

I hope you enjoy reading this thesis.

Best wishes,

Sjoerd Stolk
Nijmegen, May 10th, 2022

Contents

1. Introduction

The following chapter will introduce the proposed research problem and the relevance of it. First, this chapter will describe the proposed research problem statement after which the research aims, and the research questions will be formulated. Then, both the societal - and scientific relevance of this research will be discussed.

1.1. Dominance of the car over time

The way the people have their opinion with regards to the importance of the car has changed significantly over the past decades. A city that shows this change very clearly is Utrecht. Over fifty years ago, the legal counsel of the municipality of Utrecht decided that the 'Catharijnesingel' should be drained and transformed into a road for motorized vehicles, and thus the name changed to the 'Catharijnebaan'. The greater thought of this spatial transformation was that this road would be expanded into a ring road around the Utrecht city center (Feuchtinger, 1958). This meant that the still remaining singles around the city center would be sacrificed to construct it. From the beginning of the project on there was a lot of resistance to the Feuchtinger project. From citizens, but also from the National administration. Minister of culture, recreation and societal work, Marga Klompé, designated these waterways as national monument and prevented the disappearance of all of them. However, the Catharijnesingel still transformed into the Catharijnebaan. Still, there was a lot of resistance towards the disappearance of the water in the city and less than 50 years later, in 2002, a referendum among the citizens of Utrecht decided that the Catharijnebaan should be transformed back into the waterway it had been since 1122. In September 2020, the Utrecht single was completed again (CU2030, 2021). In 2020, in the same city that planned to sacrifice a big part of its history to become better accessible for motorized vehicles over 50 years ago, is planning to develop one of the first car-free city district in the Netherlands: Merwede. This will be one of the aiming points to develop an energy neutral city district. This city district will wield a parking norm of 0,3. This means that per ten houses, there will be space to park three vehicles. For an area that is not a city center, this is a historical low parking norm in the Netherlands. Besides this low parking norm, this project area of 24

hectares will be completely inaccessible for cars and all parking spaces will be in underground parking garages, out of sight (Van Kerkhoff Maatwerk in RO, 2019). To make this city district concept work, the Utrecht legal counsel focusses on four main strategies; public services within walking distance, development of a good infrastructure for active mobility, the presence of shared mobility means and connection to a high-quality network of public transport (Gemeente Utrecht, 2020). Altogether, this city district is an example of a modern, 21st century way of living. People that really value having their own car close to their house will probably not prefer to live in a district like Merwede. However, there is no certainty at all if this will withhold car owners from moving to Merwede. The house market in Utrecht is very contested at the moment, especially in terms of houses in the less expensive segment. This is exactly the dominant type of houses that will be built in this new district. And thus, car owners can move to Merwede and park their vehicle in an adjacent neighborhood. This was exactly some of the critique this project received from citizens of these adjacent neighborhoods during the design phase (Consultancy NL, 2020). Counselor Diepeveen of Utrecht stated in an interview with De Volkskrant (2020) that this negative side-effect will be minimalized by installing paid parking in the adjacent neighborhoods. Although this solution might obstruct this possible parking problem from happening, it is far from ideal for the residents of the adjacent neighborhoods. Everywhere in the country, people tend to be very opposed when it comes to paid parking. Even though, it is to prevent 'their' parking spaces from being taken by residents from other neighborhoods and besides, residents usually can receive a parking permit for a really small amount of money in these kinds of situations.

According to research by CROW (2017) this type of behavior arises from the human 'reptile' brain and it has two different psychological explanations. The first reason is the territorial behavior that people tend to show when it comes to their parking spaces. The second reason is that in the western world a personal vehicle is the symbol for freedom of movement. With that comes the personal free parking space that comes with it. When these forms of possession or freedom are getting compromised, the instinctive reaction of the 'reptile' brain is to protect them and thus, act opposed against measures as paid parking. Besides this solution seems to be not very popular among the inhabitants of those neighborhood, it also only addresses a result occurring from an underlying bigger problem; the free-rider problem.

1.2. The Free-rider problem

The free-rider problem is becoming more of an issue with quite some relevance, because more and more are municipalities choosing for a more organic approach in terms of area development. This way of area development became more popular in the Netherlands around the early 2010s, right after the credit crisis. Due to the crisis, the more tradition, integral, way of area development became impossible to carry out more often (Buitelaar et al., 2012). In contrast to the integral way of area development, where the municipality would have an active role in the process and would be responsible for most of the risks, the organic way of area development has a much more bottom-up process. In this way the municipality has much more of a facilitating role, which enables small-scale local initiatives from happening. An advantage of this kind of area development is the more gradual way of development. There is not one certain goal that is being chased, but over time developments will be invented and carry-out. This makes the process easier and cheaper for involved stakeholders. Because any form of intervention in area development, no matter what size, requires financial recourses, multiple stakeholders will cooperate. Together they will have more knowledge and a higher budget to make developments happen. This also leads to much more variance and more interesting urban environments. According to Jacobs (1961) this has a positive effect on the quality of living in – and the attractiveness of those environments. However, most of these collaborations are informal in nature and therefore they often do not have clear guidelines which the involved stakeholders have to obey to. Because of this informal nature nobody can be forced to collaborate as well. This can lead to a situation in which some stakeholders decide not to invest their time and money into the development, while others do. The free-rider problem occurs. Free riders benefit from the effort by not contributing but profit from the results that arose from the developments (Olson, 1965). This can lead to a situation that the people who did contribute to the development are fed up with the apathic behavior of the free-riders and are becoming less willing to contribute to later developments. Eventually this will turn organic area development into a failure.

1.3. The fifteen minute city and the one minute city

Where there are plans for an almost car-free city part in the Netherlands on the drawing board, Some Swedish cities also started with an experiment of taking back

parking spaces to improve the urban living. In the city of Gothenburg several parking spaces along the road were transformed into wooden units, with benches, picnic tables and racks for bicycles and e-scooters on it. The reason behind this spatial transformation is the one-minute city concept. The one-minute city is part of a bigger national project in Sweden called 'street moves', which aims to displace cars out of the city centers in Swedish cities. This should create cities that are more healthy, sustainable and vibrant by 2030 (Orange, 2021). The starting point of this experiment is that there is global recognition that the role of motorcars should be reduced in the future. A second motive is that in Sweden there is about 40.000 kilometers of already built streets, which is an addressable amount of space for possible redevelopment. For a country as the Netherlands, where space is very scarce, the Swedish approach is really interesting. A square of space can only be used once and when there is a road located, it means that you cannot use it for other purposes anymore (Van der Bend, 2021). However, for plans and experiments as in Utrecht and Gothenburg the main condition is that they should not come at the expense of the mobility of urban dwellers. For that reason, ArkDes and Vinnova, initiative takers of the Swedish experiment, took this project as an opportunity to do so (Peters, 2021).

The one-minute city is a concept derived from the 'fifteen minute city'. This concept was successfully integrated in some parts of Paris and will be integrated in the post-COVID strategy in the French capital (Moreno, 2021). The fifteen minute city is based on the idea that wherever in the city you live, all essential needs for a decent life in an urban area should always be within 15 minutes walking or cycling distance (Duany & Steuteville, 2021). The goal of the one minute city is, as the name of the project may suggest, that all essential needs should be within one minute walking or cycling distance in Swedish cities.

1.4.   Research problem statement

In the Dutch politics basically, all parties plead for the same goal: better accessibility of more places, and for more people. How to achieve this goal differs per party, but whoever may end up in the national administration, more people will be able to travel from A to B. Since the 1950s these developments are clearly visible in traveled

kilometers per person, per transport modes (figure 1).
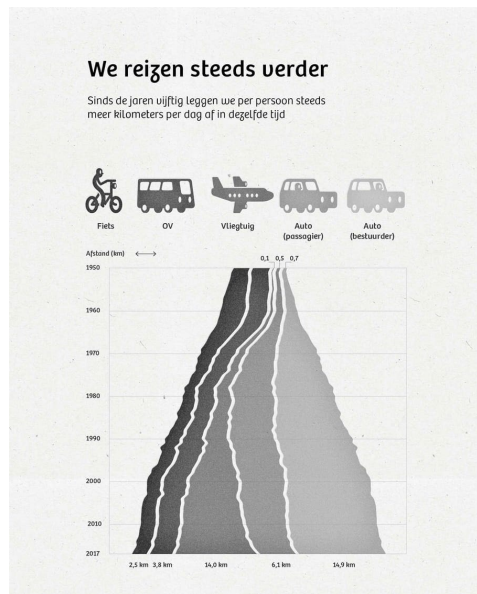
Figure 1: Travelled distance per person, per transport mode over time

However, the average travel time in the Netherlands has not reduced. The only difference, due to technology, people have been enabled to cross larger distances in the same time (Verkade, 2021). Because of the improving accessibility, companies decide to locate in a place further away from the city center, but also citizens dare to live further away from their work in a cheaper location. This leads to more congestion of infrastructures and thus the need for new investments. More so, mobility and accessibility are relative concepts. Theoretically, a place could always be more accessible, and the mobility of citizens could always be better. There are even numbers that suggest that the popularity of the car is on its way back, due to a possible saturation level of the system that revolves around the car (Renn, 2015). This might be the moment where there could be a transition from a system that is based on high levels of car ownership to a system where seeing mobility more as a service is the norm.

1.5. Research Aim and research questions

This research aims to gain a wider understanding about the possibility of a city part where low parking norms are making owning a car nearly impossible. As being described in the introduction, the planned development area Merwede in the Merwede-Kanaalzone in Utrecht is a city part as such. The proposed concept of places with such a low parking norm are rather new and unknown in the Netherlands.

Furthermore, this concept is in stark contrast with what is assumed to be the norm in the Western world: owning a car. Therefore, it is interesting to investigate what conditions should be met for citizens to live in a city part such as Merwede and thus not being able to own their own car. With the results of this research, it should become more clear what conditions are critical to be met to develop a city part as such. Therefore, this research should be a first step in the direction of making a strategy approach for areas like this in the future.

The main research question of this research will be:

What conditions should be met to make citizens want to live in a future part of a city in which they will not be able to have their own car?

To answer this question, first some sub questions need to be answered. These sub questions are designed based on the theoretical framework (chapter 2.). The answers on these sub questions should combine to the answer on the main research question:

1. What is the framework behind the fifteen minute city concept and how will this be applied?
2. To what extent could social dilemmas influence the success of a city part as such and what interventions can be taken to diminish them?
3. To what extent could information technologies help to improve the willingness of citizens?
4. What reasons do citizens have to decide to (not) own a car?

1.6. Relevance of the research

1.6.1. Societal relevance

The Netherlands really is a densely populated country. This translates into the tight housing market, and the amount of traffic congestion that goes to show every day. Especially in de 'Randstad'. Due to this congestion, the mobility of citizens in de 'Randstad' often gets compromised. An often applied strategy to battle deprived mobility is to widen existing highways or build new ones. Unfortunately, this strategy has some downsides. First, when a highway is widened, they will be less congested initially. However, when the accessibility of a place has been increased, means that it

will also attract people further away. So basically, more asphalt means more drivers (Kingham, 2020). Leading into the situation that these widened highways are congested again. Second, when there are plans to widen an existing highway, or construct a new one, often there is a lot of societal resistance, because these changes have a negative influence on the quality of living for people living near designated areas. These transitions also cause societal resistance, because they often come at the expense of, the already compromised, nature areas. The focus in the current strategy leans too much towards tackling results of existing problems, rather than finding ways to make these problems disappear. This is where the societal relevance of this research lies. If people indeed could become willing to live without their private car under the right circumstances, this will have a positive influence on the amount of congestion on highways in de 'Randstad'.

This research also finds its relevance in the environmental aspect. In the European Union 30% of the total carbon dioxide (CO2) emissions are being caused by transport. Within European strategies to decrease the total CO2 emissions, the European Union has the goal to decrease CO2 emissions caused by transport with 60% (European Parliament, 2019). If people indeed could become willing to live without their private car under the right circumstances, this will contribution to the European climate targets.

1.6.2. Academic relevance

Cities all around the world are dealing with an increasing use of private vehicles. This causes a higher demand for parking spaces and more traffic congestion. Because of this, smart mobility applications are a hot topic in scientific literature (Cáp & Certicky & Fiedler, 2017). Over the last couple of years, a lot of literature has been written about solutions to decrease pollution in cities. In literature, strategies towards sustainable mobility have 3 main focusses: 1. Technological implementations on mobility, such as mobility on demand. 2. Active mobility, meaning that the main form of mobility should shift more towards active forms, such as cycling and walking. 3. Get people to use the public transport more often (Demetriou & Papageorgiou, 2019). This research contributes to the literature about sustainable ways of mobility. However, most of this these papers are investigating these developments as rather non-binding alternatives for private vehicles. This research, however, focusses on a relatively new concept, where these alternatives are much more obligatory, since

there will be little to none parking facilities. Because at the moment these concepts are still in the designing phase and they are new in the Netherlands, there is no literature about this subject. This research will explore this field of sustainable mobility and open new doors for follow-up research this way. Additionally, geography and urban planning have a long tradition in location theories. When land gets developed, it is almost never on just a random location. To determine where and what kind of development should take place, location theories come into play. The Thünen, Weber, Alonso and Christaller models are generally seen as the foundation of location theories (Brittanica, 2014). One of the variables in these kinds of models is the limit that people have, that they are willing to travel. Both in time and in distance. During the 20th century, transportation became more car-centered and thus city planners took that in consideration. If the fifteen minute city turns out to be the new urban standard, this will have a big impact on location theories in the future.

2. Theory

This chapter will provide an overview and an explanation about the most relevant theories and approaches of this research. The relations that these theories have among each other will also be described and finally this chapter will provide a schematic overview in the conceptual framework. The smart mobility theory describes a possible shift from paying for the mode of traffic to paying for the traffic as a service. This offers a fair alternative for people who depend on their car. The theory about the fifteen minute city offers a framework which leads to a massive reduction in travel time and distance of citizens. Why some people have reasons to get rid of their car, and some people have reasons to buy one will also be addressed with theory about peak car and social status. The collective action problem theory explains what kind of social dilemmas could be a factor.

2.1. Literature review

2.1.1. Smart mobility

Smart mobility has become a hot topic over the last few years. The steep growth of urban populations all across the world combined with high standards on quality of life has caused the need for improvements in the infrastructure and other subsystems within the city (Talari et al., 2017). This increasing demand from citizens has led and

is leading to increasing congestion and more pollutions in cities (Docherty et al., 2018; Melis et al., 2017). This critical problem could potentially be transformed to infrastructural improvements with the help of technology (Longo et al., 2019). Maldonado Silveira Alonso Munhoz et al. (2020) stresses that intelligent mobility solutions can contribute to more transport options, more adaptable and affordable travel, while at the meantime reducing the dependence on private vehicles. Considering that transport causes 20% of energy consumption in cities, investing in smart mobility solutions is a potential game-changers when it comes to pollution reduction and transforming to a climate neutral city (Chen et al., 2017). The problem with container concept such as smart mobility is that it is a very messy and wide concept. Implementation of smart mobility is not the same for all cities. It is important to investigate the possibilities and the major issues in the concerning city to implement relevant solutions that make mobility 'smarter' (Badii et al., 2017). Because smart mobility is a rather vague and wide concept, there is no consensus among researchers about the exact definition of it. Table 1 shows the definition that several researchers have for smart mobility, according to Maldonado Silveira Alonso Munhoz et al. (2020).

Definitions of Smart Mobility	Authors
It is the area of a smart city representing broadly defined mobility, the components that comprise the traditional understanding of the transport of people and goods, and the dissemination of information by digital means.	Orlowski & Romanowska, 2019
Intelligent mobility is a comprehensive concept that makes the transport network's sustainability more achievable due to the search for improvements in transport services, balancing the application of technology with social, economic, and environmental aspects.	Zawieska & Pieriegud, 2018 ; Badii et al., 2017
It is the ability to access transportation services from integrated platforms that aggregate the community and present intense processing of data from users to match the demand forecast. The infrastructure must be smart with connected and sustainable vehicles.	Docherty et al., 2018
It is the integration of sustainable, intelligent, and cooperative vehicle technologies with a cloud server and vehicle networks based on big data	Kim et al., 2015
A sustainable and safe environment that meets the mobility needs of citizens and integration with intelligent systems to provide traffic information	Salvia et al., 2016
Smart mobility is related to transport and use of communication and information technologies to promote accessibility and increase the quality of life.	Stolfi & Alba, 2014
It is the application of solutions that combine behavioral economics, e-participation, and crowdsourcing to obtain better energy consumption when moving around the city	Maier, 2012
It is the adoption of digital technologies that make mobility services in a city or territory more accessible and easier for citizens.	Dell'Era et al., 2018

Table 1: Definitions of Smart Mobility (Maldonado Silveira Alonso Munhoz et al., 2020)

"From these concepts, we can understand smart mobility as being mobility that uses digital technologies to integrate systems and means of transport that interacts with

users, aiming at a sustainable, safe, accessible environment that meets citizens'
mobility needs" (Maldonado Silveira Alonso Munhoz et al., 2020). Over the years
technology has improved mobility in different ways. It is not that long ago that on
board navigation did not exist and people had to print turn-by-turn directions on their
home computer before going on a trip (Bayen, n.d.). Now there are many different
ways how technology is and could improve mobility, like self-driving cars, electric
vehicles, live mass data (e.g., google maps), and some forms of shared mobility
(European Commission, 2017). Besides this technological evolution, socio-
demographic and behavioral change are facilitating a situation in which citizens are
willing to for mobility as a service (MaaS), rather than paying for transport modes,
such as a private vehicle. This relatively new concept can really offer a solution for
those that cannot or do not want to own a car, but do not want to compromise their
flexibility. The idea of Mobility as a service is that every user can plan their journey by
entering their point of departure, their point of arrival and personal preferences, such
as most environmentally friendly option or fastest option. In 2019, 7 national pilots
started in The Netherlands. The locations are either in densely populated areas in 'de
Randstad' and in more sparsely populated areas and they last 2 to 3 years (I&W,
2019). Because a system of open data is needed for MaaS to succeed, it is important
that the national government takes an active intermediary role in the development.
This is important for the standardization of the platform and for the safety and privacy
of the users of the platform.

2.1.2. The fifteen minute city

It has been mentioned before in chapter one, but the idea of creating a 'fifteen minute
city' has also been embrace more and more by cities globally. The idea of a fifteen
minute city is that all residents of a city are residing within fifteen minutes walking or
cycling of the functions of a daily urban life. The primary strategy that cities carry out
is to claim back public space which is used as car lanes and replace them with
pedestrian and/or cycling paths. The functions that are being viewed as essential for
a decent urban life are: living, working, commerce, healthcare, education and
entertainment (Moreno et al., 2020). Figure 2 shows a framework for a proposed
'fifteen minute city'. It proposes four dimensions that should be integrated in a city to
become a fifteen minute city besides the major restructuring of the infrastructure.
These dimensions are Density, Proximity, Diversity and Digitalization. These

dimensions have been identified as a result of observing challenges that cities faced worldwide during the peak of the first wave of COVID-19. During this massive battle against the virus, it became clear that in most cities basic essential needs are very sparsely distributed (Allam, 2020). Moreno et al. (2020) claims that if the four dimensions that are listed above would be prioritized in cities, numerous issues during the first wave could have been avoided. For instance, if all citizens of a city would have their basic medical needs within fifteen minutes walking or cycling, the general level of health in that city would be higher. The next sections will elaborate the four dimensions further and explain how they should be applied.

Figure 2: fifteen minute city framework (Moreno et al., 2020)

Density

Density is one of the crucial dimensions of the fifteen minute city and it is linked directly to travel and diversity (Ewing et al., 2010). In traditional planning designs density is often seen as mega high-density buildings. In the view of the fifteen minute city however, density is regarded in the sense of people per square kilometer. In earlier planning designs, the planners' emphasis was on creating very dense city parts in high-rise buildings. This caused new challenges, because this overpopulation led to overconsumption of urban recourses and a large reliance on fossil fuel energy. In the model for the fifteen minute city the goal is to optimize the density in urban areas (Moreno et al., 2020). If this optimal level of density has been achieved, it will be plausible to arrange the public space in such a manner that citizens have access

to their needs without needing a motorized vehicle (Salingaros, 2006). To reach this optimal density it is crucial to make places multifunctional.

Proximity

Within the fifteen minute city proximity is an essential dimension. The idea is that every citizen will be able to get access to all six essential needs, which are described above, within a fifteen minute cycling radius. The dimension of proximity is essential to eliminate the time that citizens lose while commuting. It is also reducing the environmental and economic negativities that this commuting causes (Marquet et al. 2015). Improving the proximity in cities is also in line with the vision of multiple urban theorists like Jacobs (1965), Alexander (2002), Duany (2000) and Salingaros (2000). They advocate that this high proximity of all essential urban needs also helps to improve the social interactions that citizens have and that the city and citizens will benefit from it. And in the end, a high proximity enables citizens to travel from residential areas to work, commercial areas, health facilities and entertainment places in a limited time span, which drives back the collective need for motorized vehicles (Moreno et al., 2020).

Diversity

Diversity in the context of the fifteen minute city means both diversity in mixed uses in a neighborhood, as diversity in cultures and people. For cities having mixed-use areas is vital in the process of being economically vibrant fabrics (DeLisle & Grissom, 2013; Sinxadi et al., 2020). It also establishes a situation of inclusivity and possible sustainable practices. In the model of the fifteen minute city it is paramount to develop mixed-use areas in order to ensure optimal density and high proximity. The other way around, optimal density and high proximity create a situation of mixed-use areas (Moreno et al., 2020). The application of this form of diversity in the city allows the city administration to improve their services to locals and thus improve the livability in the city (Brookfield, 2017). This is especially important if there is also diversity in cultures and people. Promoting social cohesion among citizens with different cultural backgrounds will improve the level of social capital (Nabil, 2015). Moreno (2020) adds that to optimize the advantages of diversity in an urban setting, it should be deployed at multiple scales. Obviously for the fifteen minute city model it is critical that the 15 minutes radius is prioritized, but expanding this dimension

beyond the fifteen minutes perimeter, and thus creating different levels would be even better.

Digitalization

The fourth and final dimension in the fifteen minutes city is digitalization. If it was not clear already, it became clear how much influence digitalization has had on the amount of daily travel. During the COVID-19 pandemic digitalization made it possible to work at home for plenty of urban dwellers. Digitalization is a dimension that can be deployed in various ways. After having worked from home for over a year now, it is a legit possibility that in the future people will still be able to attend conferences and meetings in an online manner. Creating neighborhoods with the best possible internet accessibility will reduce the average commuting time in neighborhoods (Moreno et al., 2020). The digitalization dimension has a close connection to smart mobility, since both the fifteen minute city and smart mobility tend to use digital technology to improve the safety, sustainability and livability of an area. Not only is digitalization a dimension on its own, but it also adds to all other three dimensions of the fifteen minute city. If digital solutions would be deployed widely it would make cities much more resilient, since the needs and consumption in the city can be monitored better (Neves & Brand, 2019).

2.1.3. Peak car theory

Already in the 1950s there was the idea that at some point in the future car use would reach a saturation level and the growth of the car industry would come to a stop. Since the 1970s, traffic forecasts revealed that this saturation level would probably occur early in the 21st century (Tulpule, 1973; Metz, 2010; Renn, 2015). As a result of international studies between 1993 and 2011, it became clear that in a couple of Western, developed economies the growth of car traffic had stagnated (Schipper et al., 1993; Schipper, 2011). The peak car hypothesis was proposed for the first time by Local Transport Today (2006). They reported that the amount of traffic entering British cities and towns had dropped significantly over the previous ten years. Follow-up research appeared in the years after to investigate if this trend was also noticeable in other Western countries. Traffic data collected in The United States, Canada, Sweden, France, Germany and Japan revealed that the peak car hypothesis was not limited to the United Kingdom (Millard-Ball & Schipper, 2010; Newman & Kenworthy, 2011).

It is not clear what reason has directly caused the decline in car usage worldwide. The most widely recognized reason is that the travel time budget had been growing since cars were invented; cars become more and more affordable, they became faster, the infrastructure for cars had been upgraded times after times. This process continued until late in the 20th century and the travel time budget became saturated. This eventually led to less interest in owning a private vehicle and explore other options for travelers (Zahavi, 1974; Mogridge, 1983; Metz, 2010). Furthermore, not only the possibilities of transport by personal vehicles became saturated, but they also became more and more limited, due to congestion as a result of too many cars registered.

2.1.4. Social status

Citizens and households have various reasons why they should own a car. This can be distinguished in three categories (Belgiawan et al., 2014): Economic reasons, Spatial reasons and Social reasons. Generally, GDP per capita is a prime indicator when it comes to ownership levels in a country. Spatial reasons are also recognized determinants when it comes to car ownership. Households in urban environments are less likely to own a car, while in rural areas some households are even owning two or three vehicles. Also, places which are very accessible via public transport have a lower level of car ownership. Social and psychological factors also influence households in whether to buy a car or not. Belgiawan et al. (2014) claims that convenience, prestige and social orderliness are significant psychological determinants. A newer psychological determinant is the concern about the environmental impact that cars have. This social psychological aspect is causing a division between those who really want to seek for alternative transport modes for the sake of the environment, and those who feel the pressure to own a car because of a certain status quo that has been established over time (Pojani; Pojani; Van Acker, 2018).

2.1.5. Collective action problem

The first chapter briefly explained why free-riders could affect organic forms of spatial planning in a negative way. Another social dilemma that often interferes with collective action is the tragedy of the commons (Fisher et al., 2005). Both these dilemmas are very different from each other, but they are derived from the same

motive. In the free rider problem actors decide to not join in on group participation, where in the tragedy of the commons actors decide to consume a public good without contemplation of how their usage affects the state of that good. Both these dilemmas revolve around actors who want to benefit from certain situations, but do not feel the responsibility to take their share in the costs.

The tragedy of the commons often happens with large common pool resources. When such a resource is large enough, actors tend to not feel the negative side-effect of their usage, and thus they have no incentive to limit their consumption. The pool resource however will be overused and the negative effects of it will come down to the whole environment (Ostrom et al., 1994; Ostrom, 1999). Ostrom and others had conducted intense research towards governance of these commons. This showed that commons such as watersheds, fisheries and woodlands could be managed effectively without government control under the following conditions:

1. *"The resource has clearly defined boundaries*
2. *Use and provision of the resource is adapted to local conditions*
3. *Rules and decisions are made through collective-choice arrangements that allow most resource users to participate*
4. *Rules are enforced through effective monitoring by monitors accountable to the users*
5. *Violating of community rules are punished with graduated sanctions*
6. *Conflicts and issues are resolved through low cost and accessible conflict resolution mechanisms*
7. *The right of resource users to self-govern is recognized by higher level authorities*
8. *In the case of larger common-pool resources: rules are organized and enforced through multiple layers of nested enterprises"* (Ostrom, 1999; Foster & Iaione, 2017).

However, cities and urban commons are different from the natural resources and commons where Ostrom did research to. First, cities are not exhaustible or non-renewable, like natural resources are. However, infrastructures in the city can become rather fragile over time due to over usage.

Second, urban commons are rather 'constructed' commons. They are the end product of social processes and institutional designs. To construct a commons it is

important to bring a wide set of actors together who can work together to design and produce shared, commons goods and services at different urban scales. Such as on district/neighborhood/block/street level.

Third, as opposed to the natural resources that Ostrom researched, cities are very heavily political regulated areas. Therefore, every attempt to bring commons into the city has to confront the law and politics of the city. To construct different kinds of urban commons, experimentation on the legal spectrum is critical.

Fourth, cities can be extremely complex social systems, which does not only offer a lot of different kind of resources, but also many types of people and cultures. This means that governance of urban commons is not just about communities governing themselves, like it is the case with natural resources (Foster & Iaione, 2017; Iaione, 2016). Based on these differences Iaione (2016) came up with five new key design principles that were much more adapted to the complicated urban environment in his study about the 'co-city'. These key principles are:

1. "**Collective governance** refers to the presence of a multi-stakeholder governance scheme whereby the community emerges as an actor and partners up with at least three different urban actors

2. **Enabling State** expresses the role of the State in facilitating the creation of urban commons and supporting collective action arrangements for the management and sustainability of the urban commons.

3. **Social and Economic Pooling** refers to the presence of different forms of resource pooling and cooperation between five possible actors in the urban environment

4. **Experimentalism** is the presence of an adaptive and iterative approach to designing the legal processes and institutions that govern urban commons.

5. **Tech Justice** highlights access to technology, the presence of digital infrastructure, and open data protocols as an enabling driver of collaboration and the creation of urban commons" (Iaione, 2016).

These design principles verbalize the factors that are required to embody the city as a shared space in which there are urban commons which can be used in a sustainable manner.

2.2.   Conceptual model
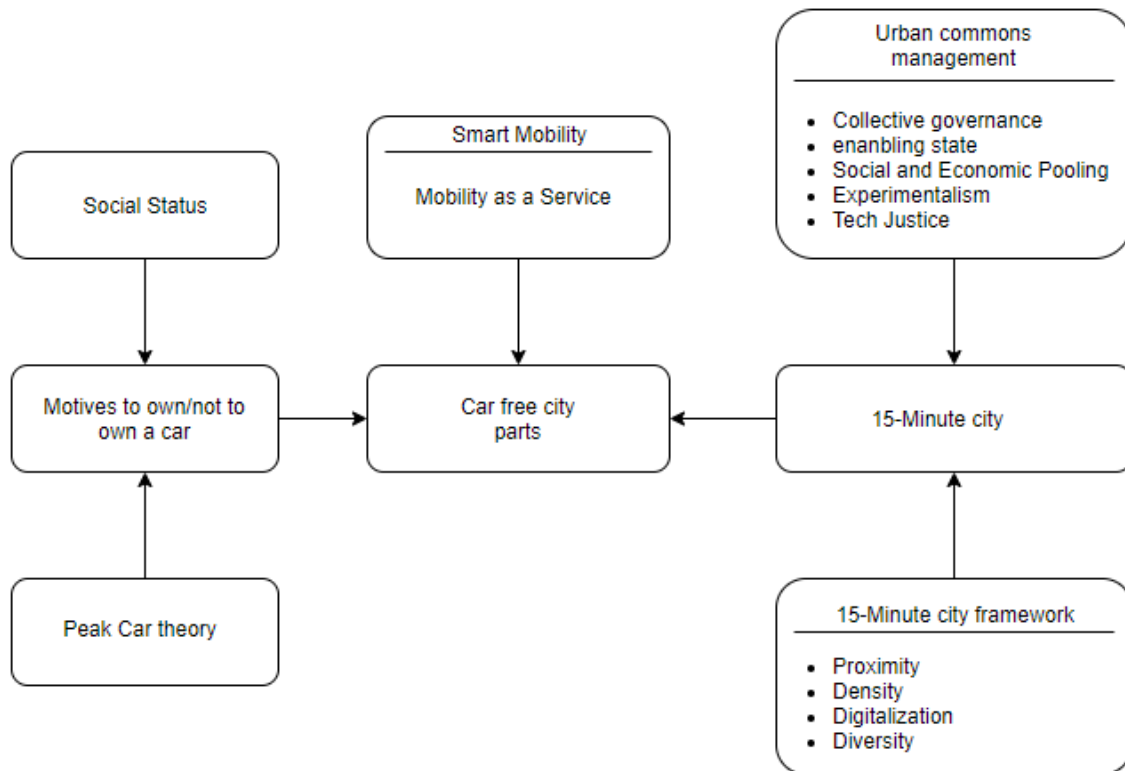
Figure 3: Conceptual model

The conceptual model shows how the possibility to have a car free city part in a city as Utrecht is influenced by three different variables. The dependent 'Motives to own/not to own a car' and 'Fifteen Minute city' variables and the independent 'Smart mobility' variable. The 'Fifteen Minute city' variable is being influenced by the independent variables 'Urban commons management' and the 'Fifteen Minute city framework'. 'Motives to own/not to own a car' is being influence by the independent variables 'Social status' and the independent variable 'Peak car theory'.

3. Methodology

The following chapter will provide an overview of the methodological choices that are made in this research. This is a very important step in the process, because this will decide the further execution of the research. This chapter contains the research paradigm that is being used in this research. That will be defined by describing the ontology and epistemology. After the research paradigm this chapter will elaborate on the research strategy and the research design of this research. This leads to a schematic representation of this research, after which the operationalization process and the methods for data collection will be revealed. This chapter concludes with a description of the internal and external validity and reliability.

3.1. Research paradigm

Kuhn (1970) describes a research paradigm as 'the set of common beliefs and agreements shared between scientist about how problems should be understood and addressed'. Paradigms are the way in which someone sees the world, what they see as the truth, and how the truth can be discovered. The research paradigm that someone has can be described by the way scientists respond to ontological, epistemological and methodological questions (Guba & Lincoln, 1990). The general consensus is that there are four major research paradigms: positivism, post-positivism, critical theory and constructivism. Therefore, it is important to determine what research paradigm this research will use. This will be established by defining the ontology and the epistemology. These definitions will eventually lead to a fitting research methodology.

Elements	Positivism	Post-positivism	Critical theory et al.	Constructivism
Ontology	Naïve realism – "real" reality which is apprehendable	**Critical realism** - reality is 'real' but only imperfectly and probabilistically apprehendable	Historical realism – 'virtual' reality shaped by social, economic, ethnic, political, cultural, and gender values, crystallised over time	Relativism - local and 'specific' constructed realities
Epistemology	Dualist/objectivist: findings true	Modified dualist / objectivist; critical tradition/community; findings probably true	Transactional / subjectivist; value mediated findings	Transactional / subjectivist / created findings
Methodology	Experimental / manipulative; verification of hypotheses; chiefly quantitative methods	Modified experimental / manipulative; critical multiplism; may include qualitative methods	Dialogic/dialectical	Hermeneutical / dialectical

Source: Adapted from Lincoln and Guba, 2000, p. 165

Table 2: Research paradigm and elements.

3.1.1. Ontology

Urban areas are complicated areas where you cannot simply assume that there is only one reality. The living environment in urban areas is a collection of multiple societies living in the same area. Therefore, this research assumes that there are multiple realities (Silva et al., 2015). According to Guba and Lincoln (1994) this ontology of multiple realities fits in the constructivist research paradigm, since this paradigm has a relativist ontology. Realities are apprehensible in a form of multiple, elusive mental constructions, based on social and experimental aspects, local and specific in nature, and their form and content relies on constructions held by individuals and group. These realities can conflict with each other, especially in a complex urban setting. After time these constructed realities can also change as the constructors of them become more educated and informed.

3.1.2. Epistemology

According to Guba and Lincoln (1994), the constructivist paradigm has the assumption that knowledge is subjective and transactional, and it is based on created findings. Hatch (2002, p.15) states it as: 'truth is what we agree it is'. The findings are created while the investigation proceeds and the investigator and the object of investigation are interactively linked to each other. This means that the researcher has to be engaged in the process and cannot take in a more distant stance. Due to this, the usual distinction between ontology and epistemology has somewhat disappeared (Guba & Lincoln, 1994; Schwandt, 1994).

3.1.3. Methodology

Guba and Lincoln (1994) claim that the methodology of a constructivist research should be hermeneutical and dialectical. The variable and personal dependent nature of the social structures means that individual or group constructions can be explained through interaction between and among the investigator and the respondents. These different constructions are interpreted by making use of conventional hermeneutic methods and techniques, and via a dialectal exchange they will be compared and contrasted. The main goal of the methodology within the constructivist paradigm is to distill a consensus construction informed and sophisticated by the existing constructions (Schwandt, 1994).

3.2.   Research strategy

One of the most vital decisions at this point in the research is to choose the right research approach, better known as the research strategy. The research strategy is an overview of several coherent decisions about how to conduct the further research. The focal points of the execution are how relevant data gets obtained and how this obtained data will be processed in order to gain answers to the research questions (Dinnen, 2014). Verschuren and Doorewaard (2007) state that the choice for a certain strategy consists of some key decisions, from which new key decisions will arise. The first decision that must be made is whether this research should be providing a wide overview about the general subject, or if it should be a more in-depth investigation. In short, the first decision is between a width or a depth research. This is a 'hard choice' in the research strategy, because these two ways of investigating are fundamentally diverse. The second decision to be made is whether the research will be quantitative or qualitative. The third and final decision to be made is whether this research is based on first-hand data, such as conducted interviews and observation, or if it will be based on already existing theories and concept and thus be more of a desk-research. These three key decisions correlate with a lot of other decisions. This decides the amount and the way of choosing the research sample, techniques how to conduct data from the sample and (like said before) how this data will be processed into answering the research question (Verschuren & Doorewaard, 2007).

First, this research will have its main focus on the planned Merwede city part within the development area Merwede-Kanaalzone in Utrecht. Therefore, this research will have an in-depth nature. The decision to conduct an in-depth analysis is based on the fact that this leads to a detailed, complex and a strong substantiation about the underlying theories of this planned city part. The downside of this choice is that this research will use a relatively small sample size and therefore generalization of the results will not be possible (Verschuren & Doorewaard, 2007).

Second, this research will make use of qualitative research techniques. This will be conducted in the way of interviews. This means that the approach of this research will be interpretive, reported in a verbal and contemplative way. This because the aim of this research is to gain a better understanding about the underlying theories and

concept, rather than creating a lot of tables, graphs and other generalizable stats (Verschuren & Doorewaard, 2007).

Third, this research will both be conducted in an empirical way and via desk study. This means that the research aim needs to be reached through a desk study, by studying documents like the zoning plan and engineering plans. Then, this data should be confirmed through data obtained out of first-hand information, such as interviews (Verschuren & Doorewaard, 2007). However, the conceptual framework, on which the research is based, is merely based on already existing theories through desk-research.

3.3.   Research methods

As also being mentioned in chapter one, to answer the research question: '*What conditions should be met to make citizens want to live in a future part of a city in which they will not be able to have their own car?*', these sub-questions should be answered first:

1. What is the framework behind the fifteen minute city concept and how will this be applied?
2. To what extent could social dilemmas influence the success of a city part as such andwhat interventions can be taken to diminish them?
3. To what extent could information technologies help to improve the willingness of citizens?
4. What reasons do citizens have to decide to (not) own a car?

In the theory chapter, it became clear that the framework behind the fifteen minute city concept revolves around the four dimensions: Density, proximity, diversity and digitalization. These dimensions will be the manner in what the fifteen minute city concept will rely in this research. The second chapter also revealed that to limit social dilemmas, such as collective action issues, or free-rider behavior, it is important that the five design principles for managing the urban commons will be complied. These principles are: Collective governance, enabling state, social and economic pooling, experimentalism and tech justice. The literature study also revealed that the possibility for a car free city part and the willingness of citizens to contribute to such a society could also be influenced using technology. The literature found out that the application of the Mobility as a Service (MaaS) could be very interesting in the future.

The fourth sub-question about reasons whether to own a car led to two theories that could influence it: the theory of peak car and social status that owning a car has. To find if these variables also influence the planned car free city part in Utrecht this will be investigated by conducting multiple qualitative, in-depth interviews. As the methodology theory about case-studies prescribes, the sample size will be not too big, because the main focus is qualitative and not quantitative. (Verschuren & Doorewaard, 2007). To increase the value of this research, it will not only be limited to the Utrecht case, but it will also focus on another city where there already are car free city parts. Therefore, the research methods that fit in with a multiple-case design will be applied in this research. Within the cases three kinds of data will be collected.

1: Conduct desk research as the first way of investigating the conceptual relations that derived from the theoretical framework.

2: Conduct complementary interviews to investigate the more abstract indicators that were found in the operationalization chapter (3.4.), that are not directly obtainable from the engineering plans.

3: Conduct an observational study. Especially to experience the usage of shared mobility means in a Dutch city, this research includes an observational study in Rotterdam. The choice to conduct this observation study in Rotterdam rather than in Utrecht is based on the fact that shared mobility has already been implemented more in Rotterdam than in Utrecht.

Using multiple ways of data collection, desk research, interviews and an observation, adds to the validity of this study.

3.3.1. Cases

Utrecht

The first and main case that will be investigated is Merwede. The largest sub-area within the development area Merwede-Kanaalzone in Utrecht. The choice of this specific area is based on the fact that the plans for this area are very groundbreaking. Merwede will become the Netherlands' first area of this size that is sustainable, car free, green and inclusive for everyone. The Utrecht municipality describes it as an example of 'healthy urban living' (DUIC, 2020). The city engineering plans deliberately calls the project a 'stadswijk' (=city part), rather than a 'woonwijk' (=neighborhood) because all basic facilities that are needed for a decent urban living, according to 2.1.2, are present in this area (Stedenbouwkundig Plan

Merwede, 2020). The engineering plan Merwede-Kanaalzone contains the areas Deelgebied 4, deelgebied 5/Merwede and deelgebied 6 (figure 4). According to the engineering plan (2020), 10.000 new houses will be built in this area of 65 hectares, from which most (6000) will be built in Deelgebied 5/Merwede. All with a parking norm that is no higher than 0,3. All this makes Deelgebied 5/Merwede extra interesting, because with 6.000 addresses divided over 17 high-rise apartment blocks, this will become one of the most densely populated places in the Netherlands (DUIC, 2020).
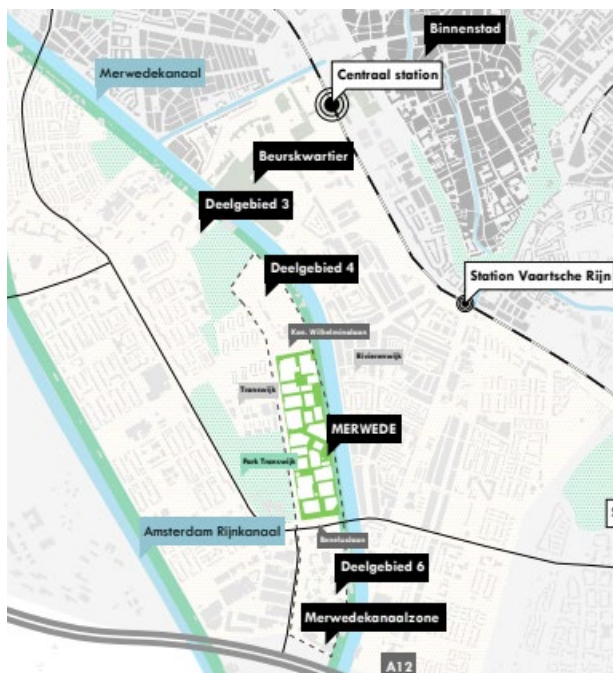
Figure 4: Plan area (Stedenbouwkundig plan Merwede, 2020)

Paris

The second and complementary case in this research will be Paris. The area around Place the la Bastille especially (figure 5). The reason is that in this part of Paris the idea of the fifteen minute city has been applied. This process has started in 2018. Transforming a historic city like Paris into a fifteen minute city is not as challenging as transforming a more modern city. A historic city has been created in a pre-car period as a matter of fact. However, according to Rolland (in O'Sullivan & Bliss, 2020) also a historic city as Paris faces some roadblocks on its way to become a fifteen minute city. Especially in the more recently built working class districts on the eastern edge of the city and in most quarters around the 'Boulevard Périphérique beltway'. These districts are known for their predominantly present social housing towers and places

for a decent urban living are scarce around there. Closer to the heart of the city, areas also deal with challenges if they want to become fifteen minute city districts. According to Rolland (in O'Sullivan & Bliss, 2020), these areas are characterized by 'mono-activity'; one specific activity dominating a whole street or block. The area around Place de la Bastille has been transformed into a fifteen minute city by turning some of these 'mono-activity' places into more 'hybrid-activity' places. For instance, in September the school ground of 10 Parisian schools in this area transformed into 'Oasis yards': green spaces that serve as school grounds during school hours and serve as public parks outside school hours (O'Sullivan & Bliss, 2020). The reason why Paris is a complementary case in this research is that Merwede does not exist yet. Therefore, results of research on the Place de la Bastille case could really give useful recommendations for Merwede in the future. The main research topic in this case will be managing the urban commons.
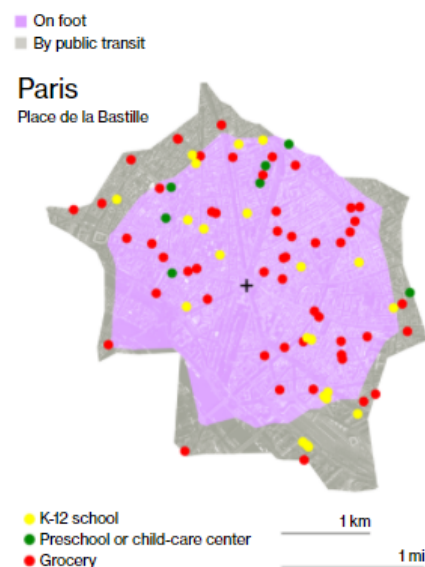

Figure 5: Fifteen Minutes in Three Cities: Paris (O'Sullivan & Bliss, 2020)

3.4.   Operationalization

This part of the methodology clarifies some abstract concepts that were revealed in the theoretical part of this research. This is an important part in the process, because this turns these abstract concepts into observable variables (Benders, 2018).

3.4.1. Smart mobility

As being described in 2.1.1., there is not one clear cut definition for smart mobility because it is a rather new concept. The central point of this concept has been best described by Maldonado Silveira Alonso Munhoz et al. (2020): *"From these concepts, we can understand smart mobility as being mobility that uses digital technologies to integrate systems and means of transport that interacts with users, aiming at a sustainable, safe, accessible environment that meets citizens' mobility needs".* With meeting the citizens' needs this research aims to a situation in which a citizen does not have to compromise on comfort, budget and travel time compared to the previous situation. Because smart mobility does not have a single definition, this research looks more into the smart mobility applications: MaaS and mobility hubs. Because smart mobility brings technology and the physical mobility system together, this research looks both into the physical accessibility and the digital accessibility.

3.4.2. The fifteen minute city

The fifteen minute city framework as described in 2.1.2. shows that a functioning fifteen minute city revolves around four dimensions, density, proximity, diversity and digitalization. The theoretical framework gives an explanation about what these dimensions involve and based on that they will be operationalized.

Density

According to Moreno et al. (2020), there is a main difference between the regular meaning of density in spatial planning in general, and density in the sense of the fifteen minute city theory. In traditional spatial planning dense places are places where there is a lot of high-rise buildings. According to the fifteen minute city theory, density can only be measured in terms of amount of people in a certain area. In order to achieve ideal density, it is crucial that that specific area has multifunctional purposes. So, determining the density of the selected cases can be measured by the amount of people living, working, spending their time in the area. It can also be established by taking a look into the multifunctionality of the area.

Proximity

Proximity is by the definition of it may be the most essential dimension within the fifteen minute city framework. It is described as that in the research area, every citizen should be able to have access to all six basic needs for a decent urban living within fifteen minutes walking or cycling. Moreno et al. (2020) adds to this that if this

is the case, the collective need for motorized vehicles will be driven back in that area. To investigate whether there is a sufficient level of proximity in the research areas, it is critical to establish if a random fifteen minute cycling area contains at least one possibility per urban needs to serve.

Diversity

In order to reach a sufficient level of density and proximity, it is paramount for areas to have multiple mixed-use areas. According to the fifteen minute city framework (Moreno et al., 2020), diversity can be interpreted in three ways; 1. Mixed-uses in the research area. 2. Cultural diversity to improve social capital. 3. Diversity in the sense of not be limited at the fifteen minutes perimeter, but extent it beyond to create different layers. To investigate to amount of diversity, it is important to try to find mixed-use areas. Best way to do this is by conducting desk research or make observations in the research areas.

Digitalization

In a fifteen minute city digitalization plays a huge role, as it is being described in the theoretical part of this thesis (Moreno et al., 2020). The digitalization plays two different parts. The general consensus is that in a fifteen minute city much more people will work from home, also post-COVID-19. Therefore, this part of digitalization can be measured through the general quality of the internet connection in these city-parts. The second part is that in applications of smart mobility, such as MaaS, it is important that people have access to the digital platform, that will provide it. This can be measured by determining to what extent people have sufficient knowledge, money and other possibilities to gain access.

3.4.3. Peak car theory

The peak car theory is an explanation why people tend to choose to not take or own a car, because over time the advantages that cars had become saturated. The effect that this phenomenon has could be investigated by searching to factors that might indicate car use saturation, such as increased travel times by car over time, more financial costs for car ownership/usage and stricter environment rules for personal vehicles.

3.4.4. Social status

Social status can affect the willingness to own a car either positively or negatively. According to Belgiawan et al. (2014) social and psychological factors whether to buy a car or not can be divided into convenience, prestige and social orderliness. These factors would cause the social status variable to influence the willingness to not own a car in a negative way. A fourth factor that is regarded as a social factor is 'concerns about the environmental impact'. This factor would cause the social status variable to influence the willingness to not own a car in a positive way.

3.4.5. Collective action problem

Because the development of a car free city part that relies on the fifteen minute city concept requires participation of the citizens that come to liven there, there is a risk that collective action problems will occur. To prevent this from happening Foster and Iaione (2017) designed five key principles of the 'co-city':

1. Collective governance: in the co-city this means that there should be a multi-stakeholder governance with at least three urban actors.
2. Enabling state: the co-city design needs the state to take a facilitating role and support collective action arrangements for the sustainability and management of the commons.
3. Social and economic pooling: there should be multiple kinds of resource pooling between at least five possible urban actors.
4. Experimentalism: there should be an adaptive and iterative approach in the process of the development of the city part.
5. Tech justice: this is comparable to the digitalization part. The access to technology should be top-notch, and there should be some open-data system to enable collaboration in the city part.

"The concept of urban commons is based on the idea that public spaces, urban land, and infrastructure ought to be accessible to, and able to be utilized by, urban communities to produce and support a range of goods and services important for the sustainability of those populations, particularly the most vulnerable populations." (Foster & Iaione, 2020).

3.5. Validity and reliability

This paragraph shows to what extent the questioning of this research is sufficient in order to reach a certain level of quality. The validity explains whether the used model offers a fitting answer to the research questions. The level of reliability on the other hand is being determined by whether the research results would be the same when it is being repeated (Benders, 2016).

3.5.1. Validity

In qualitative studies there is no single, fixed term for validity. It is being described as *"rather a contingent construct, inescapably grounded in the processes and intentions of particular research methodologies and projects."* (Winter, 2000). It is important to accept that there will always be some kind of qualitative bias in this research. In order to take the bias away as most as possible it is crucial to increase the generalizability of this research (Golofshani, 2003). This will be achieved by conducting multiple interviews and try to conduct them all in the same setting (all online, or all face-to-face) and also by conducting some desk research. This way the trustworthiness, and thus, the validity of this research will be maximized (Golofshani, 2003).

3.5.2. Reliability

As well as for the validity, also for the reliability it is important to maximize the trustworthiness of this research. To maximize this, it is important that all interviewees will be provided with the same knowledge on beforehand of the interview, and that all interviews will be conducted in the same setting. This maximized trustworthiness makes the research much more generalizable. If this is the case, it is much more likely that the models that this research uses will lead to the same results would it be used a second, third of fourth time (Golofshani, 2003).

4. Research results

In the following chapter, the collected information from desk-study and complementary in-dept interviews will be interpreted to answer the sub-questions of this research. This chapter will start by presenting the results that were gathered from the Parisian case study. Data in this case is gathered via desk-research. The focal point of this research case is governing the urban commons according to the five key principles of the co-city. Until Merwede has been developed, there is no active collective governance of the urban commons in Merwede. The way of collective governance of the urban commons in Paris can be seen as an example for Merwede when it is developed. After this, the sub-questions of this research will be answered based on the Utrecht case study. Information for this case study has been collected via desk-research and complementary interviews.

4.1. Illustrative case: Paris

One of the goals that Anne Hidalgo, mayor of Paris, has is to reduce pollution in the city caused by motorized vehicles. The number of parking Places were cut, electric vehicle charging points were increased, and the speed limit has been dropped to 30 kilometers an hour in the city. Along with this, the post-Covid strategy of Paris included the start of making Paris a fifteen minute city. This development starts in the area around 'Place de la Bastille'

4.1.1. Urban commons management

Before the plan of making Paris a fifteen minute city could be carried out in the city it is important to gain a better understanding of the people living in this city. You have to start from the people, by understanding how they live, how they move and what they want. *"How do we move in the city? In recent years, most people living in cities have spent most of their time in what Ian Mulcahey, urban planner at design and architecture firm Gensler, terms as 'two 15-minute villages', the one in which they live and the one in which they work, some making additional trips for entertainment."* (Dragonetti, 2020).
With current challenges such as climate change, the need to reduce emissions and

the Covid-19 pandemic, these two fifteen minute villages have been under increased pressured to merge.

"In cities, the covid-19 crisis has sped up an urban functioning mode which, with proximity, foreshadowed the "15-minute city", when, during lockdown, limits were placed on travel and essential purchases had to be made as close as possible to home. In addition, to prevent the spread of the virus in public transport during peak hours, alternative transport solutions were swiftly put in place. All over the world, cities demonstrated their agility by deploying hundreds of kilometres of bicycle lanes, expanding restaurant terraces onto parking spaces, and initiating greening plans in neighbourhoods, to name just a few examples." (Moreno in Chabaud et al., 2021).

With more than 20.000 inhabitants per square kilometer, Paris will be an ideal testing ground for the implementation of the fifteen minute strategy. Besides from that, Paris has been built before the car was even invented. So originally, the infrastructure for a city that revolves around active mobility is already there.

This new way of thinking about the city and politics fits in the theory about managing urban commons. In Paris some major changes were made to make sure that this project includes everyone. Diana Filippova, advisor to the Parisian mayor, explains:

"The 15-minute city is a way of doing politics that is quite different from the past … before, each department was in charge of their respective subject and had to implement it quite independently from the others. With the 15-minute city we first think about what we want to do and then we plug in all the relevant deputies and departments. We want to make everybody work together." (Dragonetti, 2020).

Within the theory of managing urban commons this thought shows signs of an enabling state, social and economic pooling and experimentalism. By doing this the city's administration enables several actors to work together by stepping away from the traditional way of city planning. This transition ensures that they got rid of bureaucratic procedures that were holding back efficient collaboration between urban actors. Hence, this is an example of the enabling state. By this same reasoning you could state that there will be more resource pooling. Since involved stakeholders will be working together from the beginning of plans, rather than everyone doing 'their part' and integrate it separately, there will be more sharing of information between involved urban actors.

In terms of the collective governance, the fifteen minute city planning will not be carried out independently from the citizens living in it. They are the central point of

this transformation after all. In Paris there are two public consultations that impact the fifteen minute city. This way the Parisian citizens will be directly involved in the process of restructuring the city. Besides these consultations, the city planners of Paris are also collecting ideas from citizens on how they should redesign the space that comes free by cutting 60.000 parking spaces. This way the planners get to know what the Parisian citizens really want or need in 'their' city (Dragonetti, 2020).

4.1.2. Sub conclusion

Theory learned that Ostrom (1999) designed eight guidelines to successfully manage common pool recourses. However, these were applied on small communities and on pool resources with a single use. Theory also learned that the urban commons are much more complex, and in order to diminish social dilemmas in the urban context Foster and Iaione (2017) designed the five key principles of the co-city: Collective governance, Enabling state, Social and economic pooling, Experimentalism and Tech justice. Examples of four of five key principles of the co-city are visible in the new strategy of Paris, starting in the area around Place de la Bastille.
Collective governance: In the fifteen minute city the planning revolves around the people that live there. In Paris there are two consultations that impact the fifteen minute city. The Parisian citizens will be involved in these consultations.
Enabling state: The new strategy chooses to step away from the traditional bureaucratic way of planning, and make all involved parties work together from the start of plans on.
Social and economic pooling: This new strategy also leads to more social and economic pooling. Several parties must work together from the start of a project on. Thus, they have to share information with each other.
Experimentalism: The fact that the Parisian mayor chooses to take a whole different approach towards urban planning and stepping away from the bureaucratic tradition is experimental on itself. As well as the approach where citizens are asked directly how they want to see the new available space being designed.

4.2. Main case: Utrecht

Merwede is the largest sub-area within the development area Merwede-Kanaalzone in Utrecht. Currently, Merwede is a former business district with a lot of empty

ground. Geographically, Merwede is the central point of the district South-West of the city center, located between Transwijk and Rivierenwijk. This makes this area really suitable to be a multifunctional, living city part in Utrecht.

4.2.1. The fifteen minute city framework

This part answers the sub question: **'What is the framework behind the fifteen minute city concept and how will this be applied?'** As described before, theory about the fifteen minute city framework learned that the fifteen minute city is based on four domains. These are: density, proximity, diversity and digitalization.

4.2.1.1. Density

Density in the fifteen minute city should not be maximized according to the fifteen minute city framework. It rather should be optimized. With 6.000 houses on a relatively small area, the density in Merwede looks more maximized than optimized. However, this whole area will be car-free. This means that the available public area will be of much higher quality. On top of that Merwede will also have an alternative collection system for waste and raw materials that will be completely indoors (Stedenbouwkundig Plan Merwede, 2021).

"Well, the density is rather high, that is true. But as I said before: it is a mixed city part, so there is sufficient balance between housing and services. At least, that is how it was thought about. So as I said: you will find all daily services within the vicinity (…) they [public services] are stacked on top of each other, but they are included in the plan area. Because you have a car free public area, you create more space for greenery, terraces, and things like that." (Personal communications 2021)

In short: as it may seem that the density in Merwede is being maximized, this is not necessarily the case. In contrast to traditional residential areas, Merwede is a car-free area, and has a fully indoors waste collection system. This means that no public space will be lost to parking spaces and waste collection containers. The roads in Merwede also can be narrower, since they will not be used by motorized vehicles. This means that the density can be higher, without compromising on the quality of the public area.

The focal point of the development of Merwede is that it will not only be a residential area. In addition to the 6.000 houses that are planned to be built, 100.000 square meters of services will be strategically located over the plan area (Stedenbouwkundig Plan Merwede, 2021). The strategic locating of utilities and services in Merwede means that they will be spread over the plan area, rather than being placed together at one central point (figure 6). This strategy will give the area a much more living character. Spreading utilities will lead to more social interactions, which will have a positive impact on the public quality of Merwede (Jacobs, 1965).

Because Merwede is located right next to the city center of Utrecht, it will become a vital part of the urban area (Utrecht South-West). Because the mobility strategy of Merwede chooses to reduce car usage, the infrastructure for active mobility (walking and cycling) needs to be improved. To improve the infrastructure, two new bridges will be built over the Merwede channel. They will only be suitable for cyclists and pedestrians. These bridges will contribute to a more extensive network for active mobility. In terms of the proximity in the fifteen minute city, this means that citizens in Merwede will not only be depending on urban services in Merwede itself, but they can easily reach adjacent areas, within fifteen minutes (Stedenbouwkundig Plan Merwede, 2020). At the same time, this improved infrastructure enables citizens from the whole Utrecht South-West region to reach more places within fifteen minutes.

"Of course, that [the fifteen minute city framework] is actually one of the key points of the design of this area, that you will find your daily services on walking and cycling distance. And Utrecht as a whole has a mobility strategy that is based on the ten

minute city, so those two are rather comparable. So, yes in this area that is absolutely a key point.” (Personal communications, 2021).
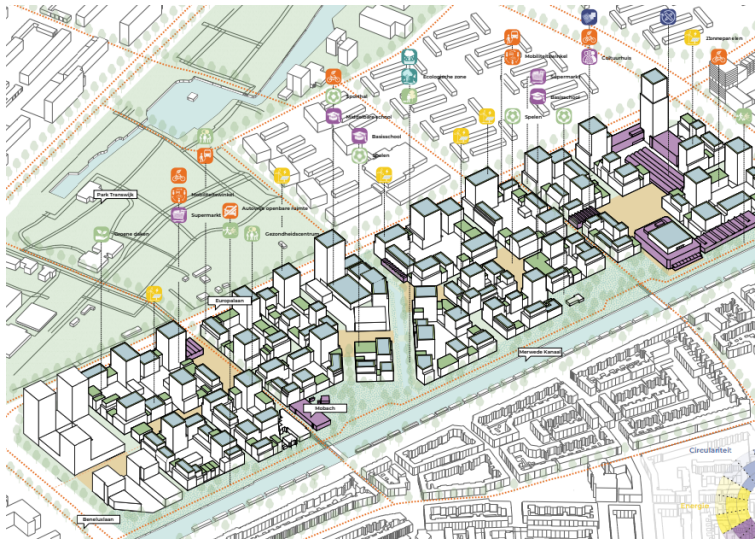

Figure 6: Multiple uses in Merwede (Stedenbouwkundig Plan Merwede, 2020)

4.2.1.3.   Diversity

From the 6.000 houses that will be built, 1.800 of them will serve for social housing (30%), 1.500 houses will be middle class houses (25%) and 2.700 houses will be high end houses (45%). Merwede is targeting young urban dwellers, seniors, singles, couples, families, starters, students and growers. The combination of a high proximity of urban services, sufficient greenery that encourage social contact and none to hardly any car traffic make this area really appealing for a wide variety of inhabitants (Stedenbouwkundig Plan Merwede, 2021).

With the design of this area one of the focal points is the multifunctionality. Because of the high density in Merwede multiple uses for a single space is paramount to have sufficient space for urban needs. Examples are school buildings that could be used for other events during the weekends.

“Yes, the plan indeed contains things like that [multifunctionality of public spaces] and it will even happen indoors. For example, schools that can be used in the weekends too for events, theater or other cultural activities. So the plan really assumes double usage. To indeed use the available space as efficient as possible, yes.” (Personal communications, 2021).

The parking policy in Merwede is also really based on diversity. Also, underground space is contested and creating parking spaces underground is really expensive after all.

"They [cars] have to be parked in parking garages underground which is very expensive. Hence, you have a very difficult business case with your garages." (Personal communications, 2021). The Merwede plans have included a parking capacity of 1.800 places based on 6.000 houses. The expectation is that a parking norm of 0,2 is the bare minimum. With decreasing numbers of car ownership, more parking space will be necessary for:

- Intensive use of shared mobility,
- Parking spaces for disabled persons,
- Visitors for the services in Merwede,
- Logistic vehicles that have to be in Merwede for several hours

According to calculations in Stedenbouwkundig Plan Merwede (2020), there is a margin of only 0,1 parking spaces per house. This means that a part of the parking spaces that belong to citizens of Merwede will have to be used by visitors or logistics during the day. Hence, the double, or triple, usage of parking spaces in Merwede is optimized this way.

4.2.1.4. Digitalization

In Merwede all the available parking spaces will be located underground. There will also be a lot of greenery in the area. This means that also the space underground is very contested. Greenery like trees claim a lot of space underground with their roots. Therefore, all underground infrastructure (cables and pipelines) in Merwede is designed as a loop that goes around the plan area. This enables a situation in which the high urban grade and the number of trees in the area go along well (Stedenbouwkundig Plan Merwede, 2021). What also adds to the digitalization of Merwede is Mobility as a Service (MaaS). Even though all urban needs can be found within 15 minutes, needing to use a car once in a while is inevitable. To make sure all citizens can easily use a car without having to own one, the digital network for MaaS will be set up simultaneously with the development of Merwede. This network will enable citizens to plan, book and pay for their travels making use of all kinds of shared mobility and public transport (Stedenbouwkundig Plan Merwede 2020).

4.2.1.5. Sub conclusion

The question 'What is the framework behind the fifteen minute city concept and how will this be applied?' can be answered as follows:

The fifteen minute city is a concept that is taken into account during the plan designing period of Merwede. Theory learned that the fifteen minute city revolves around four domains: density, proximity, diversity and digitalization. All four domains of the fifteen minute framework are included in the plans of Merwede someway.

Density: by the first impression the density in Merwede looks maximized rather than optimized. However, Merwede can afford the have a very high density without compromising on the quality of the urban area, because the whole area is car free, all waste collection happens indoors and there is a sufficient variation of several uses in the area.

Proximity: Merwede will have 100.000 square meters of urban services strategically spread over the area. Merwede will also be integrated as a part of the complete urban area, South West of the city center. This means that the infrastructure for active mobility will be improved in the whole area, resulting in less travel times to adjacent neighborhoods.

Diversity: Merwede will have houses in several price ranges. This will result in an area with a mixed group of inhabitants. There will also be diversity in the uses of places in Merwede; buildings that will be used as schools during school hours will be used as a cultural center outside school hours. There is diversity in parking strategy too. Parking places that belong to citizens of Merwede can be used by visitors when citizens are not at home. This way the amount of parking spaces can be kept at a bare minimum.

Digitalization: Because the space underground in Merwede is very contested, all underground infrastructure will be placed as a loop that goes around the area. This way, a high quality standard of digital accessibility can be assured. Also, all inhabitants of Merwede will receive a subscription to a platform which they can use in order to use shared mobility.

4.2.2. Key principles of the co-city

This part answers the sub question: **'To what extent could social dilemmas influence the success of a city part as such and what interventions can be taken to diminish them?'** To diminish social dilemmas in the urban context, there are the five key principles of the co-city (Foster & Iaione, 2017). The idea of these key principles is that public spaces, urban land and infrastructure will be accessible to, and able to be utilized by, urban communities to produce and support a range of goods and services important for the sustainability of those populations. These are:

4.2.2.1. Collective government

One of the characteristics of Merwede is the amount of landowners in the plan area. A third of the area is being owned by the Utrecht municipality. The other two third of the area is being owned by several private parties. This means that the municipality does not have the exclusive right to develop the plan area in the way that they want. *"The ground ownership belongs for two third to several private parties. And one third of it belongs to the municipality. So as the municipality you cannot completely dictate what is allowed and what is not. So, the plans in Merwede have been made in collaboration with private parties."* (Personal communications, 2021).

For the designing of the plan area all landowners of Merwede are represented in the owners collective Merwede (eigenarencollectief Merwede). This owners collective is the governing body that has made all the plans about the area. This is the most efficient way to have all parties involved when it comes to the spatial planning of Merwede.

"The private parties are represented in the eigenarencollectief Merwede, that is what it is called. And from that collective they make plans together." (Personal communications, 2021).

4.2.2.2. Enabling state

The municipality is the state, speaking in terms of the co-city. With owning a third of the land in the plan area, the state is the largest urban actor within eigenarencollectief Merwede. By being the largest stakeholder, this automatically gives the state a facilitating role within the governing body. A second reason why the state will take a facilitating role within eigenarencollectief Merwede are the social interests. Generally speaking, private actors find most value in the profitability of a

project. The state however finds most value in creating as much social interest as possible. As a matter of fact, the municipality, or state in terms of the co-city, has a long term vision that they want to comply.

"Yes, obviously they [private parties] want to build a nice building, and of course they have a vision about how society should look like. But in the end, the Euro is the decisive factor. This is just not the case with municipalities." (Personal communications, 2021). However, taking this facilitating role appears to be hard for almost all Dutch municipalities. They seem to struggle with making decisions on behalf of their citizens. Especially when it comes to decisions that are usually not really popular. Introducing paid parking in adjacent neighborhoods for example: a measure that is paramount for the development of Merwede, but highly criticized. The municipality also tend to shift the responsibility for extra costs, e.g., all parking underground, to the project. Even though those necessary extra costs derive from the ambitions of the municipality itself.

"What you see is that a lot of municipalities. Let me formulate it like this: there are only a few municipalities in the Netherlands that are used to having a metropolitan mindset. As a matter of fact only Amsterdam and Rotterdam to a lesser extent. Metropolitan in a way of: what do we want to achieve as a city? (…) originally only Amsterdam has got the mentality to go beyond what their citizens want. To think for its citizens to phrase it like that." (Personal communications, 2021).

A second reason why most Dutch municipalities struggle to take a facilitating role, is the political division within them. According to personal communications (2021), in Utrecht there are several aldermen involved in the Merwede project and they all have their own political agendas. So even though the municipality may seem as one political actor, in reality it is not.

"Politically, the municipality does not speak with one mouth. So, you have got several aldermen that are all responsible for several sub domains. Right, so one is responsible for mobility, the other is responsible for Merwede as a development area, another one is responsible for property and parking garages. Uhm, uhm and yet another one is responsible for waste collection. And they [aldermen] have all got their own individual political interests and their personal opinions. Try to line that all up." (Personal communications, 2021).

4.2.2.3. Social and economic pooling

The Merwede project has several unique characteristics: the low parking norms, all parking underground, a lot of shared mobility and indoors waste collection. These are all really ambitious characteristic, but they make the project riskier at the same time. All these characteristics make the costs of the project higher, after all (Stedenbouwkundig Plan Merwede, 2021). There has also never been a project before where these sustainable attributes have been applied on such large scale. Therefore, the first 10 years of the project all landowners within the project area will share the responsibility of the project. To execute this, another public-private governing body, containing the municipality and three or four consortia of project developers, will be created. They will be responsible for exploiting and managing the project, for at least 10 years. Only after those 10 years actors may decide to step away from the project and no longer be responsible for the project anymore.

"Uhm, what we want to achieve for that area [Merwede] governance wise, is that we share the responsibility for the success of the area as much as possible for at least ten years. Because in terms of mobility the future is very unsure, we have got very expensive parking spaces, and a lot of shared mobility. It all costs money and must be directed. How it all will turn out is really unsure. So we decided to set up a public-private mobility company that will exploit and direct everything. We step in to that new B.V. (private company) together. We, the municipality together with three or four consortia of project developers and we all have to stay in it for the least of ten years." (Personal communications, 2021).

4.2.2.4. Experimentalism

The Merwede project has high aims for several ambitions. That is one way that makes this project experimental. According to the draft municipal strategy on spatial planning and the environment (Stedenbouwkundig Plan Merwede, 2020), Merwede should set an example for sustainable and healthy urbanization in Utrecht. The ultimate goal of Merwede is to offer its inhabitants all the benefits of living in a highly urban area and diminishing the disadvantages that come with it at the same time. The key ambitious of Merwede are living close to the city center, but in a green, natural and relaxing environment. Being able to rely on a bicycle, but also being able to have access to a car when you need it. A high quality way of living, which is affordable at the same time in a lively area where there are a lot of social contacts.

The factor that really labels Merwede as an experimental project is the scale and the diffused ownership. Merwede is not the first area with goals like these, but it will be the first time that these will be applied on an area this big, so densely populated and with a wide variety of landowners.

"There already are developments like this going on in the Netherlands and worldwide too. However, Utrecht is a very special case because you have that owners-collective and there will be 6.000 houses developed in one go. That is unique." (Personal communications, 2021).

Another way in which the Merwede development is really experimental is the public-private governing body that will take on the responsibility for the success of Merwede for at least 10 years, that was discussed before. *"But that [the public-private governing body for at least 10 years commitment] is really, really unique. It has never happened anywhere before. And I think that it really is a very interesting model. Whether it is going to work I cannot say (…) you must be willing to keep collaborating with each other, and you should also be willing to make compromises during the process."* (Personal communications, 2021).

4.2.2.5. Tech justice

Because Merwede is supposed to be the benchmark of sustainable and healthy urban living, along with developing the plan area Merwede LAB will be set up. Technology for sustainability develops very fast. What is possible today, might be obsolete by tomorrow. To make sure that technological possibilities in Merwede are flexible and top-notch, the Merwede LAB will be set up. This lab will keep track of trends and innovations in the society in the field of healthy urban living, social design, energy and circular building processes. The Merwede LAB will also ensure that these trends and innovations will be integrated in the planning process. Therefore, Merwede LAB will be a part of the plan area organization (Stedenbouwkundig Plan Merwede, 2020). But also, when Merwede has been completely developed the Merwede LAB will still exist. *"There has been set up a, so called, Merwede LAB. With the goal to test those [sustainable] developments, but also to integrate them and keep this process going. Because they [the municipality] say: it should stay a sustainable area. It should not be that we make plans, integrate them, and then we stop and say goodbye."* (Personal communications, 2021).

The technology and knowledge that will be gained in the Merwede LAB will be integrated in the project, so in the end all inhabitants can profit from them. Additionally, all knowledge that will be gained through the Merwede LAB will be publicly shared in an active manner.

4.2.2.6. Sub conclusion

The question 'To what extent could social dilemmas influence the success of a city part as such and what interventions can be taken to diminish them?' can be answered as follows:

Foster and Iaione (2017) designed the five key principles of the co-city: Collective governance, Enabling state, Social and economic pooling, Experimentalism and Tech justice. All five principles of the co-city are included in at least the development of Merwede in a way.

Collective governance: All landowners of the Merwede area, with the municipality as largest stakeholder, are united in 'Eigenarencollectief Merwede'. This collective ownership is the governing body when it comes to the spatial planning and development of Merwede.

Enabling state: The municipality is the largest actor in eigenarencollectief Merwede, add this to that the municipality values social interests higher than private parties and it will give them a facilitating role. However, most Dutch municipalities struggle with this role, because 1) they tend to avoid making decisions for their citizens, especially when those are decisions that are not really popular, like paid parking. 2) Within the municipality there is a lot of division, so the municipality may seem as one political actor, but in reality, it is not.

Social and economic pooling: Once Merwede will be developed, a public-private governing body will be set up, containing the municipality and three or four consortia of project developers. They are obliged to be a part of this body for at least ten years and thus share the responsibility together.

Experimentalism: One could argue that Merwede as a whole is experimental. Never before have there been such a large project with these specific ambitions. On top of that the governing body with a ten year commitment obligation, described before, is also a really experimental feature of Merwede.

Tech justice: The Merwede lab will be set up to keep technology for sustainability up to date. All knowledge gained in this lab will be integrated in the project so all citizens

can benefit from it. On top of that knowledge gained in the Merwede lab will be publicly shared in an active way.

4.2.3. Smart mobility solutions

This part answers the sub question **'To what extent could smart mobility applications help to improve the willingness of citizens?'** A consideration between the expected traffic congestion during rush hours and the development ambitions of the municipality of Utrecht concluded that Merwede would need a maximum of 0,3, and possibly 0,2 in a later stage, parking spaces per house. This comes down to a reduction of 30% of the common parking requirement in this specific part of the city. The municipal policy is to reduce this number by 20%. This makes the parking norm in Merwede extra ambitious. By doing this Merwede anticipates on a future in which Mobility as a Service (MaaS) will get more of a foot on the ground (Stedenbouwkundig Plan Merwede, 2020). Shared mobility adds to the reduction of car ownership and car usage. Instead of using the car, citizens of Merwede would more often choose to walk, cycle or take the public transport. For the situation in which one would need a vehicle, shared mobility is always close in Merwede. To create a situation in which Mobility as a Service can succeed, you need both digital and physical accessibility to the system.

4.2.3.1. Digital accessibility

To make sure that all citizens in Merwede are able to have access to shared cars, e-bikes, high velocity bikes and other forms of shared mobility, they will all receive a mobility subscription.

"Ehm, it is for sure that the people who live there [Merwede], they will all receive a mobility subscription. With that subscription they can all make use of those shared vehicles. I know that the details of it is being worked on still, but the idea is that there will be several kinds of subscriptions, possibly based on income classes, because the lower incomes might need some support." (Personal communications, 2021). Currently, there are several providers for shared mobility in the Netherlands. In most cases these providers have their own network, where users can plan, book and pay for their services. For example, in Rotterdam there are at least seven different providers for shared electric scooters. These are: Baqme, Check, Donkey Republic,

Felyx, GoSharing, Lime and Vaimoo. For a long time, the services of each provider could only be used via their own application. This means that citizens would need to download seven different applications on their smartphone to have access to the full capacity. On top of that, users need to register on every application separately (personal observations, 2022). It is only since the end of 2021 that an application in which users are able to plan, book and pay for their whole trip was introduced. However, within this application price rates and terms and conditions vary per provider. Additionally, this application only covers the Rotterdam/The Hague region (Gemeente Rotterdam, 2022).

A national overarching open data network on which all providers are connected on the same rates, terms and conditions does not exist yet. For the development of Merwede, and the possible success of Mobility as a Service, it is paramount that a network where citizens can plan, book and pay for their travels will be set up.

"Yes, those platforms, ehm and the subscriptions too are offered by the mobility providers, ehm so they think about that [the way in which MaaS-apps will be developed and how they will be accessible for citizens]. But one thing that is really important, is that in the end everything will be bundled within one organization. So, you could potentially have several mobility providers, but they will have to collaborate and both being able to be used on one platform. So that when you come to live there, you will still be able to see the forest through the trees." (Personal communications, 2021).

4.2.3.2. Physical accessibility

To make sure that Mobility as a Service will succeed in Merwede, sufficient shared vehicles will be placed in the parking garages underground. Municipal policy advised that four personal vehicles should be replaced by one shared vehicle. Calculations showed that Merwede would need 300 shared vehicles according to this policy (Stedenbouwkundig Plan Merwede, 2020). At the same time, Merwede will serve as a mobility hub to stimulate shared mobility. The mobility hub in Merwede will contain two mobility shops. These will be placed strategically on central places in Merwede and for the adjacent neighborhoods, close to walking and cycling routes, public transport and retailing (figure 7). These shops will have a service desk, a bicycle workplace and special vehicles will be rented out from here. Examples of special vehicles are high velocity bikes and light electric vehicles for delivering goods, or to

collect waste from the housing units. These mobility shops will serve as a transfer place for travelers that want to switch from the public transport to a shared vehicle, or the other way around. This makes these shops crucial for the development of the MaaS platform (Stedenbouwkundig Plan Merwede, 2020).
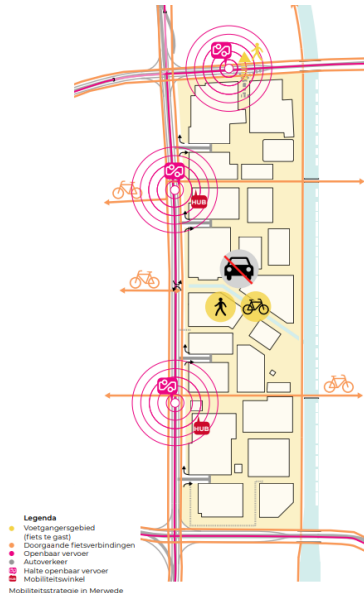

Figure 7: Mobility strategy in Merwede (Stedenbouwkundig Plan Merwede, 2020)

"Well look, this shared mobility will obviously become a part of the mobility concept that is being introduced there. So what you have is a complete package of mobility supply. Starting with walking, cycling and public transport, and additionally you will find shared mobility. Mainly cars, but possibly also other forms of shared mobility. What plays an important part in that development, are the two public transport stations in Merwede, that have the mobility hubs linked directly to them. Here you can find the supply of shared mobility." (Personal communications, 2021). As mentioned before, in Merwede the shared cars will be found in the parking garages underground. Shared (electrical) bikes and scooters will be found in bicycle sheds on ground level (Stedenbouwkundig Plan Merwede, 2020). This is an example where collective action problems might occur. In several Dutch cities, people can make use of shared bicycles and/or shared scooters. They can be found everywhere around the city and that is really convenient. Especially for people visiting the city. However, the quality of the public space is suffering from this. In cities where you can find shared mobility, you will see scooters and e-bikes literally everywhere. Most of them are parked correctly, but also a lot are just placed randomly on the sidewalks. In the case of Rotterdam there is a hotline where one could report a vehicle that is parked incorrectly. Additional observations learned that the provider CHECK for example,

uses a bonus malus scheme. Users are asked whether their booked vehicle was parked correctly, on which they simply have to reply by clicking on a thumbs up or thumbs icon. A user with multiple negative replies in a short amount of time will be suspended from the service for six months. Users will earn a coin for each positive reply they receive. When a user has collected ten coins, they have earned a 10-minute ride free of charge (personal observations, 2022). Even though these bonus malus schemes exist, the degradation of the public space because of randomly parked shared vehicles are still a problem in the current situation (figure 8). This problem causes other municipalities to be really reticent towards implementing shared bikes and scooters in their city.

Figure 8: Public space deprivation in Rotterdam due to shared scooters. (VGR, 2021)

4.2.3.3.   Sub conclusion

The question 'To what extent could smart mobility applications help to improve the willingness of citizens?' can be answered as follows:

Because of the low parking norms in Merwede not all inhabitants are going to be able to own their own vehicle. By doing this Merwede anticipates on a future in which Mobility as a Service will get more of a foot on the ground. To create a situation in which Mobility as a Service can succeed, you need both digital and physical accessibility to the system.

Digital accessibility: All citizens in Merwede will receive a subscription which they can use to make use of shared mobility. A set condition is that all existing mobility providers will have to collaborate on one open data network.

Physical accessibility: Merwede will serve as a mobility hub, also for adjacent neighborhoods. To accomplish this, 300 shared electric cars will be placed in the parking garages in Merwede. There will also be two mobility shops in Merwede, with a service desk and where special vehicles will be rented out. Merwede will also be well connected to the public transit net. This leads to a smooth transition within a multimodal journey.

However, observations learned that there is one big issue with shared mobility. They cause degradation of the public space, because vehicles can be parked literally anywhere. Currently, there are measures against this problem, but they are obviously not sufficient.

4.2.4. Reasons (not) to own a car

This part answers the sub question: **'What reasons do citizens have to decide to (not) own a car?'** As being shown in figure 9, the choice for a low or high parking norm is a self-reinforcing process. It shows that on one hand, the choice for an ambitious mobility strategy leads to opportunities for more area development without extra traffic congestion. This then leads to a more profitable area development, and then this extra generated profit can be invested to improve the mobility strategy. On the other hand, the choice for a more usual mobility strategy leads to a limited area development because of increased traffic congestion. This then leads to a smaller support base for public transport and MaaS resulting in more car dependency and an increase in car usage and possession.
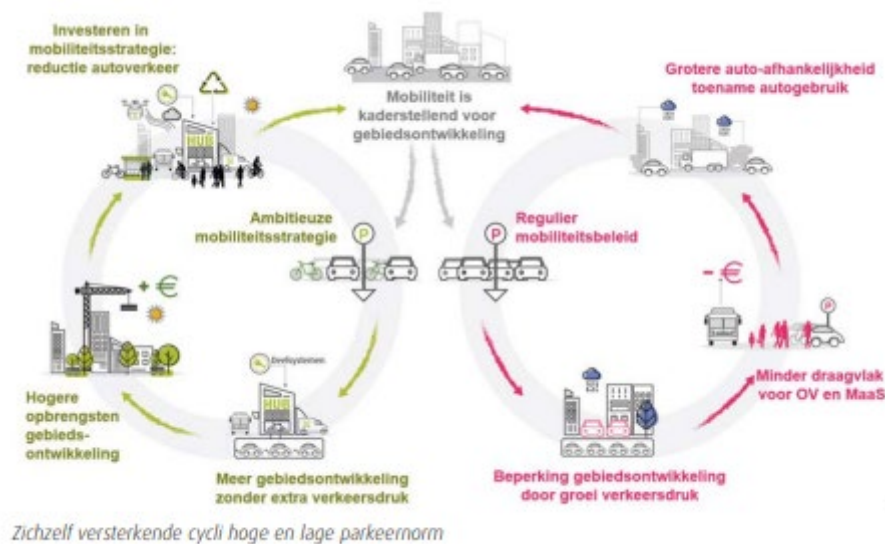
Figure 9: Self-reinforcing processes. (Stedenbouwkundig Plan Merwede, 2020)

4.2.4.1.   Reasons not to own a car

Merwede gives its citizens several reasons to not own a car. The most obvious reason is the low parking norm. Because of this low parking norm, Merwede will only have 1.500 parking places for private vehicles (Stedenbouwkundig Plan Merwede, 2020). Because there are so few parking spaces available for the citizens living in Merwede, the price you have to pay for a parking spot is very high.

"When you make parking really scarce, you make it really expensive for citizens to own a car, because a parking subscription in Merwede will cost 200 euros a month. Really expensive. That is really different to a parking subscription in other areas [in Utrecht]. I recently moved to Utrecht, and I pay 13 euros a month. Yeah, that's quite the difference." (Personal communications, 2021).

Merwede will also introduce distance parking. Parking spaces located on nearby park and ride places where parking subscription are considerably cheaper. At first sight, this could be a reason for a lot of potential inhabitants of Merwede to go live there and own a car at the same time. However, this is not exactly the case.

"That [distance parking] will be introduced, so that will be much more affordable. But it is somewhat stigmatizing when you think about it: "Yeah, you are poor, so you can go and park somewhere on a remote P+R". It is also presented as a full service, you know. So you can take a taxi service to it, but those people cannot pay that as well. No, so you just have to take your bike and potentially go through to rain to your car when you need it. Especially those who need their car every day, they have to cycle to their car through the rain twice a day. For people that only need a car once in a

while it is not that big of a deal, but they will never make use of it, they will just grab that shared vehicle. So basically, you take a group that does not have that much alternatives and you saddle them up with a much less attractive proposition" (personal communications, 2020).

This could be interpreted that even though Merwede will introduce distance parking, it will not necessarily mean that people will make use of it, because it is suggested that the extra effort people have to make will not be worth it. The fact that this policy can work stigmatizing for people that are less affluent than others really fit the theory of social status.

Another reason why people could choose to not own a car anymore can be found in the behavioral thinking of people. People tend to find it difficult to see the benefits of a non-existing situation.

"The funny thing is I think, the behavioral psychology in this case. People really struggle to see the benefits of something they do not do yet, so you sometimes have to force them into doing so. That is why I think that the example of temporarily placing planters on parking spots works really well, because then people will realize that it actually is really nice to not be looking at a piece of metal all day." (Personal communications, 2020).

In the case of Merwede this could be interpreted that people do not want to get rid of their car initially. However, when people come to live in Merwede, they will be strongly encouraged to get rid of their car. For instance, by the costs of parking in Merwede, and the disadvantages of distance parking. Once they decide to sell their car, they might see that it is not that bad to travel by public transport, and that being able to reach a wide area within fifteen minutes by bicycle takes away the need for a car.

4.2.4.2.   Reasons to own a car

People can have many reasons to own a car because of economic, spatial and social reasons. With the development of the concept of Merwede these factors have been considered. These considerations have led to the parking norm of 0,3. Calculations showed that a parking norm of 0,2 should be sufficient eventually. The developers expect that this transition comes too early for some of the inhabitants. For instance, for people that lease their car at their employer, or for people that need to gain trust in the MaaS concept first (Stedenbouwkundig Plan Merwede, 2020).

It has been briefly mentioned before, but there is a group that will be dealing with an unattractive proposition if they decide to live in Merwede.

"For a lot of people, a shared vehicle could be a good alternative [for owning a car]; because they only need to use it once in a while, they cycle and walk a lot and use the public transport. However, there are population groups that do not earn a lot of money, but they are dependent of their car (…) you can come up with a wide range of possibilities why they need it. They just need a car. They just cannot afford it [a parking spot in Merwede]. MaaS will also not be a serious alternative for them, because the costs per kilometer are just to high. Those people, they all drive in a [e.g.] third hand Renault Mégane that has cost 1.000 euros. Compared to that, MaaS is just way too expensive." (Personal communications, 2021).

One could argue that this only applies to a small population group and that they can make use of the distance parking service that was also briefly mentioned before. However, it is also mentioned before that is far below an ideal situation.

"I expect that this could cause friction, around questions like: how inclusive, or exclusive is this concept really?" (Personal communications, 2021).

4.2.4.3.   Sub conclusion

The question 'What reasons do citizens have to decide to (not) own a car?' can be answered as follows:

Theory learned that there are several reasons why people decide to not buy a car anymore. One of those reasons is the peak car theory. By the looks of it this is what the policy makers of Merwede are trying to use in their advantage. The choice of strategy can be seen as a serf-reinforcing process. Part of this strategy is to make having a car unattractive, and to make using of shared mobility, active mobility and public transit attractive.

Reasons not to own a car: Because of the low parking norms, the few available parking places come at a very high price. For people that want a car but do not want, or are not able, to pay this high price there is distance parking. However, it is not expected that it will be used a lot, because having to travel to your car takes away a lot of the benefits of having a car. In terms of social status, it also works stigmatizing if you have to travel to your car compared to your neighbors, who have parked it in the garage underneath the apartments.

Reasons to own a car: Some people just need to have their own car on daily base for whatever reason. For them shared mobility will financially never become a legit alternative, because the costs per kilometer are just too high. Parking in Merwede is also really expensive or located far away. These people are being put in a difficult proposition in Merwede.

5. Conclusion

This chapter answers the main research question 'What conditions should be met to make citizens want to live in a future part of a city in which they will not be able to have their own car?' to answer this question, this research was split up into four sub questions.

1. What is the framework behind the fifteen minute city concept an how will this be applied?
2. To what extent could social dilemmas influence the success of a city part as such and what interventions can be taken to diminish them?
3. To what extent could information technologies help to improve the willingness of citizens?
4. What reasons do citizens have to decide to (not) own a car?

5.1. Conclusion of the sub questions

In the first part of this chapter, the sub questions will be answered based on the theory and data analyses of this research.

The fifteen minute city

The first sub question of this research is **'What is the framework behind the fifteen minute city concept an how will this be applied?'**. The first part of this question, 'what is the framework behind the fifteen minute city concept', was answered in the literature review in the second chapter of this research. The literature review learned that the theory behind the fifteen minute city revolves around the four dimensions of the fifteen minute city framework; density, proximity, diversity and digitalization. **Density** means that in the fifteen minute city, planners should reach for the optimal density rather than trying to maximize it. **Proximity** means that services for the six essential needs for a decent urban living (living, working, commerce, healthcare,

education and entertainment) should be present in high proximity, since all citizens should have access to them in fifteen minute cycling or walking. **Diversity** means both diversity in the population of the city or city part, as the diversity in mixed uses in the area. This is necessary to create high proximity and ideal density. **Digitalization** means that in the fifteen minute city, digital services should be widely deployed, is that adds to all other three dimensions of the framework and it makes a city much more resilient.

Based on conducted interviews and desk research into the engineering plan of Merwede, it became clear that all four of these dimensions are integrated in Merwede someway. Even though the **density** may seem rather high in Merwede, this is not necessarily the case. The car free character of this area enables a much higher density without compromising on the quality of the public space. More so, the amount of **diversity** in function uses in Merwede also enables a higher density without compromising on the quality of public spaces. There is also diversity in Merwede in the price ranges of the houses, this must lead to a diverse population in the area. By actively making Merwede a vital and well connected part of the Utrecht South-West region, the **proximity** in this area as a whole increases. More so, the proximity in Merwede itself will be ensured by developing 100.000 square meters of urban services, strategically spread over the whole area. **Digitalization** is visible in two ways in Merwede. 1) Because the space underground is contested, due to underground parking garages and the roots of all the greenery in the area, ensuring high quality internet was a bit of a challenge. The solution is that all underground infrastructure will be designed as a loop that goes around Merwede. 2) Shared mobility will play a big role in the mobility strategy of Merwede. Therefore an open date network will be set up on which all citizens in Merwede will get a subscription.

Key principles of the co-city

The second sub question of this research is **'To what extent could social dilemmas influence the success of a city part as such and what interventions can be taken to diminish them'** The first part of this question was answered by finding out what 'possible social dilemmas that could influence the success of a city part as such' are. The literature review learned that the free-rider problem and the tragedy of the commons are social dilemmas of frequent occurrence. Both these dilemmas revolve around the same idea, benefiting from a situation without putting in

the short term costs. This eventually has a negative impact on all the involved actors. Literature review learned that Ostrom (1999) designed eight guidelines to successfully manage common pool recourses. However, these were applied on small communities and on pool resources with a single use. Literature review also learned that the urban commons are fundamentally different and much more complex compared to the classic commons. In order to diminish social dilemmas revolving around the urban commons, the five key principles of the co-city should be obeyed. These are: Collective governance, enabling state, social and economic pooling, experimentalism and tech justice. **Collective governance** means the presence of a multi-stakeholder governance scheme. **Enabling state** means the facilitating role that the state takes in regard to managing the urban commons. **Social and economic pooling** means the presence of different forms of resource pooling and cooperation between five possible actors in the urban environment. **Experimentalism** means the presence of an adaptive and iterative approach to designing the legal processes and institutions that govern urban commons. **Tech Justice** means the access to technology, the presence of digital infrastructure, and open data protocols as an enabling driver of collaboration.

Because Merwede has not been developed yet, it is impossible to observe the commons management in this area. Instead, the focus of this research is aimed towards the collaboration in the development process of Merwede. However, because the key principles of the co-city are based on existing communities, does this research include a second, illustrative case: Paris.

Desk study to Paris learned that most of these key principles are clearly integrated in the post-Covid strategy in Paris. In the starting areas of Paris there are two consultancies in which the citizens are represented well that impact the city. This seems to be a form of **collective governance**. In the post-Covid strategy the Parisian city administration chooses to step away from the traditional bureaucratic way of city planning, and get all actors involved from the start of plans on. This decision seems to be a form of **enabling state**. This same decision could also be seen as **social and economic pooling**. Because there is more collaboration from the start of plans and projects, all actors are forced to share more knowledge. The fact that the city administration chooses to take a whole different approach is **experimental** on itself. The plans also briefly mentioned that Paris will serve as a testing ground. The plans did not mention elements about **tech justice**.

Based on the conducted interview and desk research into the engineering plan of Merwede, it became clear that all five key principles are integrated in the designing process of Merwede someway. 'Eigenarencollectief Merwede' is the **collective governance** body that will organize all development in Merwede. The **enabling state** role is giving to the Utrecht municipality, since they value social interest the highest. However, lots of Dutch municipalities seem to struggle with this role. The public-private governing body that will be set up once Merwede has been developed adds both to the **social and economic pooling** and the **experimentalism** of Merwede. Also the Merwede lab that will be set up adds to these principles. As well as it adds to the **tech justice**, because all (technical) knowledge gained in this lab, will be beneficial for all citizens of Merwede and they will be publicly shared.

Smart mobility solutions

The third sub question of this research is **'To what extent could information technologies help to improve the willingness of citizens?'**. The literature review learned that smart mobility is the label that has been put to 'mobility that uses digital technologies to integrate systems and means of transport that interacts with users, aiming at a sustainable, safe, accessible environment that meets citizens' mobility needs'. Because there is not one clear cut definition for smart mobility, this research looks to well-known smart mobility applications: Mobility as a Service (MaaS) and mobility hubs. Because smart mobility brings technology and the physical mobility system together, this research looks both into the **physical accessibility** and the **digital accessibility**.

Based on the conducted interviews and desk research into the engineering plan of Merwede, it became clear that smart mobility will play a big role in Merwede. The **digital accessibility** will be created by the fact that all citizens that come to live in Merwede will be provided with a mobility subscription. They can use this to make use of shared mobility means. These subscriptions will come in different price ranges, so that they will be affordable for everyone. It has also been made clear that in the future there must be one open data network on which all providers are connected. An observation study in Rotterdam showed that this last step is really important, because with several different providers that all use different price rates and terms and conditions it is not a very user friendly system.

The **physical accessibility** will be created by making Merwede a mobility hub for the whole Utrecht South-West region. 300 shared cars will be placed in the parking garages in Merwede and Merwede will be well connected to the public transit net. This should lead to smooth multimodal journeys. However, an observation study in Rotterdam also learned that shared vehicles have one big issue. They degrade the public space, because bikes and scooters can be parked anywhere. There are measures against this problem, but they are not sufficient.

Reasons (not) to own a car

The fourth and las sub question of this research is **'What reasons do citizens have to decide to (not) own a car?'**. Literature review learned that people have various reason to own a car or not. Social status is one of them. For a long time, owning a car could be seen as a prestigious matter. On the other side there is a worldwide trend of peak car. It suggests that the improving benefits of car usage have reached its limit. Therefore, the need of owning a car is declining.

Based on conducted interviews and desk research into the engineering plan of Merwede, it became clear that this has been taken into consideration. The engineering plan sees the choice for a mobility strategy as a self-reinforcing process. Creating few parking space will increase the interest in alternatives and thus the usage of alternatives will increase. This then causes less need for owning a car. A **reason not to own a car** in Merwede is the fact that it will be very expensive to be able to park your own vehicle there. There are cheaper options, but these require traveling to your car. This is not a desirable situation in terms of social status.

A **reason to own a car** in Merwede is there for people who just need it to travel to places that are not well connected by public transit. For these people shared mobility will not be a suitable alternative financially any time soon.

5.2.   Conclusion of the main research question

After concluding the answers to the sub-questions in the previous section, the main research question can be answered. The main research question of this research is:

'What conditions should be met to make citizens want to live in a future part of a city in which they will not be able to have their own car?'

Although the main research question sounds really general, the answer will be based on the Merwede case.

One of the reasons to increase the willingness of people to live in Merwede and potentially not being able to have their own car is to take away the need to have one. Merwede will do this by implementing the fifteen minute city framework into the development of Merwede.

To make this area succeed, managing the urban commons in order to diminish social dilemmas is also important. A clear example that has been mentioned in this study is the public space degradation, caused by shared vehicles. Some people seem to not feel the responsibility to park their shared bike, or scooter the right way. By governing Merwede according to the key principles of the co-city. Paris can be seen as an example of how this could be carried out in Merwede by the time it is completely developed. However, it appeared that during the development process there is a lot of collaboration according to these key principles.

For an area with a parking norm between 0,2 and 0,3 it is important the offer sufficient alternatives. In Merwede there has been chosen to implement Mobility as a Service and to make Merwede a mobility hub for the whole region. The most important problem to tackle during this implementation is the spatial degradation that can be caused because of this.

The one issue that Merwede has though, is the fact that Merwede is presented as a very inclusive concept. However, according to the last sub question one could argue that. For people that are not able to spend 200 euros a month on parking, but who are depending on their car for whatever reason, living in Merwede puts them in a very uncomfortable position.

In the end it is impossible to judge if Merwede will turn out to be successful, because it simply does not exist yet. However, based on theories derived from the literature review and the desk study, interviews and observations to the indicators of these theories, one could argue that the approach of Merwede is the right one. The one big issue is in the fact that it appears that there is a large group for whom Merwede will not be a suitable city part to live, even though Merwede claims to be inclusive for everyone.

6. Discussion and recommendations

6.1. Discussion

6.1.1. Implications

This research is mostly valuable for the research case of the Merwede project. Challenges for this specific area where set in the research problem statement. Literature led to serval theories that should be implemented in this project. In the results section of this research, it became clear how and to what extent these theories were implemented in the plan making process. Because one of the theories, the key principles of the co-city, was more based on existing areas and how to govern these, a second case was needed in this research. Paris, which has a really ambitious mobility strategy already implemented in one region, was also included in this research. Paris served as an illustrative case as complementary results.

This research concluded that the biggest issue that Merwede has, is the legitimate doubt of how inclusive this project really is, despite the claims that it is.

Because of the in-depth character of this research and the unique characteristics of Merwede as a research area the results of this research are not generalizable to other cases. However, it is not unthinkable that there will be more projects like Merwede on a comparable, or even larger, scale. Therefore, the results of this study could serve as an example or inspiration for similar projects in the future.

6.1.2. Limitations

This research also has its limitations. For the validity of this research, it was important that all interviews would be conducted in the same setting. However, this turned out to be not possible due to a force majeure. During the research collection phase (end of 2021), the Dutch government enforced stricter COVID-19 measures which included a strict advice to all employees to work from home if possible. At the moment of this announcement the first interview was already conducted in a face-to-face setting. The remaining interviews were conducted online.

All interviews were all conducted based on the same interview guide. Which on itself was based on the operationalization part of this study. However, due to the semi-structured setting that the interviews had, not every aspect of the interview guide was discussed evenly in every interview. All interviewees had a certain field of work where they had most knowledge and talked about the most. I made the consideration

that it benefitted the research the most to ask more follow-up questions about those specific topics, rather than change the subject.

The Paris case should originally have been an equal case to Utrecht in this research. However, because of practical reasons (language barrier, money, lack of connections in France) this turned out to be unfeasible. To not completely drop the whole case, the share of Paris in this study was reduced to an illustrative case for one sub question.

In the Paris case the theory about the principles of the co-city were studied specifically. It turned out that there was plenty of information about these to find in the documents available. However, none of these documents spoke a word about the tech justice indicator. This limitation could be debunked by the fact that one may expect a certain level of technological prosperity in a city like Paris.

6.2.   Recommendations

6.2.1. Recommendations for Merwede

It has been mentioned before multiple times, but the biggest issue that there seems to be in Merwede is the lack of alternatives for inhabitants that are really car dependent. Because, claiming to develop a city part where everyone can live, but giving a large group a very difficult proposition feels contradictory. This study does not directly offer a solution to this problem. However, based on the results of this study this problem could be reconsidered again.

Merwede heavily relies on the 15-minute framework. One of the ways to increase the proximity is to integrate Merwede in the mobility plan of the whole southwest region of Utrecht. To achieve this, two bridges that are only accessible for pedestrians and cyclists will be constructed. The location of the bridges and cycle/walking paths are based on very detailed models. But still, they are models. Therefore, it is recommended to observe the flows of traffic in and around Merwede closely in the first years after the development and in case necessary, adjust the mobility network. For the digitalization part, it has been mentioned before, but digital technology develops very rapidly. Solutions that are developed in these plans, could really well be old fashioned by the time Merwede will be developed. Therefore, it is really important to emphasize that the Merwede lab should keep having an important role in the governance of the area, as mentioned in the plans.

When Merwede will be developed, this city part will strongly rely on shared mobility means. Results in this study, the observational study in particular, showed that this has a downside: the deprivation of the public space. Considering that this is already an issue in Dutch cities, despite measure against it already exist and that shared mobility will be implemented on very large scale in Merwede, Merwede should really prioritize this problem. Based on this study, the best way of intervening this problem is by handling it according to the key principles of the co-city. In other words: get the citizens involved and finding solutions, rather than enforce measures. In addition, the Parisian case also showed that it is really beneficial to have all stakeholders involved together from the start of projects and developments on, rather than having all parties working their own part of the project separately and bring them together in the latest stadium of the process. It is recommended to apply this Parisian strategy on the daily governance of the Merwede area, to minimalize possible friction between parties, and to minimalize bureaucratic procedures.

6.2.2. General recommendations

This study and the results of it are predominantly focused on Merwede. Even though it could perfectly well serve as an example for other cities, it does only contribute to a small part of the academic literature about sustainable mobility strategies. To make the results of this research more generalizable and thus have a bigger contribution to the academic literature, this research could also be conducted in other cities. This enables the possibility to compare several results with each other, which will give the possibility to create a consensus about sustainable solutions. However, the conceptual model of this research is based on the specific characteristics of Merwede. Therefore, when this research will be conducted in other cities, the conceptual model should be adjusted to the specific research cases. Even though this study only adds to a small part of the existing literature about sustainable mobility solutions, it has good value since there is a lot of interest for solutions like the fifteen minute city.

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8. Appendix

8.1. Appendix 1: Reports regarding Merwede

The following reports contain too much text to leave it in here, but this is where to find the used information:

Gemeente Utrecht, Greystar, AM, Synchroon, Lingotto, Janssen de Jong, BPD Ontwikkeling, G&S Vastgoed, Round Hill Capital, 3T Vastgoed, & Boelens de Gruyter. (2020). *Stedenbouwkundig Plan Merwede.* Utrecht, Netherlands. From https://omgevingsvisie.utrecht.nl/fileadmin/uploads/documenten/wonen-en-leven/bouwprojecten-en-stedelijke-ontwikkeling/bouwprojecten/merwedekanaalzone/stadswijk-merwede/2020-11-stedenbouwkundig-plan-merwede.pdf

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8.2. Appendix 2: Complementary interviews Merwede

Interviewee	Organization	Date	Length
Private	Merosch	1 October 2021	21 minutes
Private	Goudappel	8 October 2021	29 minutes
Private	Municipality Utrecht	19 November 2021	39 minutes

Parisians will live within a 15-minute radius

3 November 2020

At a time when many European cities are getting ready for a second lockdown, discussions on the organisation of the city of the future are more relevant than ever. Paris is committed to creating a city, or rather a multitude of neighbourhoods within the city, that will put people at the centre.

Moving differently

The '15-minute city' idea hit the headlines when Anne Hidalgo made it one of the driving issues of her re-election campaign. "The concept of a 15-minute city, in a nutshell," explains Carlos Moreno, professor at the Sorbonne and scientific advisor to the Mayor of Paris "is to design the city within a distance of 15 minutes by foot or by bike to enable the six main urban activities for living in cities: to live, to work, to supply, to education, to health, and to enjoy." After Anne Hidalgo's election last summer, the wheels have started turning to bring the idea to life.

"The 15-minute city is a new way of thinking about the city and city politics," says Diana Filippova, advisor to the Mayor. "You have to start from the people, by understanding how people move and live in the city, what people want."

How do we move in the city? In recent years, most people living in cities have spent most of their time in what Ian Mulcahey, urban planner at design and architecture firm Gensler, terms as 'two 15-minute villages', the one in which they live and the one in which they work, some making additional trips for entertainment. However, with the challenges posed by climate change and the imperative need to reduce emissions, not to mention this year's pandemic, these two villages are under increased pressure to merge.

Most urban environments in Europe originally grew around a city centre that could be compared to the '15-minute city', but things changed when urban design became car focused. "The aim is to make Paris a city where the car doesn't hold the place that it did before. It shall, and is now replaced, by what we call 'soft mobility', such as walking and cycling." explains Filippova.

The architecture and urban arrangement of Paris, as well as its high density – with more than 20,000 inhabitants per square km – makes Paris an ideal testing ground. "This idea of quarters, of small villages, is already hugely present in our everyday life," adds Filippova.

All in

"The 15-minute city starts today," says Filippova. The team is already hard at work on this six year project and the advantage of seeing a new idea become reality, is being able to follow the process and learn from it. "The 15-minute city is a way of doing politics that is quite different from the past," explains Filippova "before, each department was in charge of their respective subject and had to implement it quite independently from the others. With the 15-minute city we first think about what we want to do and then we plug in all the relevant deputies and departments. We want to make everybody work together."

Making everyone work on the project does not only refer to the municipal team. "Of course, the 15-minute city will not be built independently from people," declares Filippova. The city is already running two public consultations that will have an impact on the '15-minute city' planning. The city is also collecting ideas on how to transform 60,000 parking spaces into any space, service or feature Parisians are missing. "We will build consultations, proposals, and ask questions and try and understand what people want to do with their city in the coming years," says Filippova.

Schools as capitals of the 15-minute city

There will be some topics that will drive the change, access to culture, for example, soft mobility, environmental and social equality, and schools will play a central role in Paris' plan. "We want the school to become the capital of the 15-minute city," explains Filippova.

Making the most of its rich public school network, Paris wants to open them towards their neighbourhoods. Opening them both in terms of hours and days – making the premises accessible also in the evening or on weekends – and in terms of having them 'spill-out' into the street and the surrounding areas. Streets around the schools will have no, or limited, traffic and the school courtyards will become green 'oases' that different users can access and enjoy.

The '15-minute city' will decentralise the city on a structural level, as well as at an administrative level. "We will decentralise services so that every Parisian could have a representative of the public either in their district or on their street," says Filippova.

"We want to make life easier and better for Parisians, especially in times of pandemic," says Filippova, "and the 15-minute city is a way of achieving this in the future." Paris is already sharing its successes and challenges with a network of French cities 'Cities in common', and is keen on exchanging with as many cities as possible. "Our eyes are always wide open to see what happens in the world," says Filippova "and we want to have exchanges with other cities. We have a lot to share, but we have a lot to learn too."

Diana Filippova will be sharing more on the 15-minute city and Paris' strategy for the future at the 'Reinventing Cities conference'. Learn more here

The next source is too much text to insert here, but here is where to find it:

Chabaud, D., Moreno, C., Pratlong, F., & Gall, C. (2021). *A collection dedicated to the 15 minute CITY.* Chaire ETI. From [15-minute-city-collection.pdf (chaire-eti.org)](15-minute-city-collection.pdf)